MCHO-CL-W (RECC/12 Aug 96) (40) 1st End Mr. Neve/ran/
DSN 471-6526
SUBJECT: Update of DoD Human Radiation Experiment Events

HQ, U.S. Army Medical Command, 2050 Worth Road, Suite 10,
Fort Sam Houston, TX 78234-6010

24 JAN 1997

FOR Director, Radiation Experiments Command Center,
6801 Telegraph Road, Alexandria, VA 22310-3398

1. Attachment 1 to basic memorandum made reference to 109 radiation "events." Most of these "events" have been determined not to have been experiments but contemporarily accepted procedures for medical diagnosis and treatment of disease/condition. Your references to the location of the Brooke Army Medical Center are in error. This facility is located on Fort Sam Houston, San Antonio, Texas. It is not in the city of Houston, Texas, as indicated in your references.

2. The information you provided on each of these cases has been cross-referenced against databases available to this headquarters. This includes clinical investigation and a literature search by the title you furnish and name of investigator/author where determined. Additional information obtained is provided with the respective description sheet for the RECC Event Number to which it pertains (Attachment 4).

3. Results of these actions have been reviewed by the Chief, U.S. Army Clinical Investigation Regulatory Office, COL James M. Lamiell. His comments are provided at attachment 5. This information represents a definitive response from this headquarters, having exhausted all known sources of pertinent data.

4. Copies of your eight data sheets showing the reporting organization to be the U.S. Army Medical Research and Development Command were forwarded with a copy of your tasking memorandum and attachments to MAJ Dale Vander Hamm, Chief, Human Use Review and Regulatory Affairs Division, DSN 343-2602 or Commercial (301) 619-2602. Follow-up on these cases should be made directly with him.

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MCHO-CL-W
SUBJECT: Update of DoD Human Radiation Experiment Events

5. Our point of contact is COL Eric Daxon, Directorate of Clinical Operations, DSN 471-6612 or Commercial (210) 221-6612.

FOR THE COMMANDER:

ARLENE J. ZALOZNIK
Colonel, MC
Director, Clinical Operations

5 Attachments
wd atchs 1-3
Added 2 atchs
4. as
5. as

Department of Defense
Radiation Experiments Command Center
6801 Telegraph Road
Alexandria, Virginia 22310-3398

AUG 1 2 1996

MEMORANDUM FOR See Distribution

SUBJECT: Update of DoD Human Radiation Experiment Events

References: a. January 31, 1994 Memorandum from the ATSD(AE), Subject: Locating Records of DoD Human Radiation Experiments.

b. June 14, 1994 Memorandum from ATSD(AE), Subject: Expansion of Human Research Review to Include Policy Making Activities of DoD Components.

c. November 2, 1995 Memorandum from ATSD(AE), Subject: Response by the DoD to the Findings and Recommendations of the Advisory Committee on Human Radiation Experiments (ACHRE).

The above referenced memoranda outline a comprehensive DoD search strategy for the services and agencies to identify and retrieve all human ionizing radiation experiments (HRE) conducted or sponsored by the DoD from 1944 to 1974 (later extended to 1995). In developing the scope of the effort, a definition of an HRE was provided and the guideline to err on the side of inclusion was established to ensure that every probable HRE was identified.

As a result of the search, addressees provided a total of almost 2800 events as possible HREs. In coordination between the services and agencies and the DoD Radiation Experiments Command Center (RECC), this number has been reduced to approximately 2350 HREs. The bulk of this reduction came as a result of follow-up review of background material forwarded by the addressees to the RECC. This review indicated some HREs were duplicates, some involved animal studies, some were not sponsored or conducted by the DoD, or that the experiment had been proposed but did not in fact occur. Such HREs were removed from the database with the approval of the submitting addressee.

To ensure that the public has as complete a picture as possible about the DoD involvement in human ionizing radiation experimentation, addressees are requested to review HREs submitted for the pre-1975 period to ensure that all available documentation related to the conduct of the HREs have been forwarded to the RECC. Material required include protocols, contracts, reports, correspondence, researchers notes, journal articles, memoranda and any other documentation that bears on the conduct, results or participants in the HRE. A concise abstract summarizing the HRE must also be included.

In this regard, attached is a printout of those pre-1975 events originally provided the RECC which lack this essential information, primarily in the abstract. This information is essential and must be acquired and provided to the RECC. To assist in providing the requested information is an abstract format and a copy of an ideal event file submission.

MRA 961748

The full attention of each addressee is requested in this matter to ensure timely and thorough results. Addressees are requested to provide the requested information within 60 days from the date of this letter. Further, to facilitate the RECC expeditiously compiling the information, addressees are also requested make submissions on a phased basis . To accomplish this, each addressee should provide input NLT COB each Friday during the 60 day suspense period.

Inquiries regarding this matter should be directed to Dr. Gordon K. Soper, Principal Deputy, ATSD(NCB), at (703) 697-5161 or Colonel Claud Bailey, Jr., Deputy Director, RECC, at (703) 442-5675. Thank you for your attention to this important matter.

FOR THE DIRECTOR:

Thanks again for your support
c3f

CLAUD BAILEY, JR.
Colonel, AG, USA
Deputy Director,
Command Center

Attachments
1. Printout of pre-1975 event file
2. Abstract Format
3. Example of ideal event file submission

DISTRIBUTION:
COL Layland, Assistant for Health Policy, Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs)
CAPT Mendenhall, Officer-in-Charge, Naval Dosimetry Center, Navy Environmental Health Center
LT COL Brown, Chief, Clinical Investigations & Life Science Division, HQ AFMOA/SGPT

Event Number:	ACIR54000-A	**Service:**	Army		
Event Title:	Observations on the mechanism of the renal clearance of 131-I				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	54	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

Attachment 4

EVENT NUMBER: ACIR54000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Bricker NS, Hlad CJ: Observations of the mechanisms of the renal clearance of I-131. J Clin Invest, 34:1057-72, 1955 probably describes this study.
MEDICAL ASSESSMENT: The study involved 49 adults and did not benefit the subjects.

NOV-27-'96 WED 12:27 ID:WILFORD HALL MED LIB TEL NO: FAX:(210) 670-7030 #288 P02/29

OBSERVATIONS ON THE MECHANISM OF THE RENAL CLEARANCE OF I^{131} [1]

By NEAL S. BRICKER [2] and CHARLES J. HLAD, Jr.

(From the Renal Physiology Section, Research and Development Branch, Fitzsimons Army Hospital; the Radioisotope Unit, Veterans Administration Hospital, Denver, Colorado; and the Departments of Medicine and Physiology, University of Colorado School of Medicine, Denver, Colo.)

(Submitted for publication December 16, 1954; accepted March 23, 1955)

Studies of the renal excretion of iodide have been reported from several laboratories in recent years (1–6).[3] Despite this accumulation of information, many properties of the renal mechanisms for excretion of the iodide ion remain unknown. The present study represents an attempt to explore the behavior of the renal clearance of I^{131} under a variety of experimental conditions in human subjects. The clearance of I^{131} has been determined simultaneously with other measurements of renal function and all values, including those for I^{131} clearance, were obtained using a continuous infusion technique. It is assumed that the data derived from the study of I^{131} may be applied freely to explain the behavior of stable inorganic iodide.

METHODS

Case material

The observations are based upon 58 renal clearance studies performed on 49 adult human subjects. Four general groups of patients were included:

1. *Euthyroid subjects with normal renal function:* Thirty-four clearance studies were performed on 31 subjects, all of whom were either convalescent hospitalized patients, or out-patients, without clinical or physiologic evidence of renal disease. The mean age was 33, with a range of 20 to 65 years.

2. *Euthyroid subjects with renal disease:* Thirteen studies were performed on seven patients. Four patients had polycystic renal disease, two chronic glomerulonephritis, and one probable chronic pyelonephritis. Glomerular filtration rates ranged from 9 to 100 cc. per min. per 1.73 sq. m. The mean age was 40 with a range of 23 to 75 years.

3. *Hyperthyroid patients:* The four subjects included in this group ranged in age from 21 years to 46 years and were clinically hyperthyroid at the time of study.

4. *Myeloma patients:* Five patients with primary myeloma and two patients with secondary myeloma were included in this group. The mean age was 40 with a range of 25 to 60 years.

Procedure

Simultaneous determinations of the clearances of inulin, PAH, and I^{131} were performed in all cases. In addition, the excretion rates and plasma levels of sodium, potassium, and chloride were determined during each clearance period. Standard continuous infusion techniques were employed for the measurement of the clearance of inulin and PAH and the continuous infusion method adapted, as previously reported (6), for the determination of the clearance of I^{131}.

All patients were fasting and recumbent at the time of study. In the typical experiment a liter of water was ingested 60 to 90 minutes prior to administration of the priming solution. Subsequent water intake varied with the nature of the experiment. Urine was collected through an indwelling multiholed rubber catheter, and urine collections were concluded with two washouts of distilled water, followed by two or more injections of air. Following a timed blank urine collection period, a priming injection of inulin, PAH and I^{131} was administered intravenously and a sustaining infusion of the same substances (in a normal saline vehicle) was delivered by a Bowman constant infusion pump, usually at a rate of 1.5 cc. per min. A 30 to 40-minute period was allowed for equilibration of plasma concentrations, and in the typical experiment, at least three control clearance periods averaging 15 minutes in duration were obtained. When experimental conditions were altered after the control periods, three to seven additional periods were obtained.

Venous blood was sampled at the mid-point of each period through an indwelling 17-gauge thin-walled needle, using approximately 0.1 cc. heparin for every 10 cc. of blood. The samples were centrifuged and separated without delay. Inulin was determined according to a modification [4] of the method of Roe, Epstein, and Gold-

[1] Presented in part at the 26th Annual Meeting of the Central Society for Clinical Research, Chicago, Illinois, October 30, 1953.

[2] Present address: Peter Bent Brigham Hospital, Boston, Mass.

[3] A discussion of the majority of these data is contained in a comprehensive review by Riggs (7).

[4] Modifications include: 1) Heating diluted plasmas and protein precipitating reagents in a 50-degree water bath for 30 minutes after shaking; 2) separation of protein-free filtrates by centrifugation rather than filtra-

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stein (8); PAH, according to the method of Smith, Finkelstein, Aliminosa, Crawford, and Graber (9); chloride, according to the method of Van Slyke and Hiller (10); thiocyanate, according to the method of Gregersen and Stewart (11); and sodium and potassium were analyzed on an internally compensated Baird flame photometer. The details of the analytic methods employed in this laboratory for assay of I^{131} in plasma and urine have been reported in a separate communication (6). Donnan corrections were as follows: Na, 0.96; Cl, 1.02; and K, 0.95. I^{131} values were uncorrected.

RESULTS

I. *I^{131} plasma levels*

Continuous infusion of I^{131} throughout experiments, up to but not exceeding three hours in duration, resulted in essentially constant plasma counting rates.[5] Analyses for protein-bound I^{131} were performed in representative cases. The maximum amount of protein-bound I^{131} was observed during the last clearance period in a hyperthyroid patient and was equal to 1.7 per cent of total radio-iodine. In the majority of instances, no protein-binding of infused I^{131} was detected at the conclusion of clearance measurements.

II. *I^{131} clearance as a function of inulin clearance in the steady state*

In Figure 1 the clearance of I^{131} has been plotted against the concurrent value for the clearance of inulin for 40 studies on 34 euthyroid subjects (27 of whom had normal renal function and seven of whom had renal disease) and 11 studies on patients with thyroid dysfunction. All patients had essentially stable filtration rates during the periods of study. The range of glomerular filtration rates for the entire group was from 9 to 155 cc. per min. per 1.73 sq. m. The regression line drawn through the points was derived by the least squares method. The correlation coefficient is 0.82 and the P value less than 0.01, thereby indicating a strong relationship between $C_{I^{131}}$ and C_{In} for group data.

The validity of treating the subjects with normal thyroid function and those with thyroid dysfunction as members of the same population is

tion; 3) treatment of reagent blanks and standards identically with the unknowns; and 4) a wave length of 510 mμ on the Coleman Model 6A Spectrophotometer.

[5] Counting rates ranged from 37.2 to 202.7 cts. per sec. per 2 cc. of plasma. The range for individual subjects $\left(\frac{\text{High} - \text{Low}}{\text{High}} \times 100\right)$ varied from zero to 10 per cent with an average of 4.9 per cent for the group.

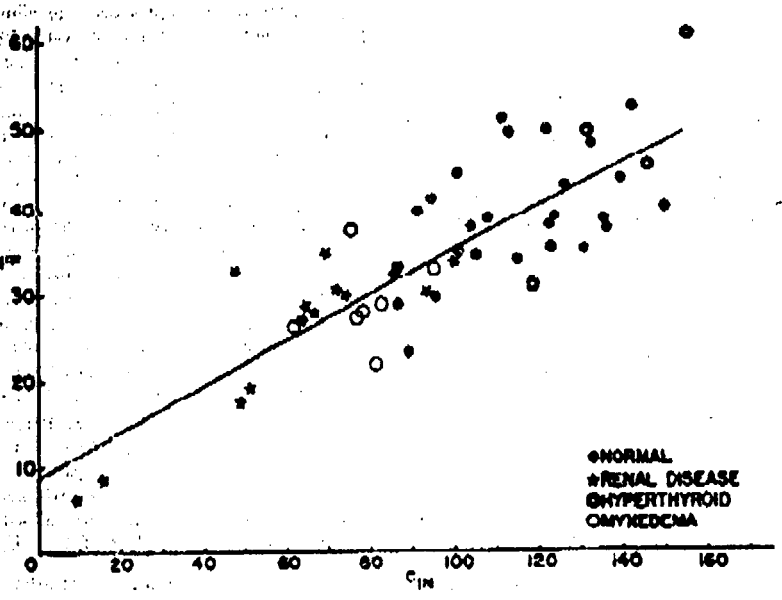


FIG. 1. RELATIONSHIP BETWEEN $C_{I^{131}}$ AND C_{In}

Each point represents the mean value of at least three separate clearance periods. Values are in cc. per min.

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based upon a previous observation that a separate plot of C_{Im} *vs.* C_{In} for the present hyperthyroid and myxedematous patients was linear and could not be differentiated statistically from the same plot for euthyroid subjects (6). The equation derived for the combined data of Figure 1 is: $C_{Im} = .368\ C_{In} + 8.6$.

III. *C_{Im} in the presence of acute alterations of glomerular filtration rate*

The linearity noted between glomerular filtration rate and I^{131} clearance in the group plot of patients with stable renal hemodynamics has been tested in individual subjects during acute increases and decreases in GFR.

A. *Acute increases in GFR:* In five subjects, C_{In} was acutely increased by the intravenous administration of Aminophylline. After three control periods, 0.25 to 0.50 gm. of Aminophylline was administered over a 5 to 10-minute period by single intravenous injection and a 10 to 15-minute period was allowed to compensate for delay time. Thereafter from three to five successive clearance periods were obtained. The response in all subjects was qualitatively the same and a representative experiment is recorded in Figure 2. A slight decrease was frequently noted in I^{131} plasma levels following Aminophylline administration; however, in no case did this decrease compensate for the elevation of GFR. Consequently, filtered load of I^{131} invariably rose. In each experiment, the percentage increase in C_{In} was associated with a greater percentage rise in C_{Im} such that the clearance ratios (C_I/C_{In}) consistently increased. Changes in C_{Cr}/C_{In} and C_{Na}/C_{In} were in the same direction as the change for C_I/C_{In}. Values for C_{Cr}/C_{In} did not follow a characteristic pattern. C_{PAH} increased slightly in four of the five experiments, but the rise was always less than that of C_{In}. Urine flow increased sharply immediately after injection but the increases were transient and values returned toward control levels after two or three clearance periods.

B. *Acute decreases in GFR:* Acute decreases in glomerular filtration rate were observed in five studies on four patients exhibiting transient peripheral vascular collapse during clearance measurements. One patient had orthostatic hy-

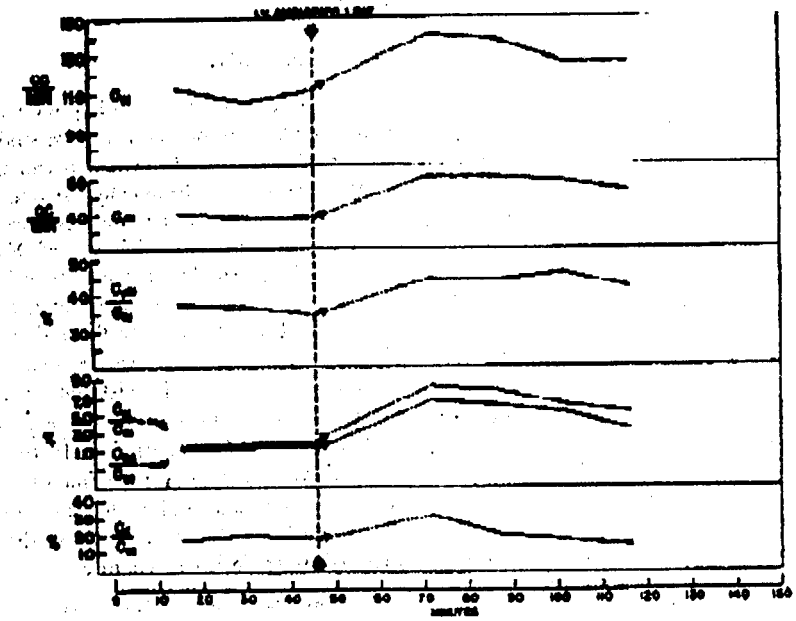


FIG. 2. EFFECTS OF ACUTE CHANGES IN GLOMERULAR FILTRATION RATE
Dotted line represents break for delay period.

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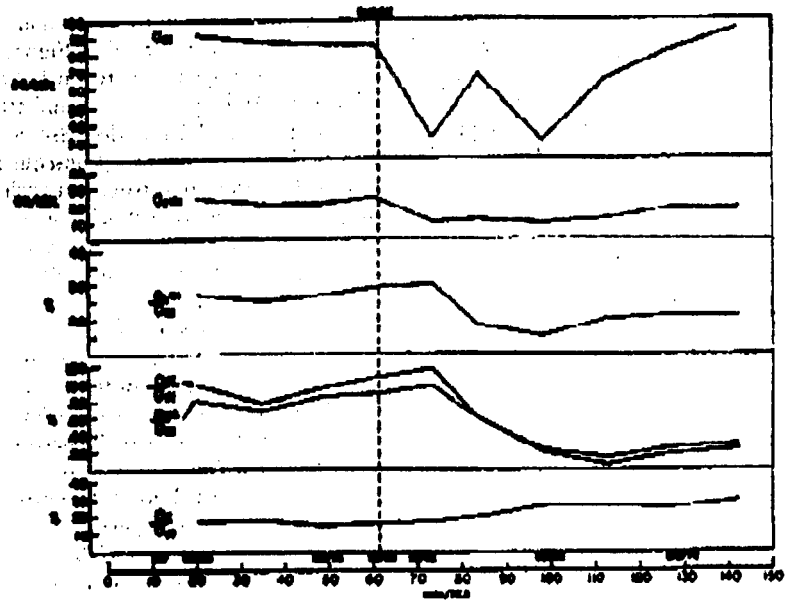


FIG. 3. EFFECTS OF ACUTE CHANGES IN GLOMERULAR FILTRATION RATE

potension and the fall in GFR was induced by elevation of the patient on a tilt table from zero to 90°. The other three patients (one of whom was studied twice) exhibited sudden onset of hypotension and bradycardia without apparent cause, and at different chronologic points in clearance measurements. In each instance, the hypotension was reversible without specific therapy.

Results of a representative experiment from this group are shown in Figure 3. In the first period after the onset of hypotension, inulin clearance decreased precipitously and was associated with a simultaneous proportional reduction in C_{PAH}. After this lag period, which was uniformly noted and may have been attributable to increased delay time in the nephra, C_{PAH} decreased out of proportion to C_{In}. The changes for sodium and chloride were in the same direction as those for iodide; however, when C_I/C_{In} had returned toward normal, C_{Na}/C_{In} and C_{Cl}/C_{In} were still well below control levels. Changes for potassium were more variable than those of the other electrolytes and the results were inconclusive. C_{PAH} fell in all studies and in four the decreases were out of proportion to C_{In}, resulting in a fall in filtration fractions. Urine flow values fell in all instances and generally remained depressed after C_{In} had returned toward control levels.

IV. *Iodide loading*

The effects of acute loading with stable inorganic iodide were observed in five studies on four euthyroid patients. In two experiments, the patients were loaded chronically for one week prior to acute loading. After three control clearance periods in all patients, 0.5 gm. of NaI was administered by single intravenous injection, and 0.5 gm. was added to the sustaining infusion and delivered at a constant rate throughout the duration of the study. It was estimated that the amount of iodide administered increased the plasma inorganic iodide levels at least one thousand times.[6] A delay period of 10 to 15 minutes was allowed between completion of the priming injection of iodide and resumption of clearance measurements. Data from these studies are summarized in Table I, cases 1 to 5.

[6] This calculated value is based upon an assumed initial plasma inorganic iodide level of 1.0 μg per cent, and a maximal volume of distribution of inorganic iodide of 40 per cent of body weight.

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TABLE I

The effects of acute and chronic iodide loading on renal hemodynamics, C_I^m, C_I/C_{in}, C_{PAH}/C_{in}, C_{Cl}/C_{in}, and C_K/C_{in}

Case		C_{in}* cc./min.	C_I^{max}* cc./min.	C_I/C_{in} %	C_{PAH}* cc./min.	F.F. %	C_{ur}/C_{in} %	C_{Cl}/C_{in} %	C_K/C_{in} %
1	Control†	101	46	46	536	19	1.7	1.7	22
	Experimental	103	44	43	500	21	2.3	2.5	25
	% Change	+4	− 3	− 7	−7	+12	+31	+47	+14
2	Control	112	50	44	728	15	2.3		26
	Experimental	103	40	38	714	15	2.1		25
	% Change	−8	−21	−14	−2	± 0	− 8		− 9
3	Control	9.3	7.4	80	24	39	15	16	229
	Experimental	8.3	6.0	70	22	38	11	13	239
	% Change	−8	−18	−11	−7	− 2	−29	−23	+ 4
4	Control‡	113	46	41	514	22	1.7	1.9	24
	Experimental	115	46	41	525	22	2.6	2.7	23
	% Change	+1	± 0	± 0	+2	± 0	+53	+44	− 3
5	Control‡	107	34	32	661	16	1.7	1.8	21
	Experimental	108	32	30	676	16	1.5	1.7	17
	% Change	+1	− 4	− 5	+2	− 1	− 8	− 8	−19
	Mean change (1–5)	−2	− 9	− 8	−2	+ 1	+ 5	+15	− 2
6	Control§	108	39	36	510	21	1.3	1.6	18
	Experimental	113	46	41	514	22	1.7	1.9	24
	% Change	+ 5	+ 18	+ 13	+1	+ 4	+30	+20	+31

* Values corrected to 1.73 sq. m. body surface area.

† Control value in all studies is the mean of at least three clearance periods prior to drug administration. Experimental value is the mean of at least three clearance periods subsequent to drug administration. Calculations of % change were performed prior to rounding numbers off.

‡ Acute loading superimposed on chronic loading.

§ Chronic loading study.

Subsequent to acute iodide loading, C_{PAH} decreased in four experiments (varying from 3 per cent to 21 per cent) and in one case remained unchanged. Values for C_I/C_{in} also decreased in four experiments but the range was only from 5 to 14 per cent. Mean decreases for the group were: C_{in}, 2 per cent, C_{PAH}, 9 per cent, and C_I/C_{in}, 8 per cent. The data from the two patients receiving acute iodide loading superimposed upon chronic loading (cases 4 and 5, Table I) do not appear to differ materially from those who received only the acute loading dose. In one patient (case 6, Table I) studies were performed before and after a five-day period of oral administration of a saturated solution of potassium iodide in the following stepwise daily doses: 5, 6, 7, 8, and 30 drops. Comparison of post-loading data with control values shows a slight increase in C_{in} (5 per cent) and a moderate rise in C_{PAH} (18 per cent). The I^{131}/inulin clearance ratio increased 13 per cent.

V. *Thiocyanate data*

Clearance measurements were performed on five subjects receiving intravenous sodium thiocyanate in amounts varying from 475 to 900 mg. of thiocyanate ion. Plasma thiocyanate levels for the group varied from 3 mg. per cent to approximately 6 mg. per cent with the level remaining relatively stable in individual patients. Diagnosis and mean data before and after thiocyanate administration for each case are shown in Table II. The effects upon renal function were qualitatively the same in all subjects regardless of the diagnosis. In the majority of cases, filtration rate exhibited a slight decrease after injection. The mean decrease for all cases was 5 per cent. Similarly, PAH clearance showed a net decrease of 5 per cent after thiocyanate. The change in the I^{131}/inulin clearance ratios varied somewhat from case to case, both in direction and magnitude. None of the individual changes, however, was marked and

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TABLE II

The effects of intravenous sodium thiocyanate on renal hemodynamics, C_{Na}/C_{In}, C_{Na}/C_{In}, C_{Cl}/C_{In}, C_{Cl}/C_{In} and C_K/C_{In}

Case		Diagnosis†	P_{SCN}‡ mg.%	C_{In}* cc./min.	C_{PAH}* cc./min.	C_{Na}/C_{In} %	C_{Na}/C_{In} %	C_{Cl}/C_{In} %	C_K/C_{In} %
1	Control§	Eut. norm.	0.0	135	670	30	1.4	1.7	20
	Experimental		3.0	134	684	29	1.5	2.0	20
	% Change			− 1	+ 2	− 5	+ 8	+16	± 0
2	Control	Eut. norm.	0.0	91	539	43	2.2	2.2	
	Experimental		4.5	82	510	46	1.9	1.8	
	% Change			−10	− 9	+ 8	−17	−20	
3	Control	Myx-P	0.0	83	476	35	1.0	1.0	20
	Experimental		3.4	75	400	37	1.2	1.1	20
	% Change			− 9	−16	+ 5	+11	+ 9	± 0
4	Control	Hyp.	0.0	119	548	26	1.1	1.6	19
	Experimental		5.0	121	575	28	1.4	1.9	24
	% Change			+ 2	+ 5	+ 6	+23	+18	+24
5	Control	Hyp.	0.0	155	847	40	0.7	1.2	20
	Experimental		6.0	149	783	35	1.1	1.3	15
	% Change			− 4	− 8	−11	+53	+10	−28
Mean % Change				− 5	− 5	+ 1	+16	+ 6.0	− 1

* Values corrected to 1.73 sq. m. body surface area.

† Eut. norm. = euthyroid subject with normal renal function. Myx-P = primary myxedema. Hyp. = hyperthyroid.

‡ P_{SCN} = plasma thiocyanate levels.

§ Control and experimental as in Table I. Calculations of % change were performed prior to rounding numbers off.

the net change for the group was approximately zero. In general, sodium and chloride excretion rates increased after the administration of thiocyanate ion whereas changes in potassium excretion rates were variable. Following thiocyanate administration, plasma levels of I^{131} increased markedly in both hyperthyroid patients and moderately in one euthyroid subject. They remained unaltered in the myxedematous patient and the second euthyroid subject.

VI. *PAH loading data*

Eight patients were included in this group. After control periods, from 60 to 70 cc. of a 20 per cent solution of Na PAH was administered intravenously as a priming solution and the sustaining infusion was calculated to maintain plasma levels at approximately 60 mg. per cent. A period of 45 minutes was allowed for equilibration of plasma levels. Diagnosis and mean clearance values for each case are reproduced in Table III.

Glomerular filtration rates for this group ranged from 49 to 139 cc. per min. In six of the eight cases, filtration rates decreased following PAH loading, (from one to 15 per cent). In seven of the eight cases, the I^{131}/inulin clearance ratios rose. Although the magnitude of the ratio changes was variable, the mean increase for the group was 10 per cent. Sodium/inulin clearance ratios rose in all instances and the mean increase for the group was 291 per cent. Individual responses for chloride and potassium varied; however, the mean changes for both were positive. Thus, chloride/inulin clearance ratios increased 55 per cent, and potassium/inulin clearance ratios increased 30 per cent.

VII. *Mercurial diuretic data*

The effects of intravenous mercurial diuretics were studied in three euthyroid normal subjects. Details of one of these studies are shown graphically in Figure 4. This patient received 2 cc. of Thiomerin® by single intravenous injection over a 10-minute period. Filtration rate declined approximately 15 per cent from control levels subsequent to drug administration and remained relatively constant at the new level. Sodium and chloride excretion rates rose progressively following drug administration. Potassium excretion rate remained relatively stable. I^{131}/inulin clearance ratios showed a tendency to decrease during the 3rd to 5th clearance periods following injec-

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TABLE III

The effects of PAH loading on C_{in}, C_{Cl}/C_{in}, C_{Na}/C_{in}, C_{Cl}/C_{in}, and C_K/C_{in}

Case		Diagnosis*	C_{in}† cc./min.	C_{Cl}/C_{in} %	C_{Na}/C_{in} %	C_{Cl}/C_{in} %	C_K/C_{in} %
1	Control	Eut. norm.	131	38	1.2	1.5	30
	Experimental		131	38	4.0	1.3	26
	% Change‡		0	± 0	+236	− 10	− 14
2	Control	Eut. norm.	139	32	1.7	1.8	24
	Experimental		123	33	4.9	1.7	20
	% Change		−12	+ 3	+187	−5	− 16
3	Control	Eut-RD	74	42	1.5	1.5	30
	Experimental		70	43	5.4	1.6	34
	% Change		− 5	+ 3	+252	+5	+ 13
4	Control	Eut-RD	94	33	1.4	1.3	20
	Experimental		80	40	5.7	1.7	28
	% Change		−15	+22	+308	+ 31	+ 39
5	Control	Eut-RD	49	36	2.1	2.2	22
	Experimental		45	42	6.6	2.9	25
	% Change		− 7	+15	+224	+ 31	+ 16
6	Control	Eut-RD	100	35	0.9	0.7	9
	Experimental		90	39	5.2	0.9	19
	% Change		−10	+12	+452	+ 42	+102
7	Control	Eut-RD	66	43	3.4	2.9	48
	Experimental		65	46	6.9	2.6	35
	% Change		− 1	+ 7	+105	− 12	− 28
8	Control	Eut-RD	65	45	1.3	1.11	29
	Experimental		70	53	8.9	5.09	65
	% Change		+ 8	+19	+563	+359	+125
Mean % Change			− 5	+10	+291	+ 55	+ 30

* Eut-RD = euthyroid patient with renal disease. Other definitions as in preceding tables.
† Values corrected to 1.73 sq. m. body surface area.
‡ Calculations of % change were performed prior to rounding numbers off.

tion of the mercurial. Urine flow values rose only during the last two periods of observation. Results in the other two cases were similar except that, 1) GFR did not drop, and 2) values for C_{Cl}/C_{in} remained essentially stable.

VIII. *The influence of the excretion of other electrolytes upon C_{PAH}*

In Figure 5 C_{PAH} is plotted against the concurrent values for the clearance of sodium. Plots of C_{Cl} *vs.* C_{PAH} and C_K *vs.* C_{PAH} are qualitatively the same as that shown for C_{Na} *vs.* C_{PAH}. Although a rough correlation exists in the group data between C_{PAH} and the clearances of the other electrolytes, the relationships are thought to represent an interdependence of each of the variables upon inulin clearance.

Experiments performed in the presence of acute changes of excretion rates of Na, Cl, and K have failed to show changes in C_{PAH} which completely parallel any of the former ions. In a group of subjects with pulmonary tuberculosis, it has been noted that following peritoneal puncture with or without induction of pneumoperitoneum, excretion rates of sodium, chloride, and potassium decreased significantly (12). Values for the clearance of iodide, simultaneously determined, were variable and in several patients in whom marked decreases in excretion rates of other electrolytes occurred, iodide clearance was either unchanged or decreased only slightly. A representative study is shown in Figure 6. Other examples of an apparent dissociation of C_{PAH} from the excretion of other electrolytes may be seen in the above noted experiments employing mercurial diuretics (Figure 4), PAH loading (Table III), and NaSCN administration (Table II).

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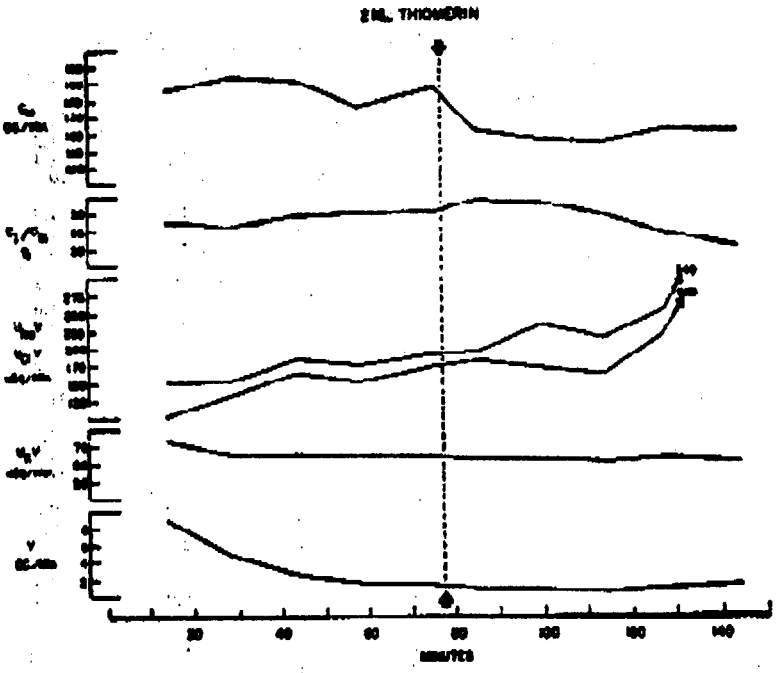


FIG. 4. INTRAVENOUS EFFECTS OF MERCURIAL DIURETICS

$U_{electrolyte}V$ = minute rate of excretion of designated electrolyte.

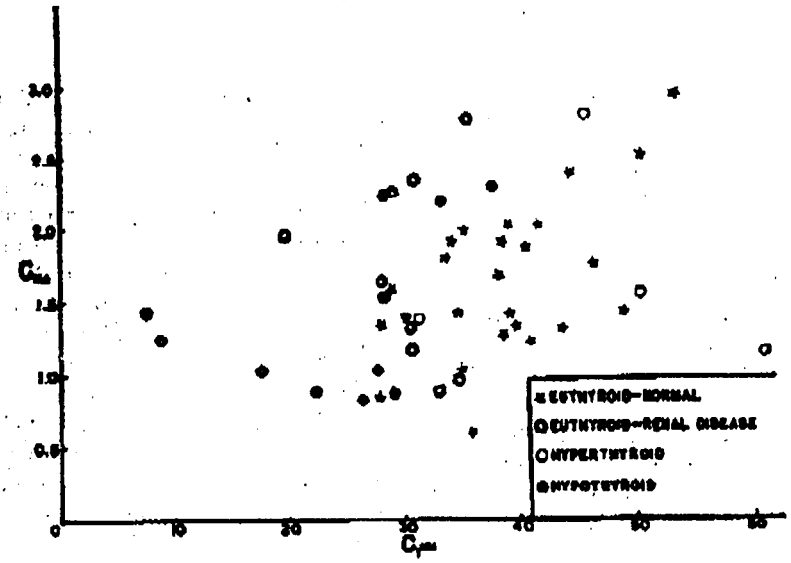


FIG. 5. RELATIONSHIP BETWEEN C_{Na} AND C_{Cl^-}

See legend Figure 1.

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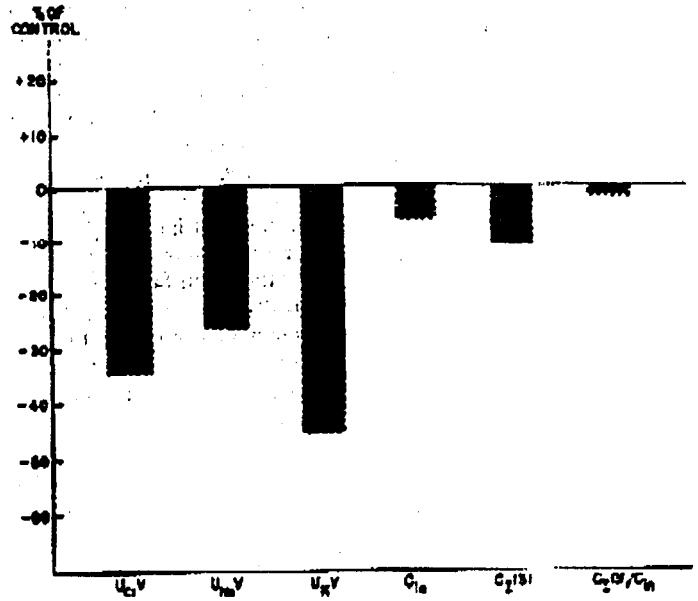


FIG. 6. EFFECTS OF INTRAPERITONEAL A^{131} INJECTION ON ELECTROLYTE CLEARANCE
See legend Figure 1.

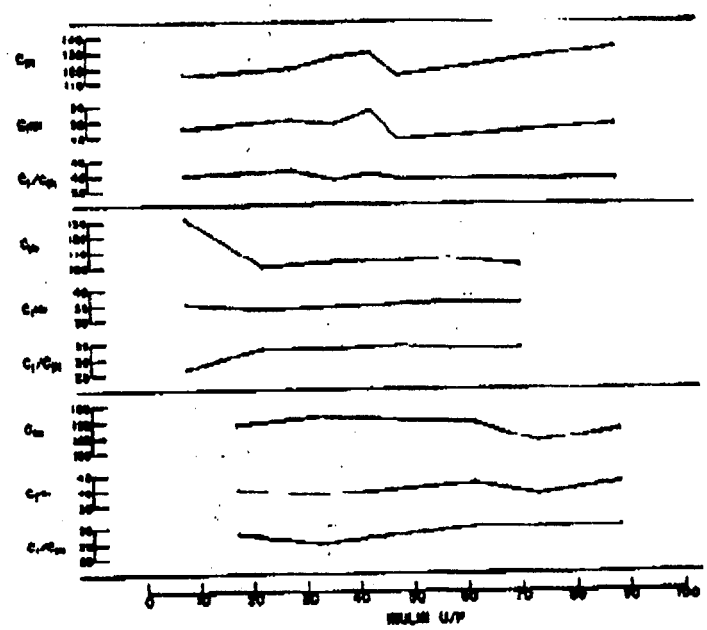


FIG. 7. EFFECTS OF DECREASING URINE FLOW
See legend Figure 1.

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IX. *Urine flow*

Data for urine flow experiments were obtained from patients with normal renal function, having a range of glomerular filtration rates from 90 to 153 cc. per min. per 1.73 sq. m. Experiments performed on three individual patients in the presence of decreasing rates of urine flow are shown in Figure 7. In each instance $C_{I^{131}}$, C_{In}, and the I^{131}/inulin clearance ratio are plotted against the urine/plasma (U/P) ratio for inulin. The latter is employed as a measure of the degree to which the glomerular filtrate has been concentrated by the reabsorption of water. The total range of U/P values for the three patients was from 9 to 90. In none of the cases did I^{131}/inulin clearance ratios decrease with increasing U/P values.

Consecutive individual clearance periods obtained during constant or falling urine flows (increasing U/P values) were available in 16 studies on patients with normal filtration rates. Of these, 10 cases (including the three shown in Figure 7) had variable or no changes in I^{131}/inulin clearance ratios, four had decreasing I^{131}/inulin clearance ratios, and two had increasing I^{131}/inulin clearance ratios. When the I^{131}/inulin clearance ratios for these subjects are plotted against the inulin U/P ratios (circles in Figure 8), there is a suggestion of a slight tendency for clearance ratios to decrease with increasing U/P values.

The effects upon I^{131}/inulin clearance ratios of increasing rates of urine flow, measured during the ascending limb of water diuresis, are represented for an individual case in Figure 9. The first six clearance periods cover a range of urine flows from 0.7 to 5.8 cc. per min. per 1.73 sq. m., and a range of inulin U/P ratios from 190 to 20. The results fail to show a rise in I^{131}/inulin clearance ratios with falling U/P values, and in fact a slight decrease in C_I/C_{In} values occurred. With the onset of decreasing rates of urine flow (increasing inulin U/P values), clearance ratios remained essentially constant.

Consecutive individual clearance periods obtained during rising urine flows were available in 10 subjects with normal renal function. Examination of these data showed no consistent change in I^{131}/inulin clearance ratios with falling inulin U/P values.

X. *Osmotic diuresis*

The behavior of $C_{I^{131}}$ has been investigated in the presence of osmotic diuresis associated with mannitol loading and spontaneous osmotic diuresis in patients with renal disease.

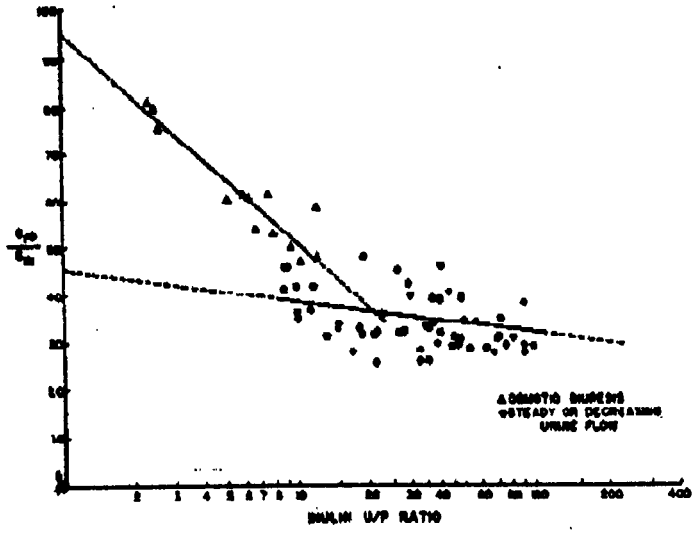


FIG. 8. RELATIONSHIP BETWEEN I^{131}/INULIN CLEARANCE RATIO AND INULIN U/P RATIO

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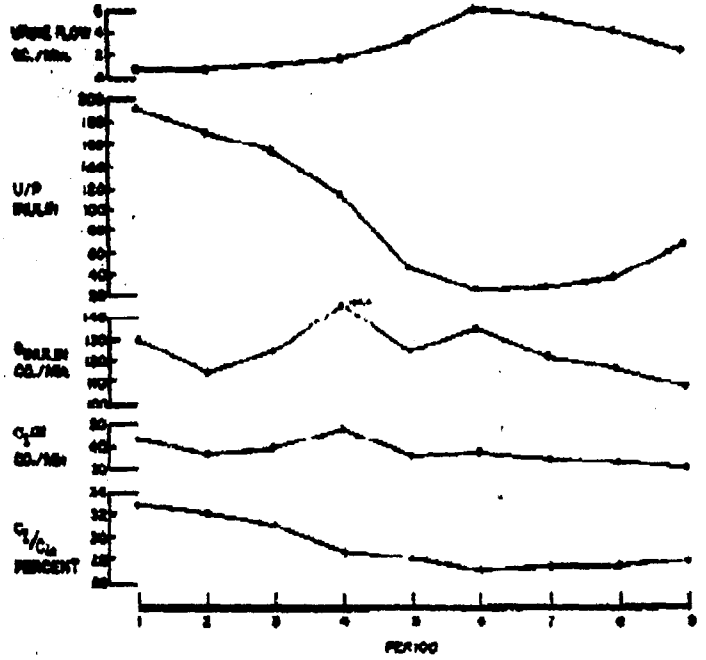


FIG. 9. EFFECTS OF INCREASING URINE FLOW ON $C_{I^{131}}$

A. *Mannitol diuresis:* Two patients were studied during intravenous mannitol loading. The first case is shown in Table IV. Glomerular filtration rate remained relatively stable throughout the period of study. Inulin U/P ratios decreased from 20 to a minimum of 5. I^{131}/inulin clearance ratios rose from 31 per cent to 60 per cent and urea/inulin clearance ratios rose from 47 per cent to 77 per cent. The percentage of filtered water excreted increased from 5.7 to 22.

In the second patient subjected to mannitol diuresis the results were comparable to the above study. Inulin U/P values decreased from a maximum control value of 40 to a minimum of 7.8 and I^{131}/inulin clearance ratios increased from 32 to 53 per cent. The percentage of filtered water excreted increased from 2.7 to 14.

B. *Osmotic diuresis associated with renal disease:* Two patients with chronic glomerulonephritis, both with inulin U/P ratios below eight

TABLE IV

Osmotic diuresis after mannitol loading

Period	Time min.	V* cc./min.	U/P†	C_{inI} cc./min.	C_I/C_{In} %	C_{urea}/C_{In} %	V/wC_{inI} %
1	0–16	5.3	18.8	99	31	47	5.8
2	16–29	5.2	17.8	93	33	47	6.1
3	29–41	4.4	21.1	93	32	46	5.2
Mannitol							
4	41–57	4.7	19.6	92	55	49	5.6
5	57–71	8.0	10.1	81	47	67	10.8
6	71–81	12.7	6.5	83	54	69	16.6
7	81–91	16.7	4.9	82	60	77	22.0

* V = urine flow.
† U/P = urine/plasma inulin ratio.
‡ Values corrected to 1.73 sq. m. body surface area.
§ Percentage of filtered water excreted was computed from the conventional formula V/wC_{In}, where V is the true urine flow, C_{In} is the filtration rate, and w is the correction for water content of plasma.

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were studied. The first patient had a glomerular filtration rate of 9.3 cc. per min. per 1.73 sq. m. and a mean inulin U/P value of 2.4. The I^{131}/inulin clearance ratios averaged 80 per cent in this subject as opposed to the range of 26 to 51 per cent observed in 50 studies on patients with U/P ratios greater than 8. The second patient with chronic *glomerulonephritis* had an inulin U/P value of 4.4 and an I^{131}/inulin clearance ratio of 38 per cent.

Data were obtained from one patient with salt-losing nephritis. At the time of clearance measurements this subject was excreting from 13 to 15 per cent of his filtered load of sodium and the average rate of excretion of sodium was 1 mEq. per min. Inulin U/P ratios ranged from 6.5 to 8.7 and the I^{131}/inulin clearance ratios averaged 61 per cent.

DISCUSSION

Two general categories of data have been obtained in the present studies: a) *Group data* from individual subjects presumably in a steady state; and b) *Data from individual subjects*, each serving as his own control, in whom experimental conditions were acutely altered. The group data supply general information which is representative of the population. The individual studies allow for an examination of certain of the dynamic aspects of iodide excretion.

In the group data, a linear relationship between C_{PBI} and C_{In} is apparent over a range of filtration rates from 40 to 155 cc. per min. Moreover, the values for C_{PBI} were invariably less than the concurrent values for C_{In}. These observations imply that: a) C_{PBI} is filtration dependent; and b) based on the assumption that plasma iodide is largely or completely filtered at the glomerulus, some of the filtered iodide ion is reabsorbed from the tubular urine. The nature of the tubular transport mechanism is not apparent in the group data and the individual studies include a series of experiments designed to elucidate the properties of this mechanism.

The filtration dependence of C_{PBI} was examined in the presence of acute alterations of glomerular filtration rate. Acute increases or decreases in GFR were always accompanied by changes in C_{PBI} which were in the same direction, but proportionately greater than those of C_{In}. I^{131}/inulin clearance ratios thus increased with rising filtration rates and decreased with falling filtration rates. It is well known that sudden alterations in filtration rate produce striking changes in electrolyte excretion. Such changes are presumably related to the creation of a glomerulo-tubular imbalance and with respect to the present study do not appear to offer direct information regarding the mechanism of the tubular transport of iodide. The possibility that Aminophylline, which was employed to increase GFR, specifically blocked the tubular reabsorption of iodide cannot be evaluated on the basis of existing information.

In contrast to the effects of elevating the filtered load of iodide by increasing GFR, elevation of filtered load through administration of an amount of stable iodide calculated to raise plasma I^{127} levels over a thousand-fold resulted in only a slight and inconsistent decrease in iodide/inulin clearance ratios. It is not yet clear whether this decrease is due to: 1) analytic error; 2) a change in the experimental conditions (*e.g.*, failure of equilibration of loading doses with the iodide, pool, decrease in filterability of iodide, *etc.*); or 3) a minor alteration in the transport of iodide relative to the filtered load. In any event, the data indicate that with large increases in plasma iodide concentrations, the rate of urinary excretion of inorganic iodide remains essentially proportional to plasma iodide levels. Reabsorption, therefore, must also remain proportional to plasma iodide levels. The relative independence between C_{PBI} and plasma iodide levels, which has previously been noted by Childs, Keating, Rall, Williams, and Power (*2*), is more suggestive of passive reabsorption of iodide as a consequence of a concentration gradient between tubular urine and plasma than it is of active reabsorption. Thus, the clearance of a substance excreted by physical processes alone is essentially independent of plasma levels, whereas the clearance of a substance transported by an active reabsorptive mechanism is influenced in a characteristic manner by elevation of plasma levels beyond a critical point. It is quite possible that the present loading experiments did not elevate plasma iodide levels sufficiently high to demonstrate an iodide Tm, for despite a thousand-fold increase in plasma iodide concentrations, the latter were still present in micro quantities. If a transport maximum for iodide does exist, it

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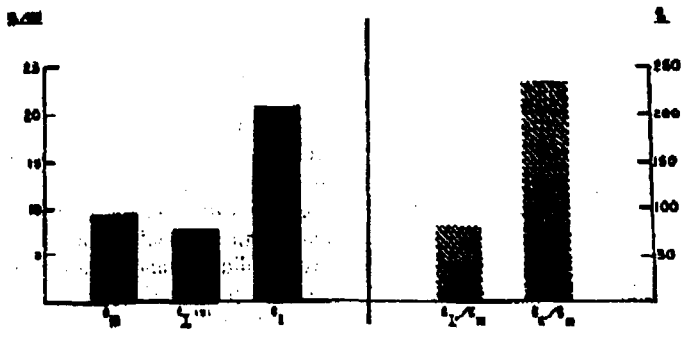


FIG. 10. THE CLEARANCE OF I^{131} IN A PATIENT WITH DEMONSTRABLE POTASSIUM SECRETION

must be geared to an iodide level far in excess of the physiologic range and it may not be possible to demonstrate its presence in humans without administration of toxic doses of iodide.

The data on iodide loading may also be examined from the point of view of evaluating iodide secretion. In studies of potassium excretion, loading with potassium salts has frequently been found to induce demonstrable secretion of potassium (13). Moreover, chronic loading with potassium facilitates the excretion of sudden large loads at more rapid rates and frequently elevates the clearance of potassium above that of inulin (13). In the present studies not only did C_I/C_{In} values not rise above unity after acute loading, but clearance ratios appeared to decrease slightly. In addition, chronic loading in two cases did not facilitate the excretion of sudden acute loads. In a subject with chronic renal disease, the opportunity to study iodide clearance in the presence of demonstrable K secretion was afforded (Figure 10). The potassium/inulin clearance ratio was 229 per cent, whereas the iodide/inulin clearance ratio was 79 per cent. Acute iodide loading in this patient resulted in a decrease in I^{131}/inulin clearance ratio to 70 per cent, rather than in an increase to a level exceeding unity. Thus, neither in this patient nor in any other subject studied to date has the value for C_{Cm} exceeded that for C_{In}.

Thiocyanate ion has long been known to block the ability of the thyroid gland to trap inorganic iodide. Recently, it has been shown that thiocyanate also exhibits a rapid and definite blocking action on the iodide concentrating processes of the salivary gland (14, 15), although chloride secretion is apparently unaffected. Gastric secretion has also been altered by thiocyanate (16). Finally, increases in urinary chloride have been observed after thiocyanate administration (17), and a significant sodium diuresis has been reported following oral doses of thiocyanate ion (18). On the basis of these facts, it might be anticipated that thiocyanate should influence the renal excretion of iodide if an active mechanism is responsible for the tubular transport of this ion.

That the plasma concentrations of thiocyanate ion in the present patients were biologically active is suggested by the following: 1) In one subject salivary/plasma iodide ratios were measured before and after thiocyanate administration. The values for this ratio decreased 63 per cent and 53 per cent from control levels during the first and third clearance periods, respectively, after the administration of thiocyanate. 2) Plasma concentrations of I^{131} increased sharply in the two hyperthyroid patients and moderately in one of the two euthyroid subjects after NaSCN administration. These changes occurred during the infusion of I^{131} at a constant rate and probably resulted from a decrease in the volume of distribution of I^{131} due to a blocking of the thyroidal iodide trapping mechanism. Consonant with this explanation is the fact that plasma I^{131} concentrations failed to rise after thiocyanate administration to the myxedematous patient. 3) Sodium and chloride excretion rates increased after thiocyanate administration in four of the five cases.

The failure to demonstrate a significant thiocyanate effect on the I^{131}/inulin clearance ratios suggests that iodide is not handled by an active

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tubular transport mechanism that may be affected by the thiocyanate ion.

The experiments involving the intravenous administration of mercurial diuretics make it possible to study the variations in $C_{I^{131}}$ under the influence of an agent capable of blocking sodium and/or chloride reabsorption. In each of the cases reported, sodium and chloride excretion rates increased following mercurial administration; however, I^{131}/inulin clearance ratios remained constant in two cases and decreased in the third. Thus, mercurial diuretics in doses sufficient to invoke moderate natriuresis and chloruresis did not noticeably decrease the tubular reabsorption of iodide.

Comparison of the clearance of I^{131} to the clearance of other electrolytes suggests that the tubular transport of iodide is not identical to that of sodium, chloride, or potassium, all of which are governed by active transport mechanisms. Thus, 1) the clearance of I^{131} (in cc. per min) is greater than C_{Na}, C_{Cl}, and C_K; 2) $C_{I^{131}}$ bears only an incidental relationship to the concurrent values for the clearances of sodium, chloride, and potassium in group data; and, 3) in individual studies altering the excretion rates of sodium, chloride, and potassium acutely within a limited range by administration of PAH, NaSCN, and mercurial diuretics, and by peritoneal puncture has not induced proportional changes in $C_{I^{131}}$.

The studies relating $C_{I^{131}}$ to rates of urine flow when the latter are decreasing are equivocal, but suggest at most a very slight relationship. $C_{I^{131}}$ does not appear to be influenced by rising rates of urine flow.

The osmotic diuresis data indicate that the clearance of I^{131} approaches the glomerular filtration rate as the inulin U/P ratio approaches one. This relationship shown in Figure 8 suggests that the tubular reabsorption of iodide may be a function of the proximal tubular reabsorption of water.

Certain points of similarity appear between the clearance of I^{131} and that of urea, a substance thought by most observers to be reabsorbed by passive back-diffusion. The data of Chasis and Smith (19) show that above a C_{In} of 40, C_{urea} is approximately a linear function of GFR. Above this level of C_{In}, I^{131} clearance is also a linear function of C_{In}.[7] In addition, both the clearance of urea (within a limited range) and the clearance of I^{131} are essentially independent of their respective plasma levels. A further point of similarity between C_{urea} and $C_{I^{131}}$ is seen in osmotic diuresis studies. It has been noted that during osmotic diuresis in the dog (20), urea/inulin clearance ratios rise with decreasing inulin U/P ratios such that at an extrapolated inulin U/P value of one, urea/inulin clearance ratios approach 100 per cent. At an extrapolated inulin U/P ratio of one, I_{131}/inulin clearance ratios also approach 100 per cent.

The present studies bring to light at least one possible difference between the excretion patterns for iodide and that for urea. The clearance of urea is influenced in a definite and predictable manner by changing rates of urine flow. The influence of decreasing rates of urine flow on $C_{I^{131}}$ as has been mentioned, is equivocal. If any relationship exists, it is not of the same order of magnitude as that noted for urea in the studies of Shannon in dogs (20) or Chasis and Smith in humans (19). In the presence of rising urine flows, it is well established that urea/inulin clearance ratios demonstrate a spurious rise (*i.e.*, "exaltation"). The present data fail to reveal a similar rise for I^{131}/inulin clearance ratios. One possible explanation for the poor relationship between $C_{I^{131}}$ and urine flow is that the distal tubule and collecting ducts may be relatively impermeable to the back-diffusion of iodide.

The majority of the present data appear most readily explicable on the basis of passive back-diffusion of iodide from tubular urine to plasma as a function of a concentration gradient created by the reabsorption of water from the glomerular filtrate. The fact that the iodide ion, despite its presence in trace quantities, must still be viewed as a charged particle does not appear to preclude diffusion as the mechanism of reabsorption.

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[7] The linear correlation coefficient for the data of Chasis and Smith including all points where C_{In} exceeds 40 is 0.71 ($p = < .01$). The linear correlation coefficient for the present data is 0.82 ($p = < .01$). It must be noted that the urea data were obtained from subjects with glomerulonephritis, whereas the I^{131} data were obtained predominantly from patients without renal disease. This fact does not appear to invalidate the comparison.

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SUMMARY AND CONCLUSIONS

1. The clearance of I^{131} has been determined (by constant infusion technique) simultaneously with other renal functions in an attempt to establish the mechanism of iodide excretion in the human kidney. Fifty-eight clearance studies were performed on 49 subjects with varying states of thyroid function and varying states of renal function.

2. In group data, $C_{I^{131}}$ has been noted to be a linear function of C_{In} over a wide range of filtration rates. Moreover, $C_{I^{131}}$ was always less than the concurrent value for C_{In}.

3. Acute increases and decreases in filtration rate were associated with changes of $C_{I^{131}}$ in the same direction as those of C_{In}, but these changes were always proportionately greater than those of GFR.

4. Increasing the filtered load of iodide by inorganic iodide loading resulted in slight decreases in I^{131}/inulin clearance ratios rather than: a) an increase in $C_{I^{131}}$ values asymptotically toward the concurrent values for C_{In} as might occur if a reabsorptive Tm had been surpassed, or b) an increase in I^{131}/inulin clearance ratios above unity as might occur if a tubular secretory mechanism existed.

5. The influence upon the renal clearance of I^{131} of agents capable of blocking renal tubular and/or iodide transport mechanisms has been investigated.

a) Sodium thiocyanate did not materially alter I^{131}/inulin clearance ratios, although plasma thiocyanate concentrations were adequate to alter plasma I^{131} levels and to change salivary/plasma I^{131} concentration ratios.

b) PAH loading was associated with slight increases in I^{131}/inulin clearance ratios in the presence of slight decreases in glomerular filtration rates. These alterations in the clearance ratios have been provisionally attributed to an osmotic diuretic effect of the loading agent.

c) Mercurial diuretics did not increase I^{131}/inulin clearance ratios despite a moderate natriuresis and chloruresis.

6. The clearance of I^{131} has been found to be essentially independent of the clearance of Na, Cl, and K in group data. In the presence of acute changes in excretion rates of Na, Cl, and K within limited ranges of the latter, $C_{I^{131}}$ exhibited only minor changes.

7. I^{131} clearance has been found to be influenced at most to a slight degree by decreasing rates of urine flow, over a range of inulin U/P values from 8 to 100 and apparently not at all by increasing rates of urine flow over a range of inulin U/P values from 190 to 11.

8. In the presence of osmotic diuresis, the I^{131}/inulin clearance ratios increased with decreasing inulin U/P values. At an extrapolated inulin U/P ratio of one, the I^{131}/inulin clearance ratio approached 100 per cent.

9. It is concluded on the basis of the present studies that iodide, in the human kidney, is filtered at the glomerulus and partially reabsorbed by the tubules. The data do not support the presence of an active tubular transport mechanism, and although this possibility cannot yet be excluded, it is provisionally held that iodide is reabsorbed predominantly by passive back-diffusion.

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Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

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Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

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CIRS: No references found.
MEDLINE: Bricker NS, Hlad CJ: Renal function and I-131 clearance in hyperthyroidism and myxedema. J Clin Endo, 14:1539-50, 1954 probably describes this study.
MEDICAL ASSESSMENT: The study involved 11 adults and did not benefit the subjects.

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Risks of fetomaternal hemorrhage resulting from amniocentesis with and without ultrasound placental localization.
Source
Obstetrics & Gynecology. 46(4):389-91, 1975 Oct.
Local Messages
BAMC
MeSH Subject Headings
*Amniocentesis/ae [Adverse Effects]
Amniotic Fluid/an [Analysis]
Female
*Fetomaternal Transfusion/et [Etiology]
Human
Placenta
Pregnancy
Pregnancy Trimester, Second
Pregnancy Trimester, Third
*Ultrasonics/du [Diagnostic Use]
Abstract
The incidence of multiple abdominal punctures, blood-stained aspirates, and fetomaternal transfusion was compared in patients undergoin amniocentesis at various stages of pregnancy with and without prior placental localization by ultrasound. A lower incidence of complications was found in those on whom ultrasound examination had been performed.

<2>
Unique Identifier
74166812
Authors
Miskin M. Doran TA. Rudd N. Gardner HA. Liedgren S. Benzie R.
Title
Use of ultrasound for placental localization in genetic amniocentesis.
Source
Obstetrics & Gynecology. 43(6):872-7, 1974 Jun.
Local Messages
BAMC
MeSH Subject Headings
Abortion/ep [Epidemiology]
*Amniocentesis
Amniotic Fluid/cy [Cytology]
Cells, Cultured
Chromosome Abnormalities/di [Diagnosis]
Female
Fetal Diseases/di [Diagnosis]
*Fetal Diseases/ge [Genetics]
Human
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Pregnancy
*Prenatal Diagnosis
Specimen Handling
*Ultrasonics/du [Diagnostic Use]
Uterus/ah [Anatomy & Histology]

<3>
Unique Identifier
70075088
Authors
Kobayashi M. Hellman LM. Fillisti L.
Title
Placental localization by ultrasound.
Source
American Journal of Obstetrics & Gynecology. 106(2):279-85, 1970 Jan 15.

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Local Messages
STIMSON / BAMC
MeSH Subject Headings
Female
Human
Methods
*Placenta
*Placenta Praevia/di [Diagnosis]
Pregnancy
*Ultrasonics/du [Diagnostic Use]

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RENAL FUNCTION AND I^{131} CLEARANCE IN HYPERTHYROIDISM AND MYXEDEMA*

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INFORMATION presently available on discrete renal function studies in hyperthyroidism and myxedema is limited, and recorded data on the hyperthyroid patients are not entirely consistent. Two patients with hyperthyroidism studied by Aas and Blegen (1) had filtration rates of 163 and 121 cc./minute, and renal plasma flows of 903 and 927 cc./minute, respectively. Two additional patients reported by Corcoran and Page (2) had depressed filtration rates (112 and 74 cc./minute) with slightly depressed renal plasma flows (487 and 528 cc./minute). In the latter report, Tm_D values[1] were in the normal range in both patients. Thus, only 2 of the 4 hyperthyroid patients had a definite elevation of renal plasma flow, and only 1 of the 4 had an elevation of the glomerular filtration rate. Two patients with myxedema were studied by Corcoran and Page (2), before and after treatment with desiccated thyroid. In both cases, glomerular filtration rates (33.5 and 55 cc./minute), renal plasma flows (306 and 323 cc./minute), and Tm_D values (13.6 and 11.1 mg./minute) were depressed prior to treatment. Subsequent to therapy, all functions increased toward normal. Results of studies on 1 infant cretin before and after therapy (3) corresponded to the findings on the 2 myxedematous patients.

The data available on the clearance of I^{131} in hyperthyroidism and myxedema (4, 5, 6) give values in the former group which are essentially the same as those found in euthyroid subjects, and values in myxedematous patients which are below normal. These isolated clearance values, however, have not been related to other simultaneously determined renal functions, and thus do not elucidate either the pattern of the renal excretion of iodide

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[1] Tm_D is a measure of the maximum capacity of the tubules to transport Diodrast.

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or the influence of thyroid activity upon the latter. Moreover, previous work has been performed using single-dose techniques (4, 7) and the results may not be analogous to those of the present study, which have been obtained using a method involving the continuous infusion of I^{131}.

The present report contains data on renal function studies performed on 4 patients with hyperthyroidism, 5 with primary myxedema, and 2 with panhypopituitarism and probable secondary hypothyroidism. The experiments include: 1) initial studies on all patients; 2) studies following the administration of *l*-triiodothyronine; 3) studies following the administration of TSH; and 4) studies following successful therapy in selected cases. In addition to measurements of glomerular filtration rate, renal plasma flow and Tm_{PAH},[2] measurements of I^{131} clearance were simultaneously obtained on all patients. The clearance of I^{131} was determined by the use of a constant infusion technique, which allowed for stabilization of plasma I^{131} levels throughout the clearance procedures.

MATERIAL AND METHODS

Subjects

The sex, age, and initial I^{131} uptake and renal function values for all patients are included in Table 1.

1. *Hyperthyroidism*: Three of the 4 patients were untreated prior to study but 1 patient (Case I) had been treated for hyperthyroidism with I^{131} three years previously. He remained asymptomatic until several months before clearance measurements, at which time symptoms recurred and propylthiouracil therapy was started. Medication was discontinued one month prior to study and the patient was clinically hyperthyroid at the time of clearance measurements.

2. *Primary myxedema*: In 2 of the 5 patients (Cases V and VII) myxedema developed spontaneously; 1 of these women (Case V) was untreated prior to study and 1 (Case VII) had received ½ grain of desiccated thyroid daily for six days prior to study. In another subject (Case VI) myxedema developed following thyroidectomy but treatment for myxedema had not been started before the renal studies. In Case VIII the patient was totally thyroidectomized eleven months before study and had received no treatment for a period of fourteen weeks prior to clearance determinations. In Case IX the patient became myxedematous following subtotal thyroidectomy six years before study and had received only sporadic and ineffectual treatment.

3. *Panhypopituitarism with probable hypothyroidism*: The diagnoses of hypothyroidism in both cases was based primarily upon clinical findings. One of the patients (Case X) had a pituitary tumor and the other (Case XI) was a pituitary dwarf. I^{131} uptake studies were not feasible in the latter patient due to previous administration of an iodized compound. Both patients were untreated prior to study.

Procedure

Inulin[3] clearances, PAH[4] clearances, and Tm_{PAH} measurements were performed, using standard continuous infusion clearance techniques (8). Details of the methods

[2] Tm_{PAH} is a measure of the maximum capacity of the tubules to transport *p*-aminohippurate.

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TABLE 1. INITIAL RENAL FUNCTION DATA

Case No.	Sex	Age	Thyroidal I^{131} uptake at 24 hrs. (%)	Renal function*				
				C_{In} (cc./min.)	C_{PAH} (cc./min.)	F.F. (%)	Tm_{PAH} (mg./min.)	$C_{I^{131}}$ (cc./min.)
I	M	38	65.0	119.4	548	21.8	—	31.2
II	M	45	51.6	130.7	654	20.0	95.3	50.3
III	F	46	64.4	145.8	512	28.5	103.3	45.6
IV	M	21	80.7	155.1	847	18.3	—	61.1
V	F	39	3.7	61.0	342	18.0	54.7	26.3
VI	M	42	2.7	76.3	383	19.9	55.0	37.5
VII	F	51	6.2	78.0	459	17.0	—	27.5
VIII	M	26	5.3	82.4	318	25.9	—	22.3
IX	M	60	3.5	82.6	476	17.3	—	29.1
X	M	36	14.0	79.6	426	18.7	—	28.1
XI	M	26	—	95.0	436	21.8	72.0	32.9

* All clearance values are corrected to 1.73 sq.M. of body surface area.

Definition of symbols: C_{In} = inulin clearance. C_{PAH} = *p*-aminohippurate clearance. F.F. = filtration fraction. Tm_{PAH} = maximum rate of tubular transport of PAH. $C_{I^{131}}$ = I^{131} clearance.

employed in this laboratory will be reported elsewhere (9) Urine was collected using a multi-holed soft rubber catheter, and collection periods (15-min.) were concluded with two 10-ml. wash-outs of distilled water and two or more insufflations of air. At least three clearance-period collections were obtained prior to any alteration of experimental conditions. The clearance values have been corrected to 1.73 sq.M. of body surface area.

The clearance of I^{131} was determined, using an adaptation of the standard continuous infusion technique. A priming dose of carrier-free I^{131} was administered intravenously in an amount calculated to produce an optimal counting rate in an assumed volume of distribution of 20 per cent of the body weight. Constancy of plasma levels was maintained with a sustaining solution delivering an amount of isotope equal to the estimated minute rate of excretion of I^{131} plus an empirical amount to compensate for thyroidal uptake. Experience indicated that this compensatory amount was approximately 20 per cent of the calculated minute rate of excretion in euthyroid subjects. In myxedematous and hyperthyroid patients, the added quantity of isotope was altered accordingly. The duration of infusion of I^{131} never exceeded three hours, and the maximum amount of protein-bound I^{131} detected was 1.7 per cent of the total plasma I^{131}. The total dose of I^{131} did not exceed 125 μc. in any experiment.

Both beta and gamma assay methods were employed in these experiments. The for-

[3] Inulin was obtained as a 10 per cent solution through the courtesy of Warner-Chilcott Laboratories.

[4] *p*-Aminohippurate.

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mer was used during the initial phases of the study. For purposes of beta assay, plasma samples were diluted 1:1 with water and 1-ml. aliquots of the diluted samples were plated into Tracerlab cupped planchets in duplicate or triplicate. Five-tenths ml. of 2N NaOH was added to each plate and the plates were exposed to 15 pounds of pressure in a pressure cooker for thirty to sixty minutes. Samples were evaporated to dryness slowly, in order to attain flat and uniform plates. When the geometry was distorted, the plates were rediluted and subsequently re-evaporated. Self-absorption was determined on at least two plasma samples on each patient by a method devised in this laboratory (10), which allowed for self-absorption corrections despite the fact that I^{131} may have already been present in the material.

For beta assay on urine, samples were diluted 1:10 and plated in 1-ml. quantities. Two drops of .006M $AgNO_3$ plating solution were added to each plate and the samples were evaporated to dryness. No corrections for self-absorption were found to be necessary at the dilution employed. Plasma and urine plates were counted in a Tracerlab Automatic Sample Changer, using an Amperex (1.4 mg./cm.^{2}) G.M. tube. The fractional 0.95 counting rate error did not exceed 2.4 per cent for any sample.

Gamma radiation was determined on 2-ml. aliquots of plasma and urine in a Reed-Curtis Scintiwell Counter. Plasma was usually counted without dilution and urine was diluted 1:5 in order to obtain counting rates comparable to those of plasma. Using water as a standard, the maximum loss due to absorption and scatter was 1.7 per cent for plasma and 0.7 per cent for urine. No corrections were applied for these errors. The fractional 0.95 counting rate error did not exceed 1.0 per cent for any sample.

Inulin was determined according to a modification of the method of Roe *et al.* (11), and PAH according to the method of Smith *et al.* (12).

RESULTS

I. *Initial renal function studies*

The results of initial renal function studies on all patients are summarized in Table 1. Using group mean values as the standard of reference, it is apparent that striking differences exist between the hyperthyroid and myxedematous patients.

In the hyperthyroid group, inulin clearance values (C_{in}) ranged from 119 to 155 cc./minute. The lowest value for C_{in} was obtained in the patient who had received prior treatment. Including this determination, the mean was 138 cc./minute—a figure appreciably above the normal range obtained in this laboratory. PAH clearances (C_{PAH}) ranged from 512 to 846 cc./minute, with a mean of 640 cc./minute. Tm_{PAH} measurements were obtained on 2 patients in this group and the values were elevated in both. Filtration fractions (F.F.) in the hyperthyroid patients ranged from 18 to 28 per cent, with a mean of 22 per cent.

In contrast to the generally increased values in the foregoing patients, a marked decrease was noted in the primary myxedema group. C_{in} ranged from 61.2 to 82.6 cc./minute. The mean value of 76.2 cc./minute represented a significant depression in glomerular filtration rate. C_{PAH} ranged from 318 to 476 cc./minute. The mean value of 396 cc./minute was also

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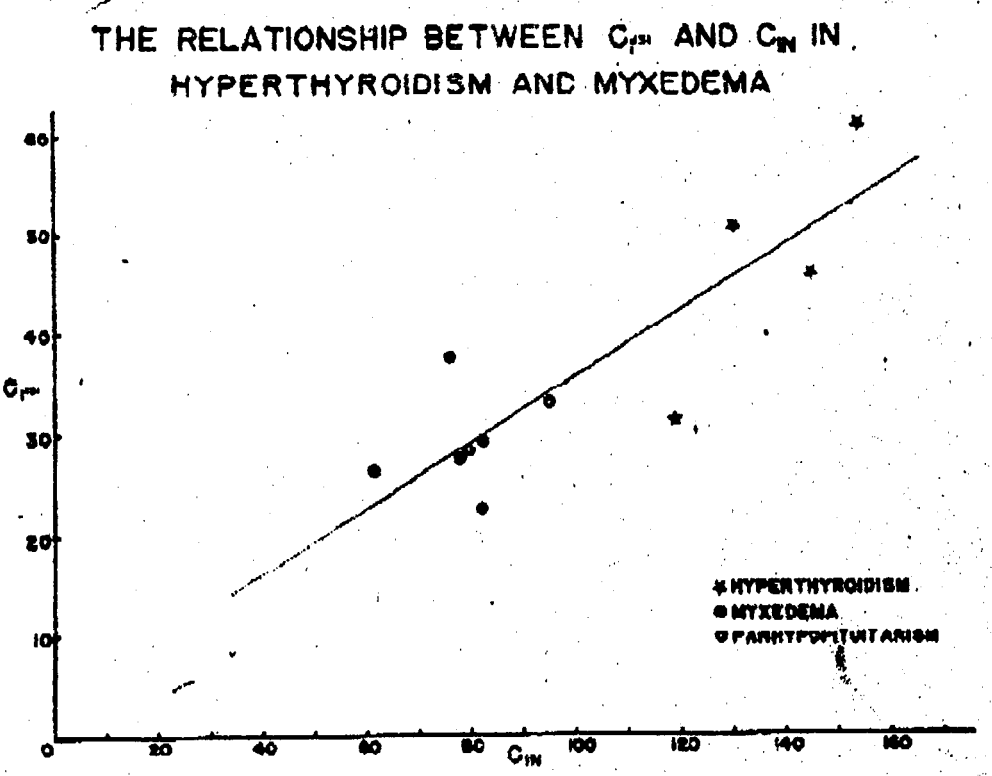


FIG. 1. C_{IN} = inulin clearance; $C_{I^{131}} = I^{131}$ clearance (cc./min.).

significantly below the normal. Tm_{PAH} values were obtained in 2 patients of this group and were below normal in both instances. Filtration fractions ranged from 17 to 26 per cent, with a mean of 19.6 per cent.

Renal functions were moderately depressed in both patients with panhypopituitarism, as follows: C_{IN}, 79 and 95 cc./minute; C_{PAH}, 426 and 436 cc./minute; and filtration fractions 19 and 22 per cent, respectively. The value of Tm_{PAH} in Case XI was within the normal range.

II. *I^{131} clearance*

The preceding data indicate that the state of thyroid function influences renal hemodynamics and tubular function. With this information at hand and in view of the importance of the thyroid gland in iodine metabolism, is was expedient to investigate the influence of the metabolic state on the renal excretion of iodide.

Values for the clearance of I^{131} ($C_{I^{131}}$) ranged from 31 to 61 cc./minute in the hyperthyroid group and from 22 to 38 cc./minute in the myxedematous group. In Figure 1, $C_{I^{131}}$ is plotted against C_{IN} for the hyperthyroid and myxedematous patients. Each point is the mean value of at least three

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TABLE 2. ACUTE EFFECTS OF *L*-TRIIODOTHYRONINE ON RENAL FUNCTION AND $C_{I^{131}}$

	C_{In}* (cc./min.)	C_{PAH} (cc./min.)	F.F. (%)	$C_{I^{131}}$ (cc./min.)
Control values	82.4	318	25.9	22.3
Experimental values	84.4	316	26.7	22.8
Change (%)	*+2.4*	*−0.6*	*+3.1*	*+2.2*

* See Table 1 for definition of symbols.

clearance periods in an individual patient.[5] The line represents the best linear function obtained by the least-squares method. The correlation coefficient for all cases is 0.86. If the 2 patients with panhypopituitarism are omitted, the correlation coefficient is 0.84. Both values are statistically significant. Further discussion of this linear relationship will be considered subsequently.

III. *Effects of L-triiodothyronine on renal function and I^{131} clearance*

The influence of *l*-triiodothyronine[6] on renal hemodynamics and $C_{I^{131}}$ was measured in the myxedematous patient who had been totally thyroidectomized (Case VIII). Following control observations, 100 μg. of *l*-triiodothyronine was administered intravenously and five post-injection clearance-period collections, covering an hour and a half duration, were obtained. The results of this study are shown in Table 2. No appreciable change in any measured function was noted. The second series of clearance measurements was performed after six days of daily intravenous administration of 100 μg. of triiodothyronine. The results of the follow-up study are shown in Table 3. The glomerular filtration rate increased 40 per cent.

TABLE 3. CHRONIC EFFECTS OF *L*-TRIIODOTHYRONINE ON RENAL FUNCTION AND $C_{I^{131}}$

	C_{In}* (cc./min.)	C_{PAH} (cc./min.)	F.F. (%)	$C_{I^{131}}$ (cc./min.)
Control values	82.1	318	25.9	22.3
Experimental values	115.8	464	25.0	34.7
Change %	*+40.5*	*+45.9*	*−3.5*	*+55.6*

* See Table 1 for definition of symbols.

[5] Only two control clearance periods were obtained in Case X.

[6] *L*-Triiodothyronine was obtained through the courtesy of Smith, Kline and French Laboratories, who obtained it from Glaxo Laboratories, where it was synthesized.

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TABLE 4. EFFECTS OF TSH ON RENAL FUNCTION AND C_I^{131}

	C_{In}* (cc./min.)	C_{PAH} (cc./min.)	F.F. (%)	C_I^{131} (cc./min.)
Control values	98.1	355	27.7	28.0
Experimental values	111.9	394	28.4	34.6
Change (%)	*+14.0*	*+11.2*	*+2.4*	*+23.4*

* See Table 1 for definition of symbols.

renal plasma flow 40 per cent, and I^{131} clearance 56 per cent. The disproportionate increase in C_I^{131} will be discussed.

IV. *Effects of TSH on renal function and I^{131} clearance*

The patient elected for this experiment (Case IX) had undergone subtotal thyroidectomy. At the time of the TSH[7] study he had been treated with desiccated thyroid for six months and was clinically euthyroid.

After control studies, TSH was administered intramuscularly (25 mg. daily) for six days and clearance measurements were repeated. The results are shown in Table 4. Glomerular filtration rate and renal plasma flow increased to a minor degree (14 and 11 per cent, respectively), and I^{131} clearance increased 23 per cent.

V. *Studies following therapy*

Studies subsequent to therapy were obtained on 3 patients—1 with hyperthyroidism and 2 with myxedema. In the hyperthyroid patient (Case III), renal hemodynamics and I^{131} clearance were recorded in the untreated state and again nine months following treatment with I^{131}, when the patient was clinically euthyroid. Clearance data for this patient are summarized in Table 5. The glomerular filtration rate decreased 19 per cent, renal plasma flow 23 per cent, and I^{131} clearance 26 per cent. The first of the follow-up studies on a myxedematous patient (Case VIII) has been discussed

TABLE 5. RENAL CLEARANCE MEASUREMENTS BEFORE AND AFTER THERAPY IN A HYPERTHYROID PATIENT

	C_{In}* (cc./min.)	C_{PAH} (cc./min.)	F.F. (%)	C_I^{131} (cc./min.)
Control values	145.7	512	28.5	45.6
Follow-up values	118.3	393	30.2	34.0
Change (%)	*−18.8*	*−23.3*	*+6.0*	*−25.5*

* See Table 1 for definition of symbols.

[7] Thytropar, obtained from Armour Laboratories.

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TABLE 6. RENAL CLEARANCE MEASUREMENTS BEFORE AND AFTER THERAPY IN A MYXEDEMATOUS PATIENT

	C_{In}* (cc./min.)	C_{PAH} (cc./min.)	F.F. (%)	$C_{I^{131}}$ (cc./min.)
Control values	82.6	476	17.3	29.1
Follow-up values	98.1	355	27.7	28.0
Change (%)	*+18.8*	*−25.6*	*+59.9*	*−3.8*

* See Table 1 for definition of symbols.

previously in the section concerning the administration of triiodothyronine (Table 3). This was a relatively short-term experiment and resulted in a marked increase in renal clearance values after six days of therapy. The second follow-up study in another myxedematous patient covered a longer interval. This patient (Case IX), considered previously in the discussion of TSH, was originally studied in the myxedematous state at the age of 60. Subsequent clearance determinations were made after six months of treatment with desiccated thyroid. Pre-treatment and post-treatment clearance values are shown in Table 6. Contrary to the response noted in the younger patient treated with triiodothyronine, renal plasma flow decreased and $C_{I^{131}}$ remained unchanged in this case. Nevertheless, there was a 19 per cent rise in glomerular filtration rate.

DISCUSSION

The occurrence of increased values for C_{In}, C_{PAH}, and Tm_{PAH} in hyperthyroidism and depressed values in myxedema suggests a definite influence of thyroid activity on renal function. It may well be that the changes in renal hemodynamics occur as a result of corresponding changes in cardiovascular hemodynamics, and that the alterations of tubular function are a reflection of alterations of tissue metabolism. Unfortunately, no data were obtained in this study to confirm these impressions. The correlation between the metabolic state and renal function appears to be somewhat better defined in the myxedematous than in the hyperthyroid patients. This is shown by the fact that depression of renal functions in the myxedematous group was somewhat greater and more consistent than the elevation observed in the hyperthyroid group. The general tendency for clearance values to revert towards normal following treatment is in support of the concept that renal function is influenced by the metabolic state.

The clearance of I^{131}, as measured in the present studies, should correspond to the clearance of stable, inorganic iodide. The information obtained on the pattern of I^{131} clearance in thyroid dysfunction may, therefore, be of some value in clarifying the mechanism of the renal excretion of the

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iodide ion. Essentially two possibilities may be considered regarding the influence of thyroid function on iodide excretion: 1) that the state of thyroid activity influences iodide excretion only through its effects upon glomerular filtration rate, and 2) that the thyroid hormone exerts a specific effect on the transport of the iodide ion, analogous to the adrenal steroid influence on sodium transport. The latter concept, if valid, could establish the presence of an active transport mechanism for iodide in the renal tubules.

In a previous report from this laboratory (13), it was shown that the renal clearance of I^{131} in euthyroid subjects is a linear function of the glomerular filtration rate, although $C_{I^{131}}$ is always considerably less than C_{In}. This relationship, shown as a dotted line in Figure 2, has a linear correlation coefficient of 0.83. The data for this plot were obtained from clearance measurements on 40 euthyroid subjects having a range of glomerular filtration rates from 9 to 150 cc./minute. Analysis of the data indicates that a considerable percentage of the iodide filtered at the glomerulus is reabsorbed on its way down the tubules. The mechanism of the reabsorption is unknown.

Comparison of the dotted line in Figure 2 with the solid line derived from

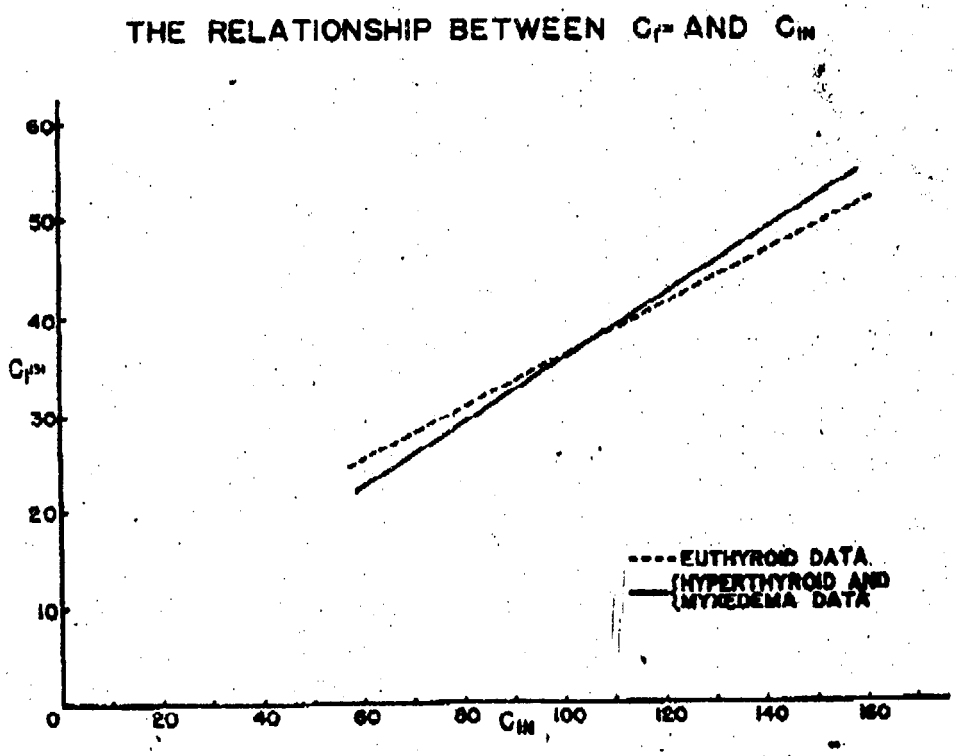


FIG. 2. C_{In} = inulin clearance; $C_{I^{131}}$ = I^{131} clearance (cc./min.).

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the thyroid patients indicates that the linearity established for the euthyroid population persists in the hyperthyroid and myxedematous groups. Statistically, there is no significant difference between the two functions, and thus it appears that all cases have arisen from the same population. On the basis of this information, it appears that thyroid activity influences iodide excretion indirectly through a filtration-rate effect, rather than through any specific action of thyroid hormone at the tubular level.

A further attempt to discover an active transport system for iodide was made in the triiodothyronine experiment. The particular patient studied was selected for three reasons: 1) he was relatively young, 2) the myxedema was of relatively short duration, and 3) he had been totally thyroidectomized and had no evidence of either residual or aberrant thyroid tissue, as determined by I^{131} tracer techniques.

The disproportionate rise in I^{131} clearance (*i.e.*, in excess of C_{In}) observed after a week of triiodothyronine administration is not completely explicable. It has been noted in previous studies (9) that acute increases in glomerular filtration rate are invariably accompanied by proportionately greater rises in $C_I{}^{131}$. Whether or not the increase in C_{In} in this experiment may be classified as acute, is conjectural and must await further information. However, there is no evidence of a definitive nature to indicate a direct action of the hormone at the tubular level.

A final attempt was made to demonstrate a direct hormonal influence on iodide transport by the administration of TSH. A treated thyroidectomized myxedematous patient was selected for this study for two reasons: 1) the absence of appreciable thyroid tissue should have minimized the increase in thyroid hormone synthesis secondary to stimulation by TSH, and 2) long-term therapy with desiccated thyroid should have reduced the variation in endogenous TSH levels, a state which might theoretically exist in an untreated myxedematous patient.

The elevation of C_{In} subsequent to TSH administration may have occurred as a result of: 1) random variation, 2) a direct effect of the TSH preparation *per se* or contaminants therein upon cardiovascular or renal hemodynamics, or 3) a response of some residual thyroid tissue to TSH stimulation, with a secondary increase in renal glomerular filtration rate and renal plasma flow attendant upon an increased metabolic rate. The increase in $C_I{}^{131}$ out of proportion to C_{In} again is not completely explicable and the same comments apply as were previously cited in the discussion of the triiodothyronine study. The provisional conclusions are that the TSH effects do not establish the presence of an active iodide transport system.

SUMMARY AND CONCLUSIONS

Renal function studies have been performed on 4 patients with hyperthyroidism, 5 patients with primary myxedema, and 3 patients with pan-

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hypopituitarism and probable secondary hypothyroidism. Glomerular filtration rate, renal plasma flow, and Tm_{PAH} values were elevated in the hyperthyroid group and depressed in the myxedematous group. Following therapy in 1 hyperthyroid patient, renal functions were reversed toward normal. Following long-term therapy in 1 myxedematous patient, the glomerular filtration rate increased despite a fall in renal plasma flow. Triiodothyronine administered intravenously to an untreated myxedematous patient for a period of six days induced a striking increase in renal glomerular filtration rate and renal plasma flow. It has been concluded that the state of thyroid activity exerts a definite effect on renal hemodynamics and tubular function.

The clearance of I^{131} ($C_{I^{131}}$) in hyperthyroid and myxedematous patients has been found to be a linear function of the glomerular filtration rate. Thus, because $C_{I^{131}}$ varies with inulin clearance (C_{In}), $C_{I^{131}}$ is increased in hyperthyroidism and decreased in myxedema. It should be emphasized that the values for $C_{I^{131}}$ in both groups of patients are comparable to those obtained in euthyroid subjects having the same range of glomerular filtration rates. Although triiodothyronine in an untreated myxedematous patient, and TSH in a treated myxedematous patient, produced an increase in $C_{I^{131}}$ out of proportion to the increase in C_{In}, no definite evidence of an active transport mechanism for iodide was obtained. It has been provisionally concluded that the state of thyroid activity influences the renal excretion of iodide indirectly through a filtration-rate effect, but that there is no apparent specific influence of thyroid or thyrotropic hormone at the tubular level.

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Event Title:	Platelet transfusion - efficiency and methods to improve current results in thrombocytopenia *patients*		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	56	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR56000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

Event Number:	ACIR59000	**Service:**	Army		
Event Title:	Evaluation of renal function utilizing radioiodine labeled Diodrast				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	59	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR59000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EFFECTS OF CARRIER DIODRAST ON EXCRETION OF I^{131}-LABELED DIODRAST

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BOSTON, MASS.

WITH THE TECHNICAL ASSISTANCE OF VALENTINE BIKERMAN

After the administration of I^{131}-labeled Diodrast† (iodopyracet), there was significant hepatic uptake and retention of the labeled material which interfered with the evaluation of function of the two kidneys by an external monitoring technique. The prior administration of carrier, or unlabeled, Diodrast (1.0 Gm.) eliminated hepatic uptake of I^{131}-labeled Diodrast and increased its renal excretion approximately twofold. Curves of renal uptake and excretion obtained by external monitoring provided indices of renal function which were not dependent on accurate urine collections.

THERE have been several recent reports of the use of I^{131}-labeled Diodrast with external monitoring over the renal areas for clinical studies of renal function.[2-5] It has been noted that the liver, in addition to the kidneys, takes up and excretes I^{131}-labeled Diodrast; for this reason the radiation detectors have been positioned to avoid the hepatic area.[6, 7]

The present study is concerned with the effects of added stable or carrier Diodrast on the renal and hepatic uptake and excretion of I^{131}-labeled Diodrast and evaluates the use of carrier Diodrast in conjunction with I^{131}-labeled Diodrast in measuring renal function by an external monitoring technique.

MATERIAL AND METHODS

Forty studies of I^{131}-labeled Diodrast excretion were performed on 19 young men with no history of cardiovascular or renal disease. Studies usually extended over 1 half-hour period. Additional observations pertinent to the present study, made in patients with essential hypertension, are also included in this report; the clinical data for these patients are published elsewhere.[8]

The usual dose of I^{131}-labeled Diodrast was 20 μc, which contained less than 1.0 μg of chemical Diodrast. When carrier Diodrast was used, the usual dose was 1 Gm. All doses were given as single intravenous injections. Urine samples were obtained by having the patient void; the plasma samples were obtained by venipuncture using heparinized syringes.

From the Robert Dawson Evans Memorial, Massachusetts Memorial Hospital, the Radioisotope and Medical Services, Boston Veterans Administration Hospital, and the Department of Medicine, Boston University School of Medicine, Boston, Mass.

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†Winthrop Laboratories, New York, N. Y.

For external monitoring of renal radioactivity, two collimated NaI(Tl) scintillation detectors were directed at the renal areas normal to the skin surface of seated subjects (Fig. 1). The radioactivity of one renal area, either right or left, was measured by a count rate meter and recorded on one side of a dual linear recorder.* The pulses from both detectors were passed to a ratiometer† and the ratio of the radioactivity of one renal area to the radioactivity of both renal areas was recorded on the other side of the dual linear recorder.

By simultaneously averaging and comparing the counting rates of the separate renal areas, the ratiometer provided a statistically valid comparison of the two counting rates immediately, without the necessity of subsequent comparison of separate recordings. The ratio of one counting rate to the sum of both counting rates was recorded on a scale of 0 to 1; when the counting rates were equal, therefore, the scale reading was 0.5, which indicated that 50 per cent of the total radioactivity present was in each renal area. The ratio of the radioactivities in the two kidneys was expressed as the ratio of the percentage in one kidney to the percentage in the other kidney.

To evaluate the counting characteristics of the renal detectors, a simulated model of the kidneys was constructed with glass flasks.

For external monitoring of hepatic radioactivity, a NaI(Tl) scintillation detector with a lead shield, collimated to avoid the gall bladder, was pressed against the anterolateral surface of the right side of the chest of the seated subjects; the pulses passed through a count rate meter and were recorded directly on an Esterline-Angus recorder.[9]

Radioactivity of samples which contained I^{131}-labeled Diodrast was measured in a well-type NaI(Tl) scintillation counter. Chemical concentration of I^{131}-labeled Diodrast was calculated from the specific activity of the dose used.

TABLE I

COLUMN 1 I^{131}-LABELED DIODRAST ALONE			COLUMN 2 I^{131}-LABELED DIODRAST AND CARRIER DIODRAST		
SUBJECT	RATIO* AT PEAK UPTAKE	MAXIMUM SUBSEQUENT RATIO*	SUBJECT	RATIO* AT PEAK UPTAKE	MAXIMUM SUBSEQUENT RATIO*
A. D.	54:44	60:40	G. E.	50:50	50:50
C. A.†	60:40	60:40	G. E.	54:46	54:46
K. F.	60:40	64:36	L. L.†	50:50	52:48
S. F.	52:48	60:40	E. B.	50:50	50:50
M. H.	56:44	66:34	E. Ho.	48:52	46:54
D. H.	50:50	60:40	D. H.	50:50	54:46
G. K.	52:48	60:40	E. Ha.	50:50	50:50
M. L.	50:50	64:36	A. J.	52:48	54:46
D. L.	52:48	74:26	N. L.	44:56	48:52
D. L.	50:50	64:36	P. G.	48:52	48:52
J. M.	50:50	54:46	R. N.†	50:50	50:50
S. M.	68:32	72:28	S. G.†	52:48	52:48
J. M.	60:40	60:40	A. B.†	56:44	50:50
J. M.	64:36	64:36	A. G.†	52:48	50:50
C. M.	52:48	60:40	G. J.†	50:50	50:50
L. S.	52:48	72:28	L. S.	48:52	50:50
K. S.	58:42	66:34	K. S.	50:50	54:46
K. S.	50:50	58:42			
K. S.	58:42	68:32			
K. S.	48:52	60:40			
Average	56:44	64:36	Average	50:50	50:50

*Right renal radioactivity (per cent) per left renal radioactivity (per cent).
†Essential hypertension.

*Houston Technical Laboratories, Houston, Texas.
†Baird Atomic Associates, Cambridge, Mass.

RESULTS

Effects of Carrier Diodrast on Renal and Hepatic Uptake of I^{131}-Labeled Diodrast.—After the injection of I^{131}-labeled Diodrast alone, there was a rapid uptake of radioactivity in the renal areas. With subsequent excretion of I^{131}-labeled Diodrast, there was an initial fall-off, followed by a plateauing of the renal activity. In all cases, radioactivity in the right kidney area appeared to be greater than that in the left throughout the period of study (Fig. 2). Such apparent right dominance varied in a ratio (right:left) from 54:46 to 74:26, and averaged 64:36, or an average of 64 per cent of the total renal radioactivity appeared to be in the right kidney area (Table I, Column 1).

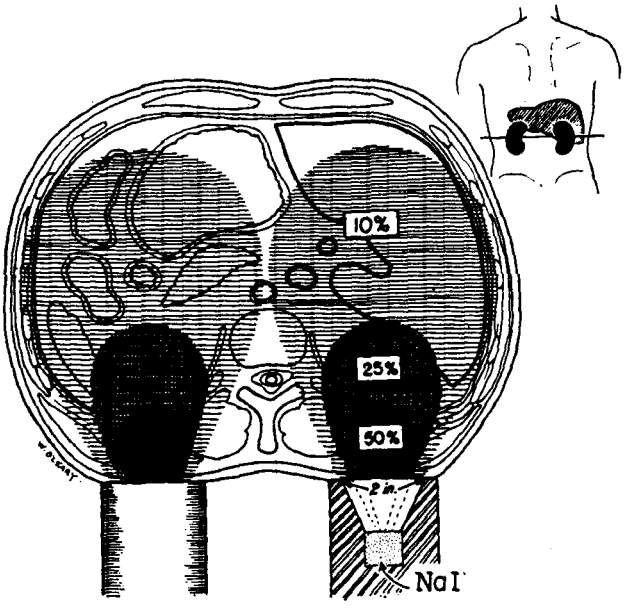


Fig. 1.—Diagrammatic cross section to show liver and kidneys in relation to the monitored areas. Percentages indicate isocount determinations related to counts obtained immediately at the opening of the shield at the periphery of each shaded area.

Monitoring over the liver showed persistent hepatic radioactivity after an initial uptake. This persistence of hepatic radioactivity with decreasing renal radioactivity resulted in an apparently more marked dominance in the right renal area in the ratiometer tracing. After a subsequent injection of stable Diodrast, liver radioactivity decreased, a secondary rise in renal radioactivity was observed, and the apparent right renal dominance disappeared (Fig. 2).

Administration of stable Diodrast prior to the administration of I^{131}-labeled Diodrast diminished hepatic uptake of I^{131}-labeled Diodrast and apparently abolished hepatic retention. Renal uptake of I^{131}-labeled Diodrast was apparently augmented and there was less plateauing in the renal excretory phase. Little shifting of the ratiometer was seen (Fig. 3). When I^{131}-labeled Diodrast was administered after a preliminary liver blocking dose of carrier Diodrast,

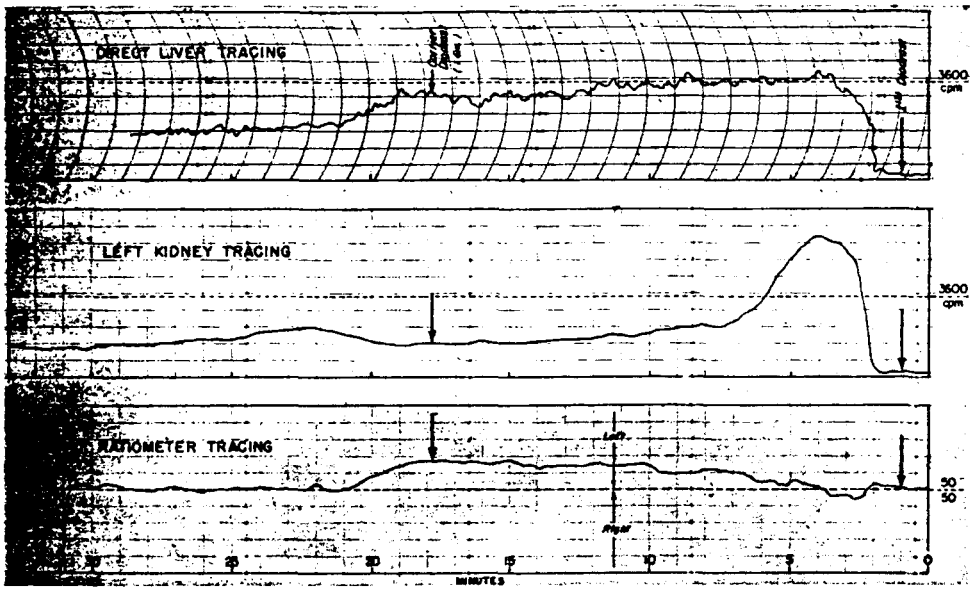


Fig. 2.—Simultaneous monitoring of the kidneys and liver, after administration of I^{131}-labeled Diodrast alone. The liver and kidney tracings are direct recordings of the counting rates in the monitored areas. Where the separate kidney counting rates are equal, the ratiometer tracing is in the midline. In this tracing an upward deflection indicates greater radioactivity in the right renal area than in the left.

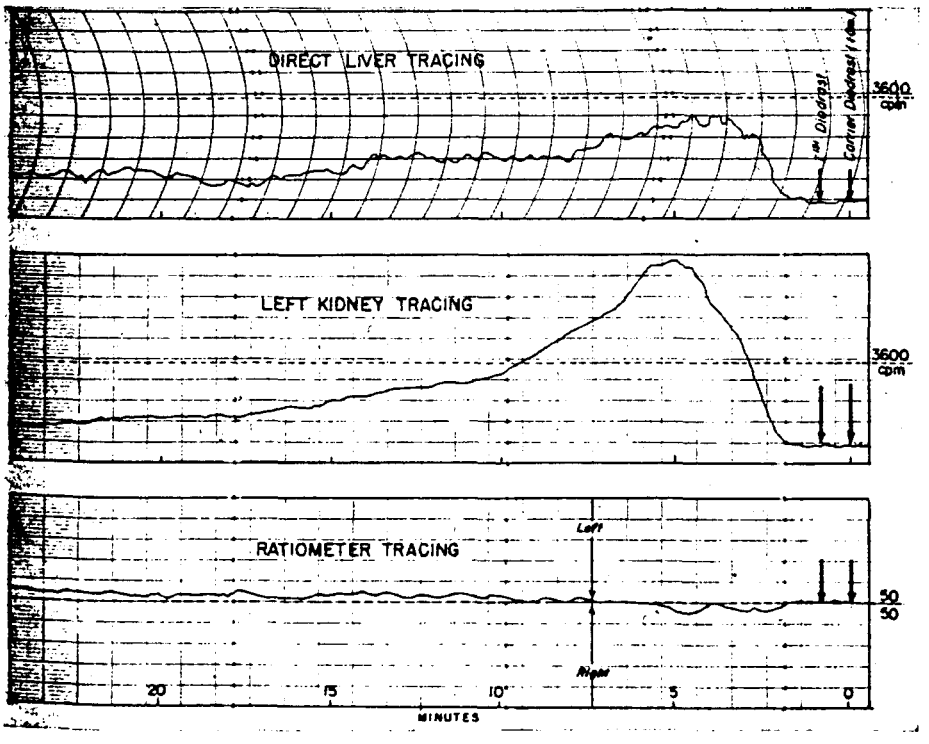


Fig. 3.—Simultaneous monitoring of the kidneys and liver, after I^{131}-labeled Diodrast given after a carrier dose of stable Diodrast. Liver radioactivity is diminished by prior administration of carrier Diodrast, and there is little shift in the ratiometer tracing. Same subject as in Fig. 2.

the ratio of right to left renal radioactivity ranged from 44:56 to 54:46, averaging 50:50 (Table I, Column 2). Several subjects were studied with and without carrier Diodrast to demonstrate these effects in the same individuals (D. H., L. S., and K. S., Table I).

Effects of Carrier Diodrast on Plasma Fall-off of I^{131}-Labeled Diodrast.—With I^{131}-labeled Diodrast alone, there was an initial rapid fall-off of plasma radioactivity, followed within 20 minutes by a plateauing at calculated plasma concentrations of 1.0 μg per cent, temporally related to the plateauing noted in renal radioactivity. When carrier Diodrast was administered during this plateau, a second rise in plasma radioactivity was observed, temporally related to the secondary rise in renal radioactivity and to the decrease in hepatic radioactivity (Fig. 4).

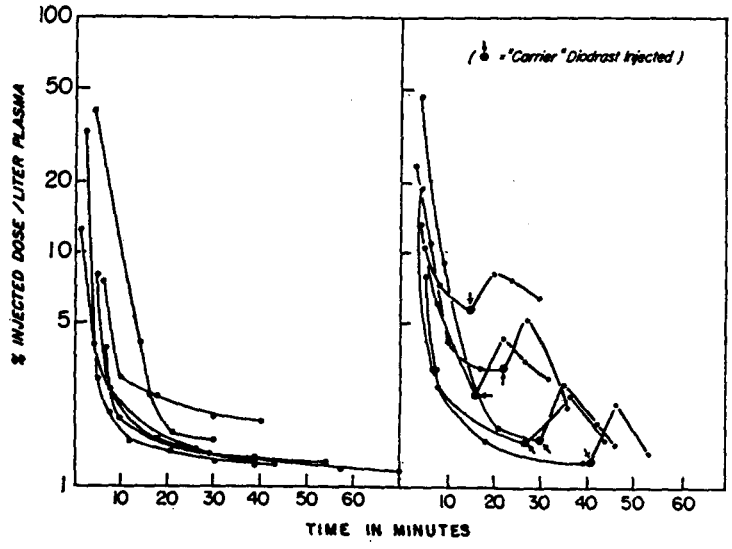


Fig. 4.—Effects of carrier Diodrast on I^{131}-labeled Diodrast plasma disappearance. The increase in plasma I^{131}-labeled Diodrast after administration of carrier Diodrast coincided with the secondary increase in renal radioactivity and decrease in liver radioactivity (cf. Fig. 3).

Effects of Carrier Diodrast on the Urine Excretion of I^{131} Labeled Diodrast.—The 30 minute excretion of I^{131}-labeled Diodrast, administered alone as a single dose to well-hydrated subjects, ranged from 25 to 60 per cent, averaging 41.6 per cent of the injected dose. In dehydrated subjects, the excretion ranged from 34 to 43 per cent, averaging 37 per cent. When carrier Diodrast was administered prior to I^{131}-labeled Diodrast, the 30 minute urine excretion in well-hydrated subjects ranged from 53 to 90 per cent, averaging 71.5 per cent. In similar dehydrated subjects, the excretion ranged from 49 to 71 per cent and averaged 64 per cent (Fig. 5).

The Influence of Background Radioactivity on Renal Monitoring.—Approximately 20 minutes after the injection of I^{131}-labeled Diodrast alone, the plateauing of radioactivity in the renal area included a significant degree of tissue

TABLE II

SUBJECT	HYDRATED		DEHYDRATED		PITRESSIN	
	T½* UPTAKE	T½ EXCRETION	T½ UPTAKE	T½ EXCRETION	T½ UPTAKE	T½ EXCRETION
Bab					67	210
2 hours later					65	230
1 day later			65	235		
4 days later	63	190				
Kim	59	200				
3 days later			61	420		
1 hour later			60	480		
3 months later	60	112				
1 hour later	60	107				
Lau	60	190				
1 hour later	61	180				
LaB	70	190				
1 hour later	61	180				
Fis	61	185				
1 month later			61	282		
Cas	78	210				
3 days later			80	250		
Zach	62	140				
3 days later			62	185		

*Half-life.

background radioactivity, as shown by the plasma sampling. To evaluate this background radioactivity, kidney models were constructed of two glass flasks which contained unequal concentrations of I^{131}. When these were placed in

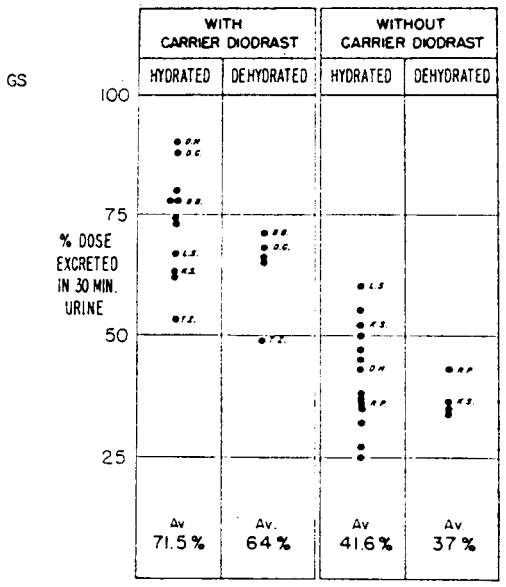


Fig. 5.—Effects of carrier Diodrast on I^{131}-labeled Diodrast excretion. Several subjects (initials) were studied under different conditions. Dehydration had little effect on the 30 minute urine excretion of I^{131}-labeled Diodrast compared with the effect of carrier Diodrast.

front of the detectors, a ratio of 80:20 was obtained (Fig. 6). The subsequent addition of a third container of I^{131}, "seen" by both detectors equally to simulate tissue background radioactivity, decreased the difference between the "kidneys" to a ratio of 68:32. When the kidney models were permitted to empty at equal rates, thereby decreasing their radioactivities relative to the tissue background radioactivity, observed differences between kidneys became even less (Fig. 6).

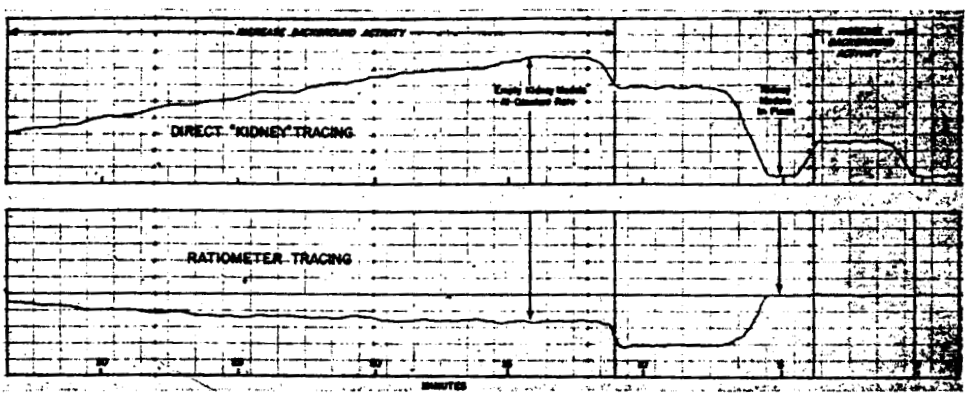


Fig. 6.—The influence of tissue background on differences in renal radioactivity demonstrated by kidney models. The two "kidneys" contained unequal amounts of I^{131} throughout, with no alteration in the relative amounts of I^{131} contained in the models. A high background radioactivity diminished the relative differences between the "kidneys." This became increasingly evident as "kidney" radioactivity fell.

The Rate of Renal Uptake of I^{131}-Labeled Diodrast With Carrier Diodrast.—After the administration of I^{131}-labeled Diodrast, immediately after carrier Diodrast, renal radioactivity in the excretion phase could be plotted on semilogarithmic paper to obtain a rate of excretion (half-life excretion). This slope of excretion could be extended to the ordinate and the difference between this slope and the uptake curve could be plotted to derive a rate of uptake (half-life uptake; Fig. 7). Half-life uptake was quite reproducible (Table II).

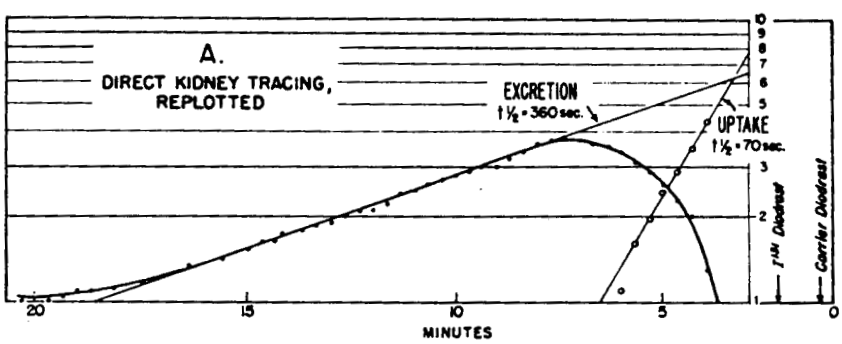


Fig. 7.—Determination of half-life uptake and half-life excretion. An exponential slope for excretion of I^{131}-labeled Diodrast after administration of carrier Diodrast could be plotted on semilogarithmic paper. This slope could be used to derive a rate of renal uptake of I^{131} labeled Diodrast.

In subjects who were studied in both the hydrated and dehydrated state, a low urine flow prolonged half-life excretion. In one subject, Pitressin did not alter half-life uptake, although half-life excretion was increased.

TABLE III

SUBJECT	T½ UPTAKE (SEC.)	T½ EXCRETION (SEC.)
R. T., at rest	45	185
painful stimulus	47	260
P. W., at rest	47	190
painful stimulus	73	380
J. B., at rest	67	170
painful stimulus	100	480
J.C., at rest	87	380
painful stimulus	100	430
D. C., at rest	80	250
painful stimulus	180	340

Several anxious patients reacted strongly to the stimulus of venipuncture or the test situation. Rates of uptake and excretion of I^{131}-labeled Diodrast under such conditions were prolonged when compared with the results of tests in the same patients when they were not subject to stress (Table III). The influence of these factors is illustrated in the direct tracings recorded at rest and during a mild syncopal attack in the same subject (Fig. 8).

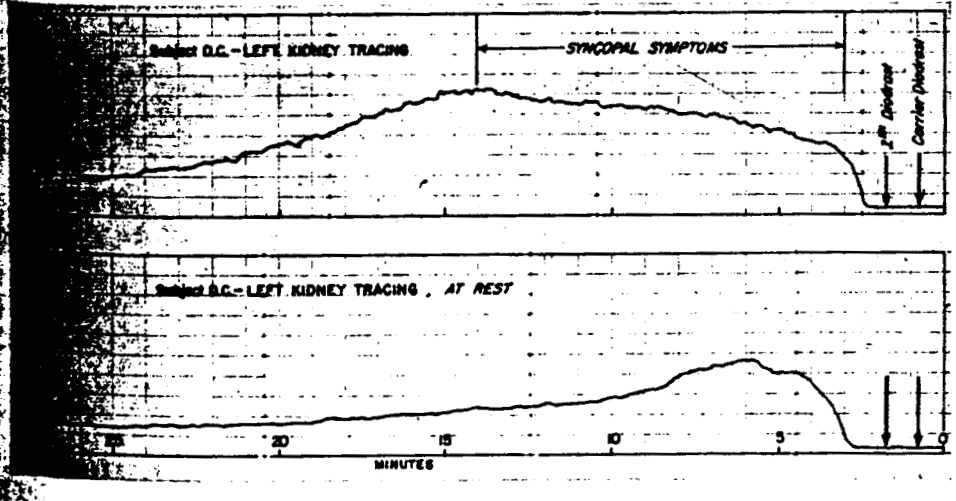


Fig. 8.—Effect of syncope on I^{131}-labeled Diodrast tracings. Continued renal uptake of I^{131}-labeled Diodrast with little excretion was seen during syncope compared with the direct kidney tracings obtained at rest in the same subject.

DISCUSSION

Although the kidneys rapidly excreted a major portion of I^{131}-labeled Diodrast given alone, the liver also took up and retained a significant amount.

The effect of liver radioactivity on the recording of renal radioactivity wa greater on the right than the left to a quantitatively unpredictable degree, con sistent with the anatomic asymmetry of the liver and its more intimate rel tionship with the right kidney, which prevented accurate evaluation of th separate kidneys when I^{131}-labeled Diodrast alone was used. Preliminary ob servations indicated that hepatic uptake of I^{131}-labeled Diodrast occurs at sp cific binding sites, inasmuch as a variety of organic iodides and substances tran ported by the liver do not flush I^{131}-labeled Diodrast from the liver as do Diodrast.[7] It was also apparent from common bile duct collections, as well external monitoring data, that the rate of hepatic excretion of I^{131}-labeled Di drast is considerably slower than that of the excretion by normal kidney The presence of specific binding sites and the slow rate of excretion apparentl make it possible to saturate the hepatic transport system for I^{131}-labeled Di drast with a 1.0 Gm. dose of carrier Diodrast and thus to prevent significa hepatic uptake of I^{131}-labeled Diodrast.

Carrier Diodrast in doses of 1.0 Gm. almost doubled the 30 minute excr tion of I^{131}-labeled Diodrast, not only because of blocking of hepatic uptak of I^{131}-labeled Diodrast, but also because of saturation of plasma protein and possibly other peripheral binding sites.[10, 11] This is in contrast to a previou study in which carrier Diodrast decreased the excretion of I^{131}-labeled Diodrast presumably because doses which exceeded tubular maximum for Diodra were used.[6]

The effect of carrier Diodrast in increasing the urinary excretion I^{131}-labeled Diodrast becomes of practical importance if external monitorin techniques are used, in that it results in a decrease in tissue backgroun radioactivity relative to renal radioactivity. Significant functional diffe ences between the kidneys may become evident during the excretion phase and the experiments with the model kidneys would indicate that a high back ground may obscure such differences.

Derived values for half-life uptake of I^{131}-labeled Diodrast given with carrier Diodrast were reproducible in the same subject and were independent of urine flow. Such measurements may provide information comparable t conventional clearances and be of particular value when variations in urin flow or difficulties in urine collections limit the accuracy of clearance tech niques. Factors which alter urine flow, however, influence calculated rat of half-life excretion, which is of particular interest in patients studied fo unilateral renal disease.[8] As might be expected, emotional or other stimu which influence renal hemodynamics may affect the results of I^{131}-labele Diodrast studies.

SUMMARY

1. Hepatic uptake and retention of I^{131}-labeled Diodrast is obviated carrier Diodrast.

2. Renal excretion of I^{131}-labeled Diodrast is increased by carrier Diodrast

3. Calculated rates of renal uptake and excretion of I^{131}-labeled Diodrast given with carrier Diodrast offer useful indices of renal function which do not require accurate urine collections.

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Event Number:	ACIR62000	**Service:**	Army
Event Title:	Radioisotopes in pulmonary physiology and pathology (I-131 & Xe-133)		
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Begining Date:	62	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR62000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR64000	**Service:**	Army
Event Title:	Survival rates of testis tumors (Army-wide investigational treatment study)		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	64	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR64000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study probably does not involve ionizing radiation.

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Authors
Morrison AS.

Title
Some social and medical characteristics of Army men with testicular cancer.

Source
American Journal of Epidemiology. 104(5):511-6, 1976 Nov.

Local Messages
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MeSH Subject Headings

Adult
Blood Groups
Carcinoma/ep [Epidemiology]
Caucasoid Race
Choriocarcinoma/ep [Epidemiology]
Dysgerminoma/ep [Epidemiology]
Educational Status
Family
Human
Male
Marriage
Military Personnel
Mumps
Negroid Race
Religion
Residence Characteristics
Risk
Socioeconomic Factors
Support, U.S. Gov't, P.H.S.
Teratoma/ep [Epidemiology]
*Testicular Neoplasms/ep [Epidemiology]
United States

Abstract
Risk of developing cancer of the testis was related to social and medical characteristics in a case-control study of men on active duty in the US Army, 1950-1970. Service records were obtained for 702 newly-diagnosed patients and 624 members of a systematic sample of unaffected servicemen. Risk ratios were computed for seminomas, tumors of other histologic types, and for all tumors combined. Respectively, these risk ratios were 0.3, 0.1 and 0.2 for blacks compared to whites, 1.5, 1.1 and 1.3 for Protestants compared to Catholics, and 1.5, 1.0 and 1.2 for the ever married compared to the never married. Risk increased regularly with duration of schooling for seminomas but not other types of tumors. Risk appeared relatively low for men from large sibships. Men from the North Central or Western parts of the country were at higher risk than those from the South or Northeast, a trend that was stronger for tumors other than seminomas. Observed changes in risk with respect to history of mumps and ABO blood group were small.

Event Number:	ACIR66000-A	**Service:**	Army
Event Title:	Intensive radiotherapy: Chemotherapy study of generalized Hodgkin's disease. CALGB 6604		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	66	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR66000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: de Lena M, et al: Clinical trials with intensive chemotherapy and radiotherapy in Hodgkin's disease. Nat Cancer Instit Mono, 36:403-20, 1973 may be related to study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier

74009326

Authors

De Lena M. Monfardini S. Beretta G. Fossati-Bellani F. Bonadonna G.

Title

Clinical trials with intensive chemotherapy and radiotherapy in Hodgkin's disease.

Source

National Cancer Institute Monographs. 36:403-20, 1973 May.

MeSH Subject Headings

Adolescence
Adult
Aged
Antineoplastic Agents/ad [Administration & Dosage]
Antineoplastic Agents/ae [Adverse Effects]
Antineoplastic Agents/tu [Therapeutic Use]
Bleomycin/ad [Administration & Dosage]
Bleomycin/tu [Therapeutic Use]
Child
Doxorubicin/ad [Administration & Dosage]
Doxorubicin/tu [Therapeutic Use]
Drug Therapy, Combination
Female
Hodgkin's Disease/dt [Drug Therapy]
Hodgkin's Disease/pa [Pathology]
Hodgkin's Disease/rt [Radiotherapy]
*Hodgkin's Disease/th [Therapy]
Human
Male
Mechlorethamine/ad [Administration & Dosage]
Mechlorethamine/tu [Therapeutic Use]
Middle Age
Prednisone/ad [Administration & Dosage]
Prednisone/tu [Therapeutic Use]
Radiotherapy Dosage
Remission, Spontaneous
Vincristine/ad [Administration & Dosage]
Vincristine/tu [Therapeutic Use]

Event Number:	ACIR66000-B	**Service:**	Army		
Event Title:	Parathyroid reserves in 131-I treated patients				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	66	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR66000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: There was probably no ionizing radiation associated with this study.

Stimson Library - OVID System

<1>
Unique Identifier
76085705
Authors
Arkles LB.
Title
Experience in parathyroid scanning.
Source
American Journal of Roentgenology, Radium Therapy & Nuclear Medicine. 125(3):634-9, 1975 Nov.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings
*Adenoma/di [Diagnosis]
Comparative Study
Evaluation Studies
Human
Iodine Radioisotopes
*Parathyroid Neoplasms/di [Diagnosis]
Radioisotopes
*Radionuclide Imaging/mt [Methods]
Selenium
Technetium
Abstract
In our experience, the low success rate of 75Se parathyroid studies does not justify continuance of the test as a routine diagnostic procedure. The initial results using the 99mTc O4--131I subtraction technique are encouraging but further experience is required in order to ascertain whether this procedure will justify a place as a routine test in the localization of parathyroid adenoma.

<2>
Unique Identifier
66037322
Authors
Adams PH. Chalmers TM.
Title
Parathyroid function after 131-I therapy for hyperthyroidism.
Source
Clinical Science. 29(2):391-5, 1965 Oct.
MeSH Subject Headings
Adult
Aged
Blood
Calcium
*Edetic Acid/pd [Pharmacology]
Female
Human
*Hyperthyroidism/rt [Radiotherapy]
Hypoparathyroidism
*Iodine Isotopes/tu [Therapeutic Use]
Male
Middle Age
*Parathyroid Glands/pp [Physiopathology]

Event Number:	ACIR67000-A	**Service:**	Army
Event Title:	Detection of pulmonary emboli using 133-xenon and macroaggregated human serum albumin (MAAG) 131-I		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	67	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR67000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR67000-B	**Service:**	Army		
Event Title:	Evaluation of technical factors of the brain scan and their relationship to diagnostic accuracy				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	67	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR67000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: There was no ionizing radiation associated with this study.

Event Number:	ACIR67000-C	**Service:**	Army
Event Title:	Regional ventilation perfusion relationships of the lung, its measurement of 13 133-xenon and a linear scanner		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	67	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR67000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier

75197678

Authors

Secker-Walker RH. Alderson PO. Wilhelm J. Hill RL. Markham J.

Title

Regional ventilation-perfusion relationships.

Source

Respiration. 32(4):265-76, 1975.

Abstract

Regional ventilation-perfusion ratios have been determined in 12 healthy subjects, 16 patients with pulmonary embolism, and 22 patients with chronic obstructive lung disease. The ventilation-perfusion ratios were determined from xenon-133 ventilation studies and 99-tc-m-labeled particle perfusion scans, using either the fractional exchange of air or the relative distribution of tidal volume per unit volume as the numerator of the ratio. A comparison of these two methods showed comparable distributions of regional ventilation-perfusion relationships in the healthy subjects and patients with pulmonary embolism. However, in the patients with chronic obstructive pulmonary disease, the fractional exchange method clearly separated this group of patients from the others.

Event Number:	ACIR67000-D	**Service:**	Army
Event Title:	Value of rose bengal 131-I in evaluating jaundiced patients		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	67	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR67000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
76209173
Authors
Davies ER. Morris JN. Read AE. Powell N.
Title
131I Rose Bengal scanning and clearance ratios in the investigation of jaundiced patients.
Source
Clinical Radiology. 27(2):227-35, 1976 Apr.
Local Messages
BAMC
Abstract
It may be difficult to distinguish between obstructive and non-obstructive jaundice despite the use of clinical, biochemical and radiographic tests. Endoscopic cannulation tests promise to be the most accurate means of separating the two groups, but they are not yet widely available, and are not entirely safe. In contrast, the 131I-Rose Bengal test is simple, safe and comparatively widely available. Its accuracy in 70 jaundiced patients is reviewed to determine whether it still has a place in the investigation of jaundiced patients. Blood clearance traces, intestinal radioactivity traces and serial abdominal scans were done during a period of 3 h. The blood clearance ratios were not helpful discriminators, and the most helpful information was the timing of intestinal radioactivity. Its rapid appearance excluded mechanical obstruction. A delay of up to 3 h in its appearance was characteristic of cholestasis. A delay of more than 3 h was found in all cases of mechanical obstruction, but also in ten cases of severe cholestasis which could not be distinguished from those with mechanical obstruction. A follow-up examination within another ten days was of diagnostic value in two of these cases and the overall accuracy of the test was 86%. The potential value of prolonging the test to 24 h is discussed. It is concluded that the 131I-Rose Bengal test is a helpful diagnostic discriminator in the great majority of patients with jaundice. It is offered as a screening procedure for specialised techniques.

<2>
Unique Identifier
78250694
Authors
Zusmer NR. Harwood SR. Pevsner NH. Janowitz WR. Serafini AN.
Title
Gray scale ultrasonography and rose bengal scintigraphy in the evaluation of the patient with jaundice.
Source
Surgery, Gynecology & Obstetrics. 147(3):321-7, 1978 Sep.
Local Messages
CHECK HOLDINGS LISTS
Abstract
In our experience, the ultrasonic examination should be the procedure of choice in the initial investigation of the patient with jaundice. It is independent from liver function and a noninvasive test which can be performed rapidly; in addition, the cause of extrahepatic obstruction can often be determined preoperatively. In our study, in many patients, the rose bengal scintigram has been indeterminate and has not been helpful in predicting whether obstructive or nonobstructive jaundice exists. Rose bengal scintigraphy appears to be of most help only in those patients in whom an adequate sonographic examination cannot be performed. Newer imaging agents currently being developed may prove to be more satisfactory in the future.

Stimson Library - OVID System

<1>
Unique Identifier
71207682
Authors
Schmidt BJ. Wehba J. Carvalho N. Pinus J. Carvalho A.
Title
Radioactive (R.B.I.-131) rose Bengal excretion test in the obstructive jaundices of the infants.
Source
Acta Paediatrica Scandinavica. 60(3):373, 1971 May.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings
*Cholestasis/di [Diagnosis]
Diagnosis, Differential
Human
Infant
Infant, Newborn
Iodine Radioisotopes/du [Diagnostic Use]
*Rose Bengal/du [Diagnostic Use]

<2>
Unique Identifier
70259805
Authors
Santiago-Borrero PJ. Irizarry S.
Title
Rose bengal (131I) excretion test in the diagnosis of obstructive jaundice in infants.
Source
Boletin - Asociacion Medica de Puerto Rico. 60(3):101-9, 1968 Mar.
MeSH Subject Headings
Biliary Tract/ab [Abnormalities]
*Cholestasis/di [Diagnosis]
Human
Infant
Infant, Newborn
Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice, Neonatal/di [Diagnosis]
Liver Function Tests
*Rose Bengal

<3>
Unique Identifier
73073973
Authors
Verow PW. Wisbey M.
Title
Sequential scanning of the liver and biliary tract in jaundiced patients with rose bengal 131 I.
Source
British Journal of Radiology. 46(541):78, 1973 Jan.
Local Messages
BAMC
MeSH Subject Headings
*Biliary Tract
Cholestasis/di [Diagnosis]
Human
Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice/di [Diagnosis]
*Liver
*Radionuclide Imaging
Rose Bengal/du [Diagnostic Use]

<4>
Unique Identifier
76063230
Authors
Watson A. Bone DE. Testa HJ. Torrance B.

Stimson Library - OVID System

Title
The value of the radio-isotope hepatogram in the jaundiced patient.
Source
British Journal of Surgery. 62(10):781-7, 1975 Oct.
Local Messages
BAMC
MeSH Subject Headings

- Biliary Tract/me [Metabolism]
- Cholestasis/di [Diagnosis]
- Diagnosis, Differential
- Half-Life
- Human
- Intestine, Small/me [Metabolism]
- Iodine Radioisotopes
- *Jaundice/di [Diagnosis]
- Liver/me [Metabolism]
- Liver Function Tests
- *Radionuclide Imaging
- Rose Bengal/du [Diagnostic Use]

Abstract
The distinction between 'medical' and 'surgical' jaundice is often difficult due to the lack of specificity of biochemical liver function tests, and the difficulty in assessing hepatocellular function and biliary tract patency in the jaundiced patient. We present a noninvasive isotopic technique which gives reliable information on these parameters, resulting in a high degree of accuracy in the classification of jaundice. 131I Rose Bengal, which is handled by the liver like bromsulphthalein, is administered intravenously and count rates during hepatic uptake and biliary excretion are recorded over the liver, biliary tract and duodenum using a gamma camera/computer system, into which is built an electronic light pen, so that particular areas of interest can be studied. Blood clearance of the iostope is simultaneously measured, and from these data the T 1/2 of uptake, the plasma retention and the excretion quotient are determined. The results of the first 80 examinations show that by qualitative assessment of the uptake and excretory phases of the 'hepatogram' and by determination of the T 1/2 and excretion quotient, jaundice has been classified with an 86 per cent accuracy in cases where the diagnosis is not apparent from clinical and biochemical data. The T 1/2 of uptake correlates well with bromsulphthalein retention in the non-jaundiced patient, and when applied to patients with obstructive jaundice enables the progress of hepatocellular impairment with time to be studied, and its recovery after relief of the obstruction. Preliminary results suggest that the technique may also have applications in the study of biliary tract dynamics in patients with post-cholecystectomy syndromes and relapsing acute pancreatitis.

<5>
Unique Identifier
76067084
Authors
Gamlen TR. Triger DR. Ackery DM. Fleming JS. Grant RW. Kenny RW. Maciver AG. Wright R.
Title
Quantitative liver imaging using 131-I Rose Bengal as an index of liver function and prognosis.
Source
Gut. 16(9):738-43, 1975 Sep.
Local Messages
BAMC
MeSH Subject Headings

- Biopsy
- Cholestasis/pp [Physiopathology]
- Comparative Study
- Hepatitis/pp [Physiopathology]
- Human
- Laparotomy
- Liver Cirrhosis/pp [Physiopathology]
- Liver Cirrhosis, Biliary/pp [Physiopathology]
- *Liver Diseases/pp [Physiopathology]
- *Liver Function Tests
- Prognosis
- *Rose Bengal/du [Diagnostic Use]

Abstract
A technique for assessing quantitatively hepatic function by direct measurement of liver parenchymal cell uptake of 131I Rose Bengal using a scintillation camera with a digital store and retrieval system is described. Ninety-four studies were performed on 84 patients with a variety of hepatic disorders over a two-year period, the diagnosis in each case being established by liver biopsy or laparotomy. The results were compared with the clinical, biochemical and histological assessment of the patients. A good correlation was found between the half-time for hepatic uptake of 131I Rose Bengal and the histological changes, as well as with clinical prognosis measured in terms of clinical improvement or deterioration to death. The rate of liver uptake was found to be a better index than the clearance of

radioisotope from the blood and was superior to conventional biochemical investigations in both icteric and anicteric patients. The test was not shown to be of clinical value in discriminating between intra- and extrahepatic causes of jaundice. It is suggested that this technique may provide a safe and sensitive method for assessing the severity of liver dysfunction and also for monitoring clinical progress, especially in situations where liver biopsy may be unreliable or hazardous.

<6>
Unique Identifier
66047078
Authors
Eyler WR. Schuman BM. Du Sault LA. Hinson RA.
Title
Rose bengal I-131 liver scan. An aid in the differential diagnosis of jaundice.
Source
JAMA. 194(9):990-2, 1965 Nov 29.
Local Messages
BAMC / STIMSON
MeSH Subject Headings
Bile Duct Neoplasms/di [Diagnosis]
Cholangiography
Cholelithiasis/di [Diagnosis]
Cholestasis/di [Diagnosis]
Diagnosis, Differential
Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice/di [Diagnosis]
*Liver Diseases/di [Diagnosis]
*Radionuclide Imaging
*Rose Bengal

<7>
Unique Identifier
75213088
Authors
Serafini AN. Smoak WM. Hupf HB. Beaver JE. Holder 4. Gilson AJ.
Title
Iodine-123-Rose bengal: An improved hepatobiliary imaging agent.
Source
Journal of Nuclear Medicine. 16(7):629-32, 1975 Jul.
Local Messages
BAMC
MeSH Subject Headings
Human
Iodine Radioisotopes/du [Diagnostic Use]
Isotope Labeling
*Jaundice/di [Diagnosis]
*Radionuclide Imaging
*Rose Bengal/du [Diagnostic Use]
Abstract
A practical method for preparing)23-I-rose bengal that allows for its rapid and efficient incorporation into the molecule is reported. Administration of 123-I-rose bengal to normal healthy patients showing the normal uptake and excretory pattern visualized with this radio pharmaceutical is also presented. The overall reduction in imaging time and radiation exposure together with the improved images possible should greatly improve our diagnostic capabilities in evaluating the jaundiced patient.

<8>
Unique Identifier
73046682
Authors
Poley JR. Smith EI. Boon DJ. Bhatia M. Smith CW. Thompson JB.
Title
Lipoprotein-X and the double 131 I-rose bengal test in the diagnosis of prolonged infantile jaundice.
Source
Journal of Pediatric Surgery. 7(6):660-9, 1972 Dec.

Stimson Library - OVID System

Local Messages
BAMC
MeSH Subject Headings
Bile/an [Analysis]
Biliary Fistula/pp [Physiopathology]
Binding Sites
*Cholestasis/di [Diagnosis]
Cholestyramine/ad [Administration & Dosage]
Cholestyramine/du [Diagnostic Use]
Chronic Disease
Feces/an [Analysis]
Human
Hydrogen-Ion Concentration
Immunoelectrophoresis
Infant
Infant, Newborn
*Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice, Neonatal/di [Diagnosis]
*Lipoproteins/bl [Blood]
Liver/de [Drug Effects]
Methods
Rose Bengal/an [Analysis]
*Rose Bengal/du [Diagnostic Use]
Rose Bengal/ur [Urine]

<9>
Unique Identifier
69201629
Authors
Davia JE. Earll JM. Moore RD. Durden WD.
Title
Rose bengal liver and abdominal scans in the differential diagnosis of jaundice.
Source
Military Medicine. 134(6):445-50, 1969 Jun.
Local Messages
BAMC / STIMSON
MeSH Subject Headings
Adult
*Cholestasis/di [Diagnosis]
Diagnosis, Differential
Female
Human
Iodine Isotopes
*Jaundice/di [Diagnosis]
Liver Function Tests
Male
Middle Age
Radionuclide Imaging
Rose Bengal

<10>
Unique Identifier
66151962
Authors
Freeman LM. Kay C.
Title
Radioactive rose bengal abdominal scanning in jaundiced patients.
Source
New York State Journal of Medicine. 66(13):1778-81, 1966 Jul 1.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings
Adolescence
Aged
Case Report
Female
Human
Iodine Isotopes
*Jaundice/di [Diagnosis]
Male
*Radionuclide Imaging
*Rose Bengal

<11>
Unique Identifier
72068039

Stimson Library - OVID System

Authors
Maksoud JG. Thom AF. Kieffer J. Carvalho Pinto VA.
Title
Fecal excretion of Rose bengal I 131 in the diagnosis of obstructive jaundice in infancy with special reference to biliary atresia.
Source
Pediatrics. 48(6):966-9, 1971 Dec.
Local Messages
BAMC / STIMSON
MeSH Subject Headings
Abnormalities/di [Diagnosis]
*Bile Ducts/ab [Abnormalities]
*Cholestasis/di [Diagnosis]
Diagnosis, Differential
*Feces/an [Analysis]
Female
Human
Infant
Infant, Newborn
Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice, Neonatal/di [Diagnosis]
Male
Methods
Rose Bengal/an [Analysis]
*Rose Bengal/du [Diagnostic Use]

<12>
Unique Identifier
73085476
Authors
Silverberg M. Rosenthall L. Freeman LM.
Title
Rose bengal excretion studies as an aid in the differential diagnosis of neonatal jaundice.
Source
Seminars in Nuclear Medicine. 3(1):69-80, 1973 Jan.
Local Messages
BAMC
MeSH Subject Headings
Bile Ducts/ab [Abnormalities]
Bile Ducts/in [Injuries]
Cholestasis/di [Diagnosis]
Diagnosis, Differential
Human
Infant
Infant, Newborn
Iodine Isotopes
*Jaundice, Neonatal/di [Diagnosis]
Kidney/me [Metabolism]
Liver/me [Metabolism]
Liver Function Tests
*Radionuclide Imaging
*Rose Bengal/du [Diagnostic Use]

<13>
Unique Identifier
72181861
Authors
Winston MA. Blahd WH.
Title
131 I rose bengal imaging techniques in differential diagnosis of jaundiced patients.
Source
Seminars in Nuclear Medicine. 2(2):167-75, 1972 Apr.
Local Messages
BAMC
MeSH Subject Headings
Bile Ducts, Intrahepatic
Biliary Tract
*Cholestasis/di [Diagnosis]
Diagnosis, Differential
Feces/an [Analysis]
Intestine, Small
*Iodine Radioisotopes/du [Diagnostic Use]
Jaundice, Neonatal/di [Diagnosis]
Kidney
Liver

Gallbladder
Human
Infant, Newborn
Intestine, Large
Liver Cirrhosis/di [Diagnosis]
Radionuclide Imaging
*Rose Bengal/du [Diagnostic Use]

<14>
Unique Identifier
75159731
Authors
Wicksman RS. Adcock DF. Bream CA. Scatliff JH.
Title
131-I rose bengal liver scanning in the differential diagnosis of neonatal jaundice.
Source
Southern Medical Journal. 68(5):599-602, 1975 May.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings
Biliary Tract/ab [Abnormalities]
Diagnostic Errors
Human
Infant, Newborn
*Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice, Neonatal/di [Diagnosis]
*Liver
*Radionuclide Imaging
*Rose Bengal/du [Diagnostic Use]
Abstract
Results of a series of 2i liver scans with 131-I rose bengal in 21 patients who developed progressive jaundice in the neonatal period are described. Using the 131-I rose bengal scan alone, an attempt was made to separate the patients into two groups, the first with total bile obstruction (biliary atresia) and the second with only partial biliary tract obstruction (intrinsic liver disease). The diagnostic accuracy of the scan was 82%. An additional diagnostic criterion, the count radio, is suggested. The determination of this ratio requires no additional effort or expense and would improve the diagnostic accuracy of the scan used alone in this series of patients.

<15>
Unique Identifier
73096442
Authors
Olsson R. Bjurstam N.
Title
Radioactive rose bengal test in the differential diagnosis of jaundice.
Source
Surgery, Gynecology & Obstetrics. 136(2):273-4, 1973 Feb.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings
Bile Duct Neoplasms/di [Diagnosis]
Bilirubin/bl [Blood]
Cholangitis/di [Diagnosis]
Cholestasis/di [Diagnosis]
Diagnosis, Differential
Hepatitis/di [Diagnosis]
Human
Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice/di [Diagnosis]
Liver Neoplasms/di [Diagnosis]
Methods
Pancreatic Neoplasms/di [Diagnosis]
*Rose Bengal/du [Diagnostic Use]

<16>
Unique Identifier
68404063
Authors
Whiting EG. Nusynowitz ML.

Stimson Library - OVID System

Title
Radioactive rose bengal testing in the differential diagnosis of jaundice.
Source
Surgery, Gynecology & Obstetrics. 127(4):729-33, 1968 Oct.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings

Adult
Cholestasis/di [Diagnosis]
Diagnosis, Differential
Female
Human
Iodine Radioisotopes/du [Diagnostic Use]
*Jaundice/di [Diagnosis]
Liver Function Tests
Middle Age
*Radionuclide Imaging
*Rose Bengal

Event Number:	ACIR67000-E	**Service:**	Army		
Event Title:	Ultrasound in placental localization				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	67	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

Stimson Library - OVID System

<1>

Unique Identifier
77184113

Authors
Edelstone DI.

Title
Placental localization by ultrasound.

Source
Clinical Obstetrics & Gynecology. 20(2):285-96, 1977 Jun.

Local Messages
BAMC

MeSH Subject Headings
Abruptio Placentae/di [Diagnosis]
Amniocentesis
Female
Gestational Age
Human
Methods
*Placenta/ah [Anatomy & Histology]
Placenta/ph [Physiology]
Placenta Praevia/di [Diagnosis]
Pregnancy
Pregnancy Complications/di [Diagnosis]
Ultrasonics/du [Diagnostic Use]
*Ultrasonics

Event Number:	ACIR68000	**Service:**	Army		
Event Title:	Effects of selective coronary arteriography on myocardial blood flow in man				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	68	**Ending Date:**	Unknown	**Note Field:**	
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Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR68000
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MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

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Kloster FE. Friesen WG. Green GS. Judkins MP.

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Effects of coronary arteriography on myocardial blood flow.

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Local Messages
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MeSH Subject Headings

*Angiocardiography
Blood Flow Velocity
Blood Pressure/de [Drug Effects]
*Coronary Circulation/de [Drug Effects]
Coronary Disease/pp [Physiopathology]
Diatrizoate/ad [Administration & Dosage]
*Diatrizoate/pd [Pharmacology]
Human
Injections
Pulse/de [Drug Effects]
Radioisotopes
Time Factors
Vascular Resistance/de [Drug Effects]
Xenon

Effects of Coronary Arteriography on Myocardial Blood Flow

By Frank E. Kloster, M.D., W. Glenn Friesen, M.D., Gerald S. Green, M.D., and Melvin P. Judkins, M.D.

SUMMARY

Myocardial blood flow responses to selective coronary arteriography were studied in 22 patients. Left coronary flow was estimated by the radioactive inert-gas (^{133}xenon) washout technic using precordial detection. Duplicate control studies were obtained before radiocontrast injection and test studies were performed at 1 min and 3, 5, or 7 min after angiography. Eleven patients received a single 7-ml injection of methylglucamine diatrizoate and 11 were given a series of injections (average total 40 ml), with the test blood flow studies after the final injection.

Myocardial flow increased in every patient 1 min after contrast injection (average control flow 66.3 ml/min/100 g; test flow 78.8, +18.9%, $P < 0.001$). Blood flow increased further in seven of 10 studied at 3 min (average 95.7 ml/min/100 g, +35.7%, $P < 0.001$) and remained elevated at 5 and 7 min. Systemic pressure was unchanged from the control level, so coronary vascular resistance decreased in proportion to the increase in flow. Blood flow responses in patients with coronary artery disease were no different from normal subjects. Sham injections of normal saline produced no increase in coronary flow.

Selective coronary arteriography results in a prompt increase in myocardial blood flow which persists for several minutes. The probable mechanism is coronary vasodilatation produced by the markedly hypertonic contrast material, an effect demonstrated previously in other vascular beds.

Additional Indexing Words:

Radiographic contrast material
Radioactive inert gas
Coronary artery disease
Coronary angiography
Coronary vascular resistance
^{133}Xenon washout technic

DESPITE the wide use of selective arteriography for evaluation of coronary occlusive disease, the effects of radiographic contrast material on the coronary circulation have not been extensively studied in humans. Reports demonstrating the marked hemodynamic and vascular effects of hypertonic contrast material on the systemic circulation suggest that important changes might occur with coronary arterial injection.[1-5] Studies in open-chest dogs and in intact animals have demonstrated that increases in coronary blood flow do occur following intracoronary injection of contrast material.[2, 6-11] The development of the radioactive inert-gas washout method for determination of myocardial blood flow has made studies of the coronary circulation readily available clinically.[12] This technic is being used increasingly to evaluate responses to pharmacologic interventions and the effects of electrically induced tachycardia

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and exercise in normal individuals and patients with coronary heart disease.[13–17] Radiographic contrast material is usually required for coronary catheter positioning in these studies and coronary angiography is frequently performed during the same procedure. Knowledge of the coronary hemodynamic effects of contrast material is important in evaluating the findings, as well as for a more complete understanding of responses to selective coronary angiography. The purpose of this study was to determine the effects of selective coronary arterial injection of radiographic contrast material on myocardial blood flow in patients with normal and diseased coronary arteries.

Methods

Myocardial blood flow through the left coronary artery was studied in 22 patients during diagnostic coronary arteriography. Twelve of the 22 had greater than 50% narrowing of the left main, anterior descending, and/or circumflex artery, and 10 had essentially normal vessels. Studies were performed using the Judkins technic for selective coronary injection.[18] Methylglucamine diatrizoate (Renografin-76*) was the contrast material used in all cases.

Myocardial blood flow was determined by the radioactive xenon (^{133}Xe) washout technic using a precordial scintillation detector as described by Ross et al.[12] Patients were studied in the left anterior oblique position with the spectrometer probe positioned externally over the left ventricle using fluoroscopy. A 1-ml injection of normal saline solution containing 75 mCi of ^{133}Xe was given selectively as a bolus into the left coronary artery for each blood flow determination and the catheter was flushed with 3 ml of normal saline solution. The resulting myocardial clearance curve of ^{133}Xe was recorded using a 2-in scintillation detector with a 20° flat-field collimator and a spectrometer system with a time constant of 1 sec,† and was inscribed on a direct-writing recorder.‡ The radioactive clearance curve was replotted semilogarithmically and myocardial blood flow was calculated by the standard method.[12, 14, 17]

Control myocardial blood flow was determined in duplicate in all patients prior to contrast-material injection. In the first 11 individuals a rapid sequence of 5–7 injections of contrast was then made while routine coronary angiograms were filmed. The injections averaged 7 ml each and the total volume of all injections averaged 40 ml. In the final 11 patients a single 7-ml injection of contrast material was given. Myocardial blood flow determinations were repeated 1 min and 3, 5, or 7 min after the final injection of the series, or after the single injection.

In three individuals the mechanical effects of injection of a volume of fluid were assessed by giving a bolus of 7 ml of normal saline solution. Myocardial blood flow was determined in duplicate before saline injection and was repeated 1 and 3 min afterward. The same three patients were then given 7-ml injections of contrast material and blood flow studies were again repeated after 1 and 3 min.

Systemic arterial pressure, pulse rate, and the electrocardiogram were recorded continuously throughout the control and test studies. The results of all studies were analyzed statistically using the paired *t* test.

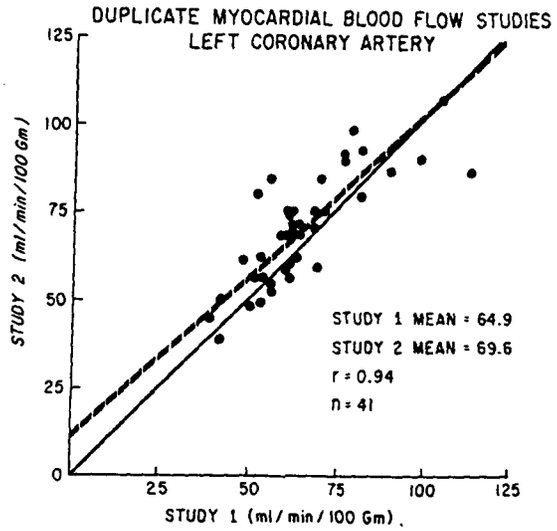


Figure 1

Results of duplicate myocardial blood flow determinations in 41 patients. All studies were of left coronary artery flow. The findings of the first study are plotted on the abscissa against the results of the second on the ordinate. The solid line indicates indentity, and the regression line for our results is interrupted.

Results

The results of duplicate determinations of myocardial blood flow through the left coronary artery in 41 patients are presented in figure 1. There was a small difference between the mean values for the two studies (64.9 vs

* E. R. Squibb and Sons, New York, New York.
† Nuclear Chicago Corp., Des Plaines, Illinois.
‡ Heath Company, Benton Harbor, Michigan.

Table 1

Myocardial Blood Flow

Pt	Contrast injections (total no.)‡	Control flow (avg ml/min/100g)§	Blood flow after contrast injection (ml/min/100g) 1 min	3 min	5 min	7 min
1	5	84	99	115	—	—
2	5	66	73	118	—	—
3	5	106	121	136	—	—
4	5	83	86	—	82	—
5	5	73	86	—	—	—
6	5	54	55	—	65	—
7*	5	55	59	77	—	—
8*	5	66	92	80	—	—
9*	5	69	71	—	—	80
10*	5	68	84	—	—	106
11*	5	61	74	—	79	—
12	1	68	86	75	—	—
13	1	55	71	86	—	—
14	1	80	102	108	—	—
15	1	58	79	70	—	66
16*	1	55	61	—	71	—
17*	1	49	70	—	77	—
18*	1	67	81	—	102	—
19†	1	59	66	—	—	—
20†	1	65	71	—	99	—
21*	1	54	61	—	68	—
22*	1	68	86	92	—	—
No.	—	22	22	10	8	3
Mean flow	—	66.3	78.8	95.7	80.3	84.0
% change**	—	—	+18.9	+35.7	+32.1	+29.6
Significance	—	—	$P < 0.001$	$P < 0.001$	$P < 0.001$	—

*Narrowing > 80% or complete occlusion of the left main, anterior descending, and/or circumflex coronary artery.

†With 50–80% narrowing of the left main, anterior descending, and/or circumflex coronary artery.

‡Total of the control studies + postangiographic determinations.

§Control values before contrast injection are the average of two studies.

**Based on the control values of the individuals observed at that time.

69.6 ml/min/100 g) and an excellent correlation ($r = 0.94$). The average difference between the first and second study was 8.5 ± 1.1 ml/min/100 g (mean ± SEM).

Myocardial blood flow responses to radiocontrast material are shown in table 1. There was no difference between the results of patients having multiple contrast injections and those having single injections. The average increase in myocardial flow 1 min after injection was 10.6 ± 2.4 ml/min/100 g (mean ± SEM) in the multiple-injection group compared to 14.2 ± 2.0 in the single group (P = NS). After 3 min the mean values were 22.8 ± 5.2 vs 24.9 ± 3.3 ml/min/100 g (P = NS). Therefore, data from patients having single and multiple contrast injections are combined in the subsequent analysis of results.

Myocardial blood flow 1 min after contrast injection was higher than the control value in every patient. The average for the entire group rose from a control flow of 66.3 ml/min/100 g to 78.8, an 18.9% increase ($P < 0.001$). Blood flow increased further in seven of 10 studied after 3 min. The average flow at this time, 95.7 ml/min/100 g was 35.7% above the control level ($P < 0.001$). Myocardial flow remained elevated above the 1-min value in six of eight studied at 5 min and in

two of three patients after 7 min. Only one individual (patient 4) had a blood flow lower than the control level at any time after contrast injection.

The findings in the three patients who had sham injections of normal saline solution are shown in figure 2. There was essentially no change in myocardial blood flow at 1 and 3 min following saline injection. The same individuals were then given 7-ml injections of contrast material. Blood flow increased at 1 and 3 min following contrast injection to the same extent in these patients as was seen in the entire group.

Myocardial blood flow responses in patients with obstructive disease of the left coronary artery system are compared to those with normal vessels in figure 3. The average control flow was lower in patients with coronary obstructive disease (61.1 ± 2.1 ml/min/100 g, mean $\pm$ SEM) than in those with normal arteries (72.7 ± 5.4 ml/min/100 g) but the difference was not significant ($0.1 > P > 0.05$). Myocardial flow increased equally in the two groups after contrast injection with no significant difference at 1 or 3 min ($0.1 > P > 0.05$ and $P > 0.1$).

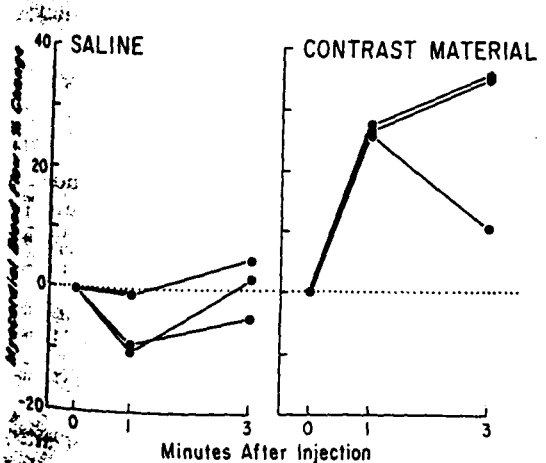


Figure 2

Myocardial blood flow in three patients following a sham injection (7 ml normal saline solution) and after 7 ml of contrast material. There was no significant change in myocardial flow following saline injection. The same patients showed the increase in blood flow characteristic of the entire contrast injection

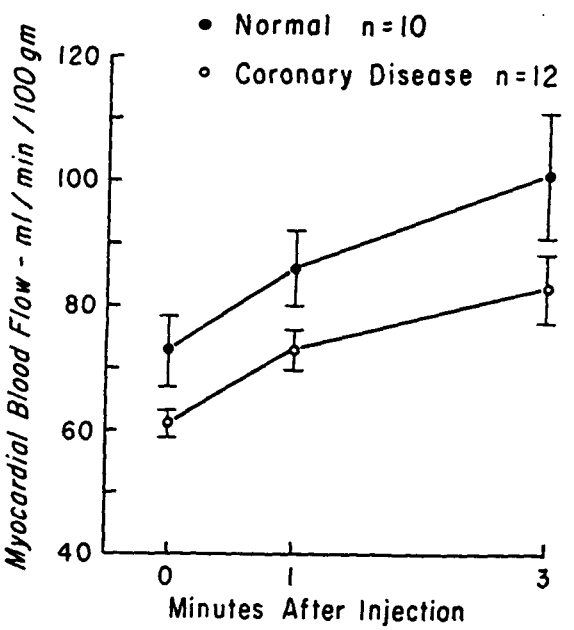


Figure 3

Myocardial blood flow following contrast-material injection in patients with normal and diseased coronary arteries. Mean values $\pm$ SEM are shown. Average values for myocardial flow were lower in patients with coronary obstructive disease, but were not significantly different from those with normal vessels ($P > 0.05$). The magnitude of increase in flow after contrast injection was the same in the two groups.

Systemic arterial pressure and pulse rate were unchanged between the control and test measurements. Characteristically there was either no alteration or a transient decrease in pulse rate and blood pressure immediately following contrast injection which persisted only a few seconds and had disappeared by the time of the 1-min flow study. Since coronary blood flow increased with no change in coronary perfusion pressure, coronary vascular resistance, the quotient of pressure over flow, must have decreased in proportion to the increase in flow.

Discussion

These studies demonstrate a consistent and substantial increase in myocardial blood flow following selective coronary angiography in patients with and without coronary heart disease. Earlier studies using flowmeters or rotameters in open-chest dogs found similar

increases in coronary blood flow after contrast-material injection, with elevations up to 150% over control levels.[6–10] These technics monitoring beat-by-beat blood flow demonstrated an initial decrease in flow lasting a few seconds and corresponding to the time contrast material was in the artery. This was followed by a period of increased flow lasting 1–4 min. Carson, Weber, and Wilson first measured myocardial blood flow in intact animals before and after selective coronary angiography using the ^{133}Xe washout method.[11] They demonstrated an increase in blood flow of the same magnitude as in our group of patients, but of shorter duration, similar to the previous studies in dogs. The early decrease in blood flow found with flowmeters was not detected by either their study or ours, since the inert-gas technic provides average flow over a period of 20–60 sec rather than instantaneous flow.

The basis for the increase in blood flow appears to be the marked hyperosmolarity of radiocontrast materials. The osmolarity of methylglucamine diatrizoate (1648 moz/liter) is five and one half times that of blood serum, and other contrast materials are of equal or greater hypertonicity.[5] Previous studies have shown an increased cardiac output, decreased systemic pressure, and decreased systemic vascular resistance following systemic injection of a variety of contrast agents.[1–5] Injections of other hypertonic materials, such as mannitol or hypertonic saline, have evoked similar responses.[5, 19, 20] Mechanisms proposed for these responses have been expansion of the blood volume due to transfer of water from the tissue to the vascular space, a decrease in vascular tone mediated neurologically in part, and a further decrease in vascular resistance due to a direct effect of the hypertonic material on arterioles.[4, 19–22]

Similar mechanisms are probably operative in the coronary vascular bed following selective injection of contrast material. Increased coronary flow and decreased coronary vascular resistance have been demonstrated with a variety of angiographic contrast materials and differing technics of flow measurement. Friesinger et al.[2] and Carson, Weber, and Wilson[11] have shown similar hemodynamic responses in dogs following coronary injection of hypertonic materials other than radiocontrast agents. Lehan et al. found a massive transfer of water from tissue to capillaries immediately after contrast injection, indicated by a 35–50% fall in coronary hematocrit. This was followed by coronary vasodilatation and increased flow,[9] a sequence similar to that in the systemic circulation.[2–4] The rapid onset of increased flow, the consistent relationship to hypertonicity of the material injected, and the profound local fluid shifts have all pointed to a direct effect of contrast material on the vascular wall. Whether this is due to a reduction in vascular smooth muscle tone, or loss of fluid in the vessel wall with increased lumen size, has not been determined.

Reactive hyperemia might be anticipated following contrast injection due to temporary interruption of myocardial oxygenation and perhaps accentuated by the high viscosity and slow passage of contrast through the coronary circulation. However, Griggs et al. found that the rise in coronary flow following contrast injection in dogs was greater than that attributable to reactive hyperemia.[10] Further, they found the large increase in coronary flow was paralleled by a rise in coronary sinus blood oxygen, with no change in myocardial oxygen consumption. This would seem to exclude reactive hyperemia as a major determinant of the increase in flow. Their studies of coronary sinus blood oxygen saturation in five patients having selective coronary arteriography suggested the same was true in humans.

A reflex decrease in vascular resistance which can be prevented by ganglionic blockade has been demonstrated following systemic angiography.[4] However, Marshall and Shepherd found that increases in femoral artery flow following hypertonic injections in dogs were unchanged after denervation of the leg.[19] Whether coronary injection of contrast material might activate a coronary chemoreflex or central circulatory reflexes, or would act more as an isolated vascular bed similar to the leg, is not known. Pharmacologic interventions to

determine the possible role of autonomic influences on myocardial blood flow were not feasible in our patients. However, from the above data it appears that vasodilatation due to a direct action of contrast material on the vascular wall is the primary mechanism for the changes in coronary vascular resistance and blood flow.

Previous studies using the ^{133}Xe technic and other methods have shown that myocardial blood flow is normal at rest in patients with coronary artery disease.[12, 15–17, 23–25] Further investigations using a variety of stresses designed to increase coronary flow, including exercise, isoproterenol and epinephrine infusion, and pacing-induced tachycardia, have usually demonstrated no difference between the responses of normal individuals and those with coronary stenosis.[15–17, 24, 25] Knoebel et al. did find a correlation between the severity of coronary artery disease and the response of myocardial blood flow to increased myocardial oxygen demand induced by right atrial pacing or isoproterenol infusion.[26] Measuring myocardial blood flow by the rubidium clearance technic, they demonstrated that patients with more severe coronary disease were unable to increase myocardial flow to the same extent as normal volunteers or patients with less severe coronary disease using either form of stress. In our studies the increase in myocardial flow in response to a completely different challenge from those above was the same in patients with coronary narrowing as in normal subjects, and was unrelated to the degree of narrowing. Indeed, it seemed remarkable that even individuals with extensive severe obstructive disease (patients 9, 11, 16, 17, 21, and 22) were capable of appreciable increases in coronary flow after contrast injection. This suggests, as Rowe has proposed, that even in diseased coronary vessels the site of vascular resistance still lies peripherally in the arterioles rather than in the areas narrowed by atherosclerosis.[22] Such vessels might still have a considerable capacity for increased flow, as indicated in the above studies. Rowe has suggested the need for a method for determining maximal coronary blood flow to more critically evaluate the significance of obstucting coronary artery disease.[22]

Two implications of these findings are apparent. The first concerns the potential protective effect of increased blood flow on myocardial oxygenation during coronary angiography. Radiographic contrast material is very viscous, markedly hypertonic, nonoxygenated, and not a desirable medium for perfusing the coronary arteries. The anticipated adverse effects of the contrast material may well be counterbalanced by the increase in myocardial blood flow and tissue perfusion resulting promptly after contrast injection and persisting for several minutes.

Second, any interpretation of changes in myocardial blood flow resulting from pharmacologic or other interventions must consider the possible influence of contrast material on the results. Contrast material is commonly used when positioning the catheter in the coronary artery and in verifying the position subsequently. It is apparent that this alone may alter coronary blood flow appreciably and that the effect may persist for at least 7 min.

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Event Number:	ACIR69000-A	**Service:**	Army
Event Title:	Roentgenographic technique for measuring lung volume, FAMC 69/140		
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Event Number:	ACIR69000-B	**Service:**	Army
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Event Number:	ACIR69000-C	**Service:**	Army
Event Title:	Use of RISA blood volume determination to determine red cell volume, Cr-51		
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William Beaumont Army Medical Center	El Paso	TX	USA

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Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

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MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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Authors
Nusynowitz ML. Strader WJ 3d. Waliszewski JA.

Title
Predictability of red cell volume from RISA blood volume.

Source
American Journal of Roentgenology, Radium Therapy & Nuclear Medicine. 109(4):820-2, 1970 Aug.

Local Messages
CHECK HOLDINGS LISTS

MeSH Subject Headings

*Blood Volume Determination
*Chromium Isotopes
*Erythrocyte Count
*Hematocrit
Hematologic Diseases/bl [Blood]
Human
Methods
*Serum Albumin, Radio-Iodinated

PREDICTABILITY OF RED CELL VOLUME FROM RISA BLOOD VOLUME*

By MARTIN L. NUSYNOWITZ, LTC, MC, USA, WILBUR J. STRADER, III, MAJ, MC, USA, *and* JEROME A. WALISZEWSKI
EL PASO, TEXAS

METHODS which allow the rapid and repeated estimation of red cell volume are useful in many clinical situations. Indirect estimations derived from radioactive iodinated human serum albumin (RISA) blood volumes and the venous hematocrit are technically simple, rapid, adaptable to semiautomatic machine methods, and can conveniently be performed repeatedly. These indirect estimations have been criticized because comparison with direct measurements of red cell volume using chromium 51 labeled red cells has shown discrepancies in the individual results.[4,6]

We suggest that in most clinical situations, a reasonably accurate and useful estimate of the red cell volume can be derived from the simple indirect technique.

METHOD

Blood for counting was drawn without stasis from antecubital veins into heparinized syringes. Hematocrits were determined by the micro-method employing a standard 3 minute centrifugation in a Phillips-Drucker centrifuge and a correction factor of 0.96 applied for trapped plasma. The Cr^{51} red cell volumes (Cr^{51} RCV) were determined by a modification of the method of Sterling and Gray[5] using autologous blood. Samples were counted in a well type scintillation counter. These were obtained from the patient, and after a 10 minute mixing time served both for a direct measurement of the red cell volume and as the background sample for the plasma volume determination which followed immediately. RISA blood volumes were determined on 10 minute postinjection whole blood samples in a Picker Hemoliter. The red cell volume (RISA RCV) was determined using the corrected venous hematocrit.

RESULTS

Thirty-three consecutive determinations were made on patients whose hematologic status was stable during the period of study. The results are given in Table 1 and are illustrated in Figure 1. The correlation coefficient between the RISA RCV and the Cr^{51} RCV is +0.974. The standard error of the estimate is 0.17 and the standard error of the slope of the regression equation is 0.03. Thus, the value of the Y intercept is not significantly different from 0 and the slope of the estimating equation is not significantly different from 0.788, which is the mean ratio of Cr^{51} RCV/RISA RCV derived from our determinations on 30 normal young men. This ratio is related to the mean ratio: body hematocrit/venous hematocrit (BH/VH) of 0.867 in these normal subjects. As can be seen from Table 1, over 80 per cent of the predicted red cell volumes are within 15 per cent of the actual value, and almost 90 per cent are within 20 per cent. None are as much as 25 per cent from the actual result.

DISCUSSION

The extremely high correlation coefficient of 0.974 attests to the high degree of predictability of Cr^{51} RCV from the RISA RCV. It is obvious that useful estimates of red cell volume can be obtained from the RISA technique in most clinical situations.

* From the Radioisotope-Endocrine Clinic and the Department of Medical Research and Development, William Beaumont General Hospital, El Paso, Texas.

This material has been reviewed by the office of The Surgeon General, Department of the Army, and there is no objection to its presentation and/or publication. This review does not imply any indorsement of the opinions advanced or any recommendation of such products as may be named.

TABLE I

CLINICAL STATUS, HEMATOCRIT, RISA RED CELL VOLUME, Cr^{51} RED CELL VOLUME, AND PERCENTAGE ERROR IN PREDICTED RED CELL VOLUME

Clinical Status	Hematocrit (%)	RISA Red Cell Volume (l.)	Cr^{51} Red Cell Volume (l.)	$\left(\frac{0.788 \text{ RISA RCV} - Cr^{51} \text{ RCV}}{Cr^{51} \text{ RCV}}\right) \times 100\%$
1 Possible polycythemia vera	48	2.083	1.775	−7.6
2 Cirrhosis with ascites	35	1.640	1.393	−7.2
3 Cirrhosis with ascites	40	1.828	1.534	−6.1
4 Anemia	35	2.083	1.633	+0.5
5 Aplastic anemia	30	1.066	0.878	−4.3
6 Gaisbock's syndrome	48	2.147	1.967	−14.0
7 Possible polycythemia vera	53	3.043	2.450	−2.1
8 Preoperative radical surgery	38	1.959	1.500	+2.9
9 Shock	36	1.873	1.537	−4.0
10 Immediately postoperative colectomy	45	2.022	1.427	+8.2
11 Possible hypovolemia	47	2.346	1.922	−3.8
12 Possible polycythemia vera	53	4.101	3.063	+5.5
13 Anemia	36	2.212	1.732	+0.6
14 Hemolytic anemia	30	1.158	1.071	−14.8
15 Possible polycythemia vera	66	5.120	3.914	+3.1
16 Hemolytic anemia	34	0.912	0.784	−8.3
17 Hemolytic anemia	43	1.866	1.371	+7.3
18 Persistent icterus	48	2.617	1.941	+6.2
19 Postsplenectomy hemolytic anemia	41	2.472	2.185	−10.8
20 Hemolytic anemia	27	1.037	1.042	−21.6
21 Anemia	28	1.159	0.999	−8.6
22 Preoperative radical surgery	41	1.500	1.268	−6.8
23 Preoperative radical surgery	38	1.591	1.323	−5.2
24 Possible polycythemia vera	57	3.127	2.037	+21.0
25 Preoperative radical surgery	46	2.214	1.814	−3.8
26 Possible polycythemia vera	55	3.014	1.941	+22.4
27 Cirrhosis and jaundice	46	2.376	2.100	−10.8
28 Uremia and anemia	18	0.608	0.479	0.0
29 Persistent icterus, possible hemolysis	47	2.883	2.674	−15.0
30 Nephrotic syndrome	29	0.791	0.545	+14.4
31 Uremia	24	0.627	0.408	+21.1
32 Possible polycythemia	47	1.579	1.233	+0.9
33 Postsplenectomy for hemolytic anemia	32	1.124	1.077	−17.8

It would be superfluous to routinely convert the results of the RISA technique to predicted Cr^{51} RCV values (by multiplying by 0.788), since the values obtained may be compared to the normal values established by the RISA method.

This technique has advantages over the Cr^{51} labeled cell method in that it does not require autologous or homologous blood, extensive preliminary preparation, or manipulation which may result in contamination. Furthermore, precalibrated injection doses and semiautomatic machine methods are commercially available for the RISA technique, eliminating almost all calculations, thereby allowing rapid and repeated performance of the test by relatively unskilled personnel.

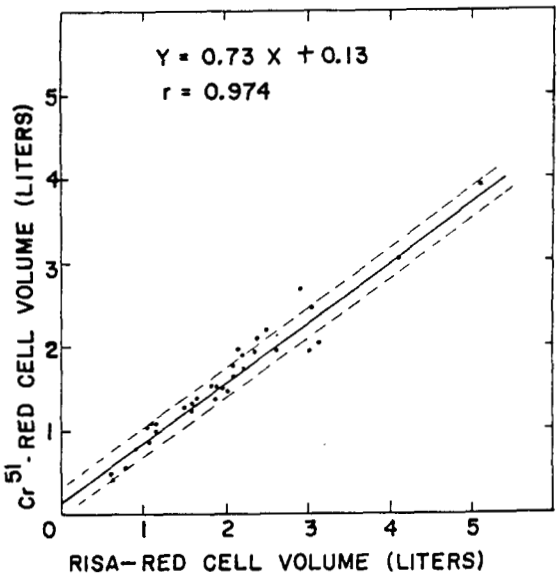


FIG. 1. Correlation between RISA red cell volume and Cr^{51} red cell volume in 33 patients. The solid line is the least square regression line, and the broken lines indicate 1 standard error of the estimate.

Retzlaff *et al.*[4] recently pointed out that indirect estimates of red cell volume may result in errors because these methods presume a mean constant value of BH/VH (=0.87) for all patients. These errors become large as both the ratio BH/VH departs from the presumed value and as the venous hematocrit increases, especially when it gets over 50 per cent. However, the latter situation is readily identifiable clinically, and significant departures from the presumed ratio occur in only a small percentage of patients.[1,2,4] Thus, relatively large errors (>25 per cent) can be expected only very infrequently, and even in these cases the result is apt to reflect the range of the red cell volume. We emphasize that in the vast majority of cases excellent estimates of the true red cell volume are provided.

There is no doubt that cell labeled techniques provide the best estimate of the red cell volume[3] and should be used when clinical circumstances warrant and when time and facilities permit. However, we conclude that the indirect RISA method is more than adequate for most clinical purposes.

SUMMARY

The RISA plasma label method of estimating red cell volume is technically simple, rapid, adaptable to automation, and can be performed repeatedly but has been criticized because of discrepancies in individual results when compared to Cr^{51} cell label methods.

Determinations in 33 patients have shown an extremely high degree of correlation between both methods (r = +0.974), attesting to the predictability of one from the other. Most of the discrepancies in results were quite small, and none was so great as to negate its clinical usefulness. The simpler RISA method of red cell volume estimation is very adequate for most clinical purposes.

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Event Number:	ACIR70000-A	**Service:**	Army		
Event Title:	Mottling on the colloidal radiogold liver scan				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	70	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents

Event Abstract:

EVENT NUMBER: ACIR70000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Strader WJ, Nusynowitz ML: The meaning of mottling on the colloidal radiogold liver scan. Milit Med 138:725-7, 1973 describes this study. There were 132 liver scans between 1968 and 1969.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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<1>

Unique Identifier
74036065

Authors
Strader WJ 3d. Nusynowitz ML.

Title
The meaning of mottling on the colloidal radiogold liver scan.

Source
Military Medicine. 138(11):725-7, 1973 Nov.

Local Messages
STIMSON / BAMC

MeSH Subject Headings

Biopsy
*Gold Colloid, Radioactive/du [Diagnostic Use]
Human
*Liver
*Liver Diseases/di [Diagnosis]
*Radionuclide Imaging

The Meaning of Mottling on the Colloidal Radiogold Liver Scan

Wilbur J. Strader, III, M.D.
*LTC Martin L. Nusynowitz, MC, USA**

THE use of the liver scan as a diagnostic tool in focal hepatic disease is well established.[3,4] Diffuse liver disease has been associated with diffuse abnormalities in radiogold distribution (mottling, patchiness) occurring in conjunction with hepatomegaly, increased splenic uptake, or increased marrow uptake.[2,7] The purpose of this study was to ascertain the significance of the mottled or patchy liver scan occurring as an isolated finding.

Materials and Methods

Radiogold 198 colloid was given in doses of approximately 150μCi two to four hours before scanning. A Picker Magnascanner(R) with a 5″ NaI (Tl) crystal and 85 hole 5″ broad focus collimator was used to obtain x-ray film and color dot scans in the anterior and right lateral views. Scan speed was determined by the formula:

$$\text{scan speed (cm/min)} = \frac{\text{maximum count rate (c/min)}}{\text{information density (c/cm}^2\text{)} \times \text{line spacing (cm)}}$$

All liver scans were performed at an information density of 375 c/cm^2 and a line spacing of 0.4 cm. Settings for film density were determined from the maximum count rate: for count rates of 4000 cpm or less the density setting was 75; for count rates between 4000–8000 cpm the setting was 50; and for count rates of over 8000 cpm the setting was 25. Dot factors were chosen as the setting nearest $\frac{1}{1000}$ the maximum count rate.

All liver scans performed during 1968 and 1969 were reviewed. Those scans with nonfocal findings were included if liver function studies were available within five days of the procedure. One hundred and thirty-two scans met these selection criteria. Scans were initially interpreted by one or both of the authors, without knowledge of the clinical status or liver function tests. Before ascertaining the results of the laboratory studies, the initial reports of these interpretations were classified into three groups: (1) Normal; (2) Patchiness only; and (3) Patchiness plus hepatomegaly, increased splenic uptake, or marrow uptake.

Clinical records were then reviewed and the serum concentrations of alkaline phosphatase (AP), glutamic oxaloacetic transaminase (SGOT) and total bilirubin (B) as obtained on a Technicon Autoanalyzer SMA 12/60(R) were classified as either normal or abnormal, using the following upper limits of normal:

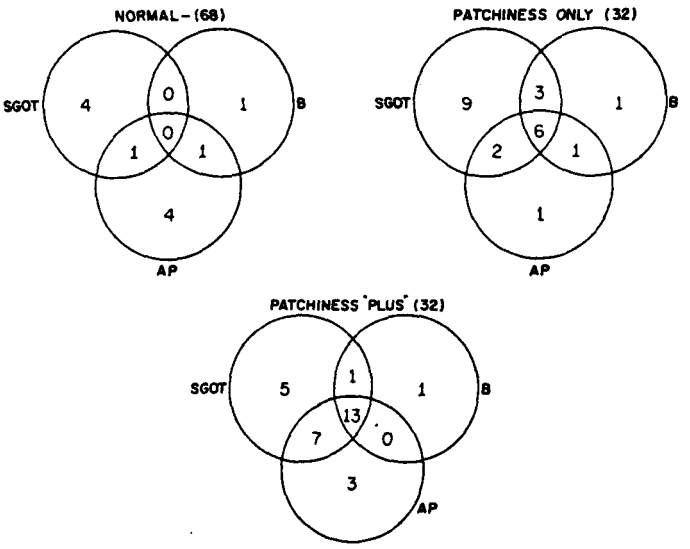


Fig. 1. Venn diagrams showing the distribution of abnormal liver chemistry tests in three groups of scans. The number in parenthesis is the total number in that group. SGOT = serum glutamic oxaloacetic transaminase; B = total bilirubin; AP = alkaline phosphatase.

Alkaline phosphatase 85 mU/ml
Serum glutamic oxaloacetic transaminase 50 mU/ml
Total bilirubin 1.0 mg/100 ml

All patients had all three tests performed except as noted. Results of liver biopsies were included when available and classified as normal or abnormal.

Results

Sixty-eight of the 132 liver scans were normal. In 57 (84 per cent) of these, all three liver function tests were normal; in none were all three tests abnormal (Table I and Fig. 1). Nine biopsies had been obtained in this group of 68 patients, and one was abnormal, showing fatty metamorphosis.

Thirty-two patients had patchy scans, and in only nine (28 per cent) of these were all tests normal (Fig. 1 and Table I). Two of the 11 patients with only one abnormal test had only two tests performed, and one of the six patients with two abnormal tests had only two tests performed. Seventy-two per cent of the patients whose scan showed only patchiness had one or more abnormal liver function tests. Eleven biopsies were performed in this group, and only two were normal—one patient had two abnormal function tests and one patient had none.

The group of scans showing only patchiness was further subdivided into those with mild patchiness and those with a major degree of patchiness. Seventeen of the 32 subjects in this group demonstrated only mild patchiness, and of these, seven (41 per cent) had no liver function study abnor-

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TABLE I

DISTRIBUTION OF LABORATORY ABNORMALITIES IN 132 NORMAL, PATCHY, AND "PATCHY PLUS" RADIOGOLD LIVER SCANS

Number of Abnormal Tests	Number of Patients	Per Cent	Biopsy Results	
			Normal	Abnormal
0*	57	84	7	—
1	9	13	1	1
2	2	3	—	—
3	0	0	—	—
Total	68	100	8	—
0**	9	28	1	—
1	11	34	—	6
2	6	19	1	2
3	6	19	—	1
Total	32	100	2	9
0†	2	6	1	—
1	9	28	—	5
2	8	25	—	5
3	13	41	—	7
Total	32	100	1	17

*Normal (68)
**Patchy (32)
†Patchy plus (32)

mality. The remaining 10 (59 per cent) patients had at least one abnormal test. In contrast, only two (13 per cent) of the 15 subjects with major patchiness had no abnormal liver function test, while 13 (87 per cent) had at least one abnormal test (Table II).

The remaining 32 patients fell into the "patchy plus" group (Table I and Fig. 1). Only two (6 per cent) of these had normal liver function tests. Two of the nine patients with one abnormal test had only that test performed, and both had abnormal biopsies. One of the eight patients with two abnormal tests had only those two performed, and he had an abnormal biopsy. Of the 18 biopsies performed in this group, only one was normal; all three liver function tests in this patient were normal.

Discussion

The colloidal gold liver scan has been primarily used to delineate focal lesions. Attempts have been made to correlate the appearance of the liver scan with hepatic function in diffuse liver disease,[1-4,6] since the uptake of colloid by the liver is dependent upon the integrity of hepatic blood flow and reticulo-endothelial cell function and distribution.[2,5,6] In addition to these physiological variables, the appearance of the liver scan is also dependent upon a number of technical factors which affect counting statistics. The effect upon scan appearance due to these technical factors has been held constant by standardizing our scanning parameters.

Castell and Johnson[1] correlated mottling, splenic uptake, and marrow uptake of colloidal gold with ammonia tolerance test results in patients with known diffuse liver disease and found a near linear relationship. Whang *et al*[7] found that mottling was often present with known liver disease, but could elicit no clear correlation between the degree of mottling and the severity of liver dysfunction.

Our results indicate that a normal pattern of distribution of radiogold in the liver without any evidence of patchiness is associated with normal liver function tests (and biopsies) in the overwhelming majority of patients (84 per cent). In only three percent of patients with a normal scan was hepatic function so significantly impaired as to cause abnormalities in two of the three tests performed.

Those scans classified as "patchy plus" represent the other end of the spectrum. Our results indicate that there is only a very small chance (6 per cent) that all the liver chemical tests employed will be normal in this group, while the vast majority of patients (94 per cent) had evidence of significant liver disease. In those patients with only one abnormal test, all five biopsies obtained showed histologic evidence of hepatic disease.

The scans showing patchiness alone represented the middle ground. A much larger percentage of such scans were associated with normal liver chemical tests (28 per cent) than in the "patchy plus" group, but the percentage showing at least one abnormality was still very high (72 per cent). Again, in the subgroup showing only one abnormal test, all biopsies were abnormal.

When the group showing patchiness alone was further subdivided, 87 per cent of those with major patchiness had abnormal liver studies, and only 13 per cent had normal results. On the other hand, 59 per cent of those with minor patchiness had abnormal tests, and 41 per cent were normal. Thus, even a minor degree of patchiness often reflects hepatic dysfunction.

By selecting strict criteria of normality (see "methods") our results were biased so that some patients in the normal scan group were classified as having abnormal liver function tests, when there was the slightest elevation in only one of the three studies. For example, three of the nine patients with one abnormal liver function test in the normal scan group had borderline abnormalities: one patient with a bilirubin of 1.1 mg/100 ml and two with SGOT of 51 and 57 mU/ml. Results in the abnormal scan groups would not have changed essentially. Even with the strict criteria, the false negative rate of the scan was low.

Note that in only eight of the 27 patients with abnormal liver biopsies, were all three liver function tests abnormal. In fact, in 12 patients with abnormal biopsies, two of the three tests were normal. In the abnormal scan groups, 26

TABLE II

DISTRIBUTION OF LABORATORY ABNORMALITIES IN 32 PATCHY RADIOGOLD LIVER SCANS

Number of Abnormal Tests	Number with Mild Patchiness	Per Cent	Number with Major Patchiness	Per Cent
0	7	41	2	13
1	7	41	4	27
2	1	6	5	33
3	2	12	4	27
Total	17	100	15	100

of the 29 biopsies were abnormal; of the nine biopsies in patients with normal scans, only one was abnormal and, in this patient, two of the three liver function tests were normal. Therefore, the distribution of radioisotope on the liver scan is as indicative of liver disease as any of the conventional liver function tests.

In conclusion, a normal liver scan indicates normal liver function. Diffuse abnormalities in radionuclide distribution in conjunction with hepatomegaly, increased splenic uptake, or marrow uptake indicate hepatic disease. Mottling alone is also indicative of liver disease in many cases, especially when severe. Even when the mottling is mild, a majority of patients will manifest abnormalities in liver function studies.

Summary

The significance of patchy distribution of activity in the liver scan was evaluated by determining the incidence of abnormal liver function tests (alkaline phosphatase, glutamic oxaloacetic transaminase, bilirubin) and biopsies in 132 radiogold studies.

Normal scans were associated, in the vast majority of instances, with normal tests and biopsies, while scans showing patchiness plus hepatomegaly, increased splenic, or marrow uptake were almost always associated with abnormalities.

When patchiness was the only finding, the majority of patients had abnormal liver function tests and biopsies; furthermore, evidence of abnormality increased as patchiness increased.

These results indicate that the distribution pattern of radiogold is a rather sensitive indicator of liver function.

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Book Reviews (Continued)

The Lymphatic System. M. Battezzati, M.D., Head, Department of Surgery of the Univ. of Genoa and I. Donini, M.D. Piccin Medical Books, Padua and London, 1972, 496 pp., 284 illus.

This very useful book containing 48 pages of references represents a tremendous amount of work on the part of the two authors. Printed on 7½ × 10½" heavy, glossy paper, many of the 284 illustrations are of full page length, with a number of the anatomical and histological representations in color. Published originally in Italian, the text appears to have lost nothing in its translation. The 10 chapters are well presented, beginning with a lengthy and interesting history. The embryology, anatomy, and physiology of the lymphatic system are introductory, followed by detailed chapters on clinical investigation and pathophysiology of the system, including techniques of lymphangiography. Some 132 pages are allotted to the description of normal and pathological roentgenological studies of the lymphatic system by individual organs and systems. These studies are beautifully demonstrated by drawings and reproductions of the roentgenograms. The text includes some interesting aspects of the surgery of the lymphatic system, as well as intralymphatic therapy.

This unusual book is one of a kind. Written on a little known subject, it should be on the reference shelves of all medical libraries and available to all physicians who encounter diseases of the lymphatic system. It should be of added interest to the surgeon, radiologist and oncologist.

MG Carl W. Hughes, MC, USA

Arithmetic for Nurses. Marilyn Ferster (Gilbert). Springer Publishing Company, Inc., New York, 2nd Ed., 1973, 120 pages, $4.50.

This revised edition was designed to provide nursing students with a background in basic mathematics. It can be used as a programmed instruction book or in the classroom. The book contains 7 chapters, each with a preview, a work plan, and a review. Each preview presents problems to be solved by the student. If all are solved correctly, the rest of the chapter may be skipped. If, however, solutions are incorrect, the student is directed to make a work plan and to read various sections of the chapter.

In each chapter's work plan there is a detailed explanation of the subject and many problems are presented for practice. Answers to problems are presented before the next problem is given.

At the end of each work plan, a review of the chapter is covered by presenting several computations so that the student may check his progress. If any computations are missed, the student is directed to review certain topics.

This book does provide for a review of basic mathematics and could be valuable for individuals lacking proficiency in the subject.

LTC Glennadee A. Nichols, ANC

(Continued on page 733)

Event Number:	ACIR70000-B	**Service:**	Army		
Event Title:	Postoperative treatment of women with resectable ovarian cancer with radiotherapy, chlorambucil or no further treatment				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	70	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR70000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: Hreshchyshyn MM: Results of the Gynecologic Oncology Group trials on ovarian cancer: preliminary report. Nat Cancer Instit Mono, 42:155-65, 1975 describes the results of the "Postoperative treatment of women with resectable ovarian cancer with radiotherapy, Melphalan, or no further treatment" which coincides with this study title.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

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<1>

Unique Identifier

77056314

Authors

Hreshchyshyn MM.

Title

Results of the Gynecologic Oncology Group trials on ovarian cancer: preliminary report.

Source

National Cancer Institute Monographs. 42:155-65, 1975 Oct.

Abstract

Preliminary results of three prospective controlled ongoing Gynecologic Oncology Group studies in ovarian carcinoma are discussed. The first study involves "Postoperative Treatment of Women With Resectable Ovarian Cancer With Radiotherapy, Melphalan, or No Further Treatment" (77 evaluable patients). Although there is a trend favoring chemotherapy, the differences as yet are not statistically significant. The second protocol evaluates "Postoperative Treatment of Women With Stage III Ovarian Cancer by Radiotherapy or Melphalan, Either Alone or in Both Sequences" (141 evaluable patients). The progression-free interval is shorter with either therapeutic modality alone and longer with the two combinations of radiation and chemotherapy. The third protocol deals with "Treatment of Women With Disseminated or Recurrent Advanced Ovarian Cancer With Melphalan Alone, in Combination With 5-FU, in Combination with 5-FU and Dactinomycin, or in Combination with Cytoxan, 5-FU, and Dactinomycin" (200 evaluable patients). In terms of progression-free interval, the study favors combination chemotherapy.

Event Number:	ACIR70000-D	**Service:**	Army		
Event Title:	Treatment of women with advanced cervical cancer confined to the pelvis with hydroxyurea or placebo both in combination with radiation				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	70	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR70000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: Piver MS, et al: Hydroxyurea and radiation therapy in advanced cervical cancer. Am J Obstet Gynecol, 120:969-72, 1974 describes a similar clinical trial.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier

75052309

Authors

Piver MS. Barlow JJ. Vongtama V. Webester J.

Title

Hydroxyurea and radiation therapy in advanced cervical cancer.

Source

American Journal of Obstetrics & Gynecology. 120(7):969-72, 1974 Dec 1.

Local Messages

BAMC / STIMSON

Hydroxyurea and radiation therapy in advanced cervical cancer

M. STEVEN PIVER, M.D., F.A.C.O.G.
JOSEPH J. BARLOW, M.D., F.A.C.O.G.
VITUNE VONGTAMA, M.D.
JOHN WEBSTER, M.D.
Buffalo, New York

A prospective randomized double blind study on women with locally advanced cervical cancer was carried out to evaluate the combination of hydroxyurea and irradiation therapy. The results of the clinical trials are discussed as well as a method for improving similar future studies.

THE PROGNOSIS for women with advanced cervical cancer remains poor. In many such patients this may be because the entire extent of tumor has not been treated.[1] Of 32 women with clinical Stage IIIB cervical cancer who underwent pretherapy surgical staging, 37.5 per cent were found to have para-aortic node metastases, such metastases being above the usual pelvic irradiation field. A second consideration for the continued poor prognosis, in spite of the advent of megavoltage radiotherapy, is that the amount of radiation is limited by the tolerance of the normal pelvic structures, bladder and rectum. Therefore, a radiosensitizing substance which would enhance the effect of ionizing radiation on the malignant cells without also enhancing the effect on normal tissues is needed. Sinclair[2] using in vitro cell survival studies demonstrated that hydroxyurea (HU) would sensitize Chinese hamster cells to the effects of radiation. He showed that G_1 (postmitotic) and G_2 (premitotic) stages in the cell cycle of Chinese hamsters are more radiosensitive than in the S stage (DNA synthesis). Moreover, HU preferentially killed S phase cells while G_1 and G_2 cells were apparently not affected. G_1 phase cells did not progress into S phase, but were blocked at the G_1-S interphase. Cells in G_2 appeared to progress through mitoses into G_1 stage. Consequently, HU would act to destroy the relatively radioresistant cells in S phase and to collect the surviving cells at the relatively radiosensitive portion of the cell cycle—G_1-S interphase. He also showed that the G_1 cells were sensitized to the action of x-rays.

This prompted one of us to evaluate the combination of radiation and HU using an animal tumor system. Third generation isotransplants of a spontaneous C_3H/He mouse mammary carcinoma were employed. Transplants were made from cell suspensions prepared from freshly excised second generation isotransplants and injected into the muscle mass of the leg. Fractionated gamma irradiation with intermittently administered HU were utilized in the animal experiments. One-half of the animals received intraperitoneal HU and one-half saline. When the irradiation was administered under hypoxic conditions there was a significant ($P < 0.05$)

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radiosensitizing effect on the tumor in the group that received concomitant hydroxyurea as compared to saline controls.[3]

Next we evaluated this combination of agents in women with advanced squamous carcinoma of the cervix. A double blind prospective study was initiated whereby patients were randomly assigned either to receive HU plus radiation or a control group to receive placebo plus radiation. This paper is a report of these results.

rads external irradiation plus intracavitary radium; 15.3 per cent (2/13), 4,000 rads external irradiation plus intracavitary radium; one, 7,000 rads external irradiation; and one, 3,000 rads external irradiation plus intracavitary radium. Of the women with Stage IIB cervical cancer in the HU group, 66.6 per cent (6/9) received 5,000 rads external irradiation plus intracavitary radium, and 33.3 per cent (3/9) received 4,000 rads external irradiation plus intracavitary

veloped anemia as compared to three of 15 in the hydroxyurea group. None of these were long lasting and the lowest recorded hemoglobin was 8.6 per cent. (2) White blood count: One of 22 control women developed a WBC less than 2,500 as compared to 11 of 15 receiving hydroxyurea. (3) Platelets: One of 22 developed platelets of less than 100,000 and one of the 15 in the hydroxyurea group developed thrombocytopenia.

Gastrointestinal. There was no significant nausea or vomiting in either group. In the placebo group one patient developed moderate and one severe diarrhea. In the hydroxyurea group 2 developed moderate and one severe diarrhea.

Skin reactions. In the placebo group three developed mild, two moderate, and one severe skin reactions, with severe skin reaction being recorded for prolonged wet desquamation and moderate skin reaction being short duration of moist desquamation. In the hydroxyurea group four developed mild, 2 moderate, and one severe skin reactions (Table I).

Skipped dose of drugs. In the placebo group one patient had two doses deleted of the compound because of fever of unknown origin with another patient skipping one dose because of an abdominal rash. Seven out of 15 patients in the HU group had at least one dose of HU eliminated. Four of these had one dose deleted and one patient two doses because of leukopenia. One patient was inadvertently sent home on HU with a WBC of 1,400. She died from acute enterocolitis and pancytopenia with a final WBC of 100 and platelet count of 16,000. She had received 3,000 rads pelvic irradiation for Stage IIIB cervical cancer. She is considered dead from cancer, although she never completed therapy.

Tumor status at 2 years.

Stage IIB. At 2 years, 6 of 13 (46.1 per cent) women in the placebo group were without evidence of disease (NED) as compared to seven of nine (77.7 per cent) in the HU group ($P = 0.03$).

Table I. Complications

Complications	*Hydroxyurea (15 patients)*	*Placebo (22 patients)*
Anemia	3	5
Leukopenia	11	1
Thrombocytopenia	0	1
Moderate—severe diarrhea	3	2
Moderate—severe skin reaction	3	3

Stage IIIB. In the placebo group only one of 9 patients (11.1 per cent) was NED for 2 years as compared to 50 per cent of the hydroxyurea (3 of 6) group who were without evidence of recurrent cervical cancer at 2 years ($P = 0.13$).

Of the total women that received hydroxyurea 66.6 per cent (10 of 15) were NED at 2 years versus 31.8 per cent (7 of 22) of the placebo group ($P = 0.0014$) (Table II).

Comment

There are several mechanisms by which chemotherapeutic agents used in combination with radiation therapy could be of benefit, one by synchronization of cells within the mitotic cycle so that the radiation is administered to cells that are in a sensitive portion of the cycle. Hydroxyurea has been shown to destroy the relatively radioresistant cells synthesizing DNA (S phase) and to collect the surviving cells in the relatively radiosensitive G_1-S interphase.[2] The net result of hydroxyurea would be to inactivate the resistant cells and to sensitize the remaining cells. A second mechanism of action would be an agent which would prevent the repair of cells from sublethal radiation damage. Phillips and Tolmach[5] have demonstrated that HU does prevent the repair of sublethally damaged cells by radiation. Many radiation therapy failures are in large tumors containing many hypoxic cells. With reduction in the size of the tumor by the killing action of fractionated irradiation on the aerobic cells there is improvement in the vascularization of the tumor. Many of the hypoxic cells (G_0) then become aerobic, enter the expanded aerobic cell cycle allow-

Table II. Tumor status at 2 years

Stage	*Hydroxyurea (NED)**	*Placebo*	*P Value*
IIB	7/9 (77.7%)	6/13 (46.1%)	0.03
IIIB	3/6 (50.0%)	1/9 (11.1%)	0.13
Totals	10/15 (66.6%)	7/22 (31.8%)	0.0014

*NED = no evidence of disease.

ing HU to inactivate the S phase cells and synchronizing the remaining cells.

It is therefore theoretically possible that HU has the following actions: (1) destroy cells that are in a radioresistant part of the cycle; (2) synchronize the remaining cells in a radiosensitive portion of the mitotic cycle; (3) prevent repair of sublethally radiation damaged cells; (4) with shrinkage of the tumor and improved vascularization hypoxic cells enter the aerobic cycle and proliferate and are subject to the effects of HU.

These results have been demonstrated in in vitro cell cultures and in animal tumor system. We have conducted a prospective randomized double blind study on patients with advanced cervical cancer to evaluate the combination of hydroxyurea and irradiation therapy. Patients with clinical Stage IIB and IIIB cervical cancer were randomized to receive concomitant radiation therapy plus intermittent hydroxyurea or placebo. All patients were evaluated for recurrent tumor 2 years after completing therapy. 77.7 per cent of the women with Stage IIB cervical cancer in the hydroxyurea group were NED at two years as compared to 46.1 per cent of the control group. This is statistically significant at the 5 per cent level using the chi square test. Of those women with Stage IIIB cervical cancer 50 per cent were without evidence of tumor at 2 years in the hydroxyurea group as compared to the control group with 11.1 per cent. This was not significant at the 5 per cent level using Fisher's exact test. However, when the groups are combined (Stages IIB and IIIB) 66.6 per cent of the HU group were NED at 2 years as compared to 31.8 per cent of the controls, significant at better than the 1 per cent level. There was not a significant sensitization of the normal tissues in the hydroxyurea group as compared to the controls. Though the majority of patients receiving hydroxyurea had a depression of their white blood count only one patient had more than one dose of hydroxyurea deleted because of leukopenia. Red cells and platelets were not significantly affected in either group. Also, there was no increased sensitization by hydroxyurea of the skin or intestinal tract.

Since it is axiomatic that the entire extent of disease must be treated this study was discontinued when our surgical staging of patients with advanced cervical cancer demonstrated that nearly 40 per cent of women with far advanced local cervical cancer (Stage IIIB) had para-aortic node metastases and were previously not having the entire disease treated. The final evaluation of a prospective double blind study combining radiation therapy and hydroxyurea or placebo must include those patients surgically staged who then have had the entire extent of their cervical cancer treated by radiation therapy. This we have been conducting for the past 2 years.

The authors gratefully acknowledge the assistance of Dr. Irwin Bross for the statistical analysis.

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Event Number:	ACIR70000-E	**Service:**	Army		
Event Title:	Request to evaluate Cleocin (7-chloro-7-deoxylincomycin) tissue levels in bone and irradicated bone				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	70	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR70000-E
RECORDS: None available.
CIRS: The investigator was COL Louis H. Guernsey, DC. The study was approved on 23 May 70 and terminated on 14 Dec 71.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The study probably did not involve ionizing radiation.

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TITLE=> REQUEST TO EVALUATE CLEOCIN (7 CHLARO-7 DEOXYLINCOMYCIN) TISSUE LEVELS
     => IN BONE AND IRRADICATED BONE.
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> SUERNSEY               > LOUIS H.              > P   > COL DC
            =>                        >                       >     >
            =>                        >                       >     >
            =>                        >                       >     >
            =>                        >                       >     >
            =>                        >                       >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


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       GENERIC NAME                        BRAND NAME
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     =>                                =>
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DEVICES=>
       =>

DA-------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


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A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...      ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...      ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...      ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...      ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 14 DEC 71     ...      ...      ALL
F) EXPEDITED REVIEW................ __ ___ __     ...      ...      4
I) HSRRB ACTION.................... 28 MAY 70      AP               4
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M) PROGRESS REPORT RECD AT HURO.... __ ___ __      ...      ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __      ...      ...      ALL
O) PROTOCOL RECEIVED AT HURO... ... __ ___ __      ...      ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __    NO. REPORTED TO DATE=> 0__

ACTION:  (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14       TRANSACTION COMPLETED - PF4/16       CONTINUE - ENTER



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FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=>      HMJFAMM=>      ACC=>      GIFT/HSC=>      GIFT/SA=>      GRANTS=>

DISEASE CLASS=>                                  =>
              =>                                 =>

COMMENTS=>
         =>
         =>
         =>

INITIATOR HSC       LAST UPDATED 18Jan94              PROTOCOL ADDED 00 ? 00

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Event Title:	Radiotherapy of localized and regionally advanced nodal and extra-nodal malignant lymphoreticular tumors and intensive radiotherapy and chemotherapy of nodular lymphomas		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	71	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Event Number:	ACIR71000-B	**Service:**	Army
Event Title:	Joint imaging with 99m-technetium pertechnetate		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	71	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR71000-C	**Service:**	Army
Event Title:	Placental imaging with 99m-technetium pertechnetate		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	71	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR71000-D	**Service:**	Army		
Event Title:	Postoperative treatment of women with stage III ovarian cancer by radiotherapy or chlorambucil either alone or in both sequences				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	71	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent *Forms Available*:		**Informed Consent Request:**		**Subject Names Identified:**	
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Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier
72080848

Authors
Griffiths CT. Grogan RH. Hall TC.

Title
Advanced ovarian cancer: primary treatment with surgery, radiotherapy, and chemotherapy.

Source
Cancer. 29(1):1-7, 1972 Jan.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

- Adenocarcinoma/dt [Drug Therapy]
- Adenocarcinoma/mo [Mortality]
- Adenocarcinoma/rt [Radiotherapy]
- Adenocarcinoma/su [Surgery]
- *Adenocarcinoma/th [Therapy]
- Carcinoma/dt [Drug Therapy]
- Carcinoma/mo [Mortality]
- Carcinoma/rt [Radiotherapy]
- Carcinoma/su [Surgery]
- *Carcinoma/th [Therapy]
- Chlorambucil/tu [Therapeutic Use]
- Cyclophosphamide/tu [Therapeutic Use]
- Female
- Human
- *Nitrogen Mustard Compounds/tu [Therapeutic Use]
- Ovarian Neoplasms/dt [Drug Therapy]
- Ovarian Neoplasms/mo [Mortality]
- Ovarian Neoplasms/rt [Radiotherapy]
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- *Ovarian Neoplasms/th [Therapy]
- Prognosis
- *Radioisotope Teletherapy

ADVANCED OVARIAN CANCER: PRIMARY TREATMENT WITH SURGERY, RADIOTHERAPY, AND CHEMOTHERAPY

C. THOMAS GRIFFITHS, MD,* RICHARD H. GROGAN, MD,† AND THOMAS C. HALL, MD‡

Surgery, radiotherapy, and chemotherapy can each palliate advanced ovarian cancer. A combination of these needs assessment. Sixty patients with pelvic or abdominal dissemination received postoperative irradiation. Fifteen Stage II and 19 Stage III patients having more than half the tumor excised and no palpable disease postoperatively (Group A) had median survival times (MST) of 39 and 26 months. The MST of 26 Stage III patients with palpable masses (Group B) was 9.5 months. Thirteen Group A patients receiving irradiation plus mustard therapy had a MST of 64+ months while 19 Group A patients with irradiation alone had a MST of 26 months. The mean free interval to recurrence was 18.5 months in the former category and 13.5 months in the latter ($p = .02$). In Group B, similar response rates occurred with irradiation or irradiation plus mustard therapy, but the latter regimen induced more complete responses of greater duration with doubling of the MST. These findings suggest that survival time in advanced ovarian cancer is inversely proportional to the residual tumor volume after primary therapy, and reduction in tumor volume by surgery and irradiation is enhanced by chemotherapy.

CARCINOMA OF THE OVARY HAS BECOME THE fourth leading cause of cancer deaths among American women, following cancer of the breast, colon, and lung.[1] The mortality rate has steadily increased to nearly three times that reported in 1930, without concurrent improvement in overall survival beyond a meager 30%. Because symptoms occur late, fewer than 30% of ovarian cancers are localized at the time of diagnosis.

The failure of attempts at earlier detection has stimulated interest in the treatment of disseminated ovarian cancer. The palliative value of surgery and the tumor's responsiveness to radiation therapy or chemotherapy alone suggest that a multiple therapeutic approach might achieve prolonged remissions or cure. The purpose of this report is to assess the possible exploitation of certain biological characteristics of the tumor by combining primary surgery with irradiation and chemotherapy.

SELECTIVE LITERATURE REVIEW

The recent literature indicates that the prognosis for disseminated ovarian cancer is not altogether bleak, depending on the treatment employed.

In reporting 230 cases of ovarian cancer treated between 1952 and 1961, Munnell observed a 40% 5-year survival rate which compared favorably with the 28% survival rates of two earlier series reported from the same institution.[21] The author concluded that the improvement in survival resulted from more aggressive treatment rather than from earlier diagnosis or fewer advanced cases. Since improved survival among patients with advanced disease was only evident when extensive surgical resection was followed by radiation therapy, Munnell's contention seems well founded.

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TABLE 1. Staging for Carcinoma of the Ovary (Adopted by the International Federation of Gynecology and Obstetrics and the American College of Obstetricians and Gynecologists)

Stage I	Growth limited to ovaries
	IA Unilateral
	IB Bilateral
	IC One or both ovaries plus ascites with malignant cells
Stage II	Growth involving one or both ovaries with pelvic extension
	IIA Extension and/or metastasis to the uterus and/or tubes only
	IIB Extension to other pelvic tissues
Stage III	Growth involving one or both ovaries with abdominal dissemination (omentum, the small intestine and its mesentery)
Stage IV	Growth involving one or both ovaries with distant metastases outside the peritoneal cavity

The prognosis for women with disseminated tumor at the time of primary operation appears related not only to the stage of disease (Table 1) but also to the extent of surgical resection.[10,13,14,18,21,22] For advanced cases, numerous authors have advised removal of the uterus, tubes, and ovaries and the exision of as much gross tumor as possible, provided the patient's life is not endangered. Although radiotherapy has been recommended prior to extended surgery,[18] most gynecologists still favor a "maximal surgical effort" at the time of initial laparotomy.[4,5,10,13,14,21,22,24,27] Such operations are termed "optimal" in this report, which implies that most of the tumor was excised.

Although the value of postoperative radiotherapy has been obscured by the lack of randomized series of patients, irradiated tumor masses frequently regress in size. In addition, the 5-year survival rate in Stage II, where residual tumor is certain but the volume is small and can be encompassed by a radiation field, is significantly increased by postoperative irradiation (Table 2).

In most series, Stage III survival rates have been unchanged by radiotherapy. However, when patients having optimal initial operations were considered separately, improved survival was evident in the irradiated groups.[18,22] This effect may depend upon the size of individual tumor masses. In a recently reported study, 25% of Stage III patients without residual palpable tumor survived 4 years following postoperative radiotherapy, whereas only 8% of irradiated patients with palpable tumor postoperatively survived.[5] With such larger tumors, radiation therapy and anticancer drugs are less likely to reach or affect the cells in the center of the mass.[6,19]

TABLE 2. 5-year Survival Rates in Stage II with and without Postoperative Irradiation, Collected Series[3,7,14,16,18,21,24,26]

	No.	5-year survival rate
Surgery only	110	19%
Surgery plus radiotherapy	190	42%

The observation in the early 1950's that nitrogen mustard could produce significant regression in the size of ovarian tumor masses has led to the widespread use of alkylating agents in the management of this disease. In recent years, the substituted mustards—chlorambucil, cyclophosphamide, and melphalan—have gained favor because of the convenience of oral administration and the relative absence of gastrointestinal side effects. An objective response to alkylating agents may be anticipated in 30% to 50% of patients. No single alkylating agent has demonstrated clinical superiority.[12]

The role of alkylating agents as surgical or radiation adjuvants is not well defined. An improved objective response rate to chlorambucil plus irradiation for ovarian cancr was described by Miller and Brenner,[20] in 1962. A modest increase in survival time was also noted by these authors and by others combining various alkylating agents, either concurrently or sequentially, with irradiation.[3,4,10,15,17,25] Only two of these studies had randomized controls.[4,15] In another study, chemotherapy combined with irradiation failed to increase the overall 5-year survival rate. However, in considering only patients who had optimal initial operations, i.e., less residual tumor volume, significant improvement in survival was evident in the combined therapy group as compared with the irradiation alone group.[27]

MATERIALS AND METHODS

From 1955 through 1965, 70 patients with disseminated epithelial ovarian cancer at the Boston Hospital for Women (Parkway Division) received radiation therapy following primary operation. Only patients with Stage II and Stage III epithelial cancers, as defined by the International Federation of Gynecology and Obstetrics (FIGO), were included (Table

1). Four patients with concurrent breast cancer were excluded as were two patients dying of their disease before radiotherapy was completed and two patients with endometrioid carcinomas treated with progestational agents. No follow-up information was available on 2 patients referred from afar for irradiation only, and these also were excluded.

The remaining 60 patients are classified in Table 3 by stage, histologic cell type, and histologic grade or degree of cellular differentiation. As indicated by the median survival times, both the stage and grade of the tumors correlated with survival. As expected, the histologic cell type had no influence on survival independent of stage and grade. The 37-month survival time of the single patient with a mucinous tumor was consistent with a Grade II designation.

SURGERY

The 60 patients were grouped according to their postoperative status. An optimal operation was defined as the excision of more than 50% of the tumor bulk leaving no masses large enough to palpate postoperatively. Thirty-four patients, 15 with Stage II disease and 19 with Stage III disease, had optimal operations and were designated Group A. Group B consisted of 26 Stage III patients with residual palpable masses. Although 11 Group B patients underwent partial resection of their tumor masses, only 3 of these had more than half the tumor removed. Biopsy alone was performed on the remaining 15. There was no consistent relationship between operation performed and anatomic extent of tumor among the Stage III patients.

RADIATION THERAPY

For 52 patients, postoperative irradiation consisted of 2200 R to 4500 R delivered to the mid-coronal plane of the abdomen. Eight patients received less than 1700 R because of intolerance to therapy or because a lower palliative dose was elected. One of three field sizes was chosen based on the anatomic extent of disease. Parallel opposing anterior and posterior portals were used. The inferior boundary of all fields was the lower margin of the obturator foramina. The superior boundary of the pelvic field was the mid-portion of L5. A combined pelvic and lower abdominal field was bounded superiorly by the inferior poles of the kidneys. For whole abdominal irradiation, the superior margin was the dome of the right diaphragm and the kidneys were shielded after 2000 R. There was no correlation between field size and survival exclusive of stage of disease and postoperative status.

The dose rate varied between 100 R and 200 R daily for 5 days weekly depending on the portal size and the patient's tolerance. Temporary interruption of therapy was common among those patients receiving concurrent chemotherapy. Since radiation sources, total dose, and duration of therapy varied widely, these variables were carefully analyzed. The only discernible effect of radiation dose or source was a diminished median survival time among the eight patients receiving less than 1700 R (Table 4). These patients were removed from further study, except for one who had a marked reduction in tumor size following only 1500 R and prolonged survival after additional irradiation. This patient was retained since her exclusion would unfavorably weight the patient group receiving radiation therapy alone. Dose was plotted against duration of therapy on semi-logarithmic graph paper to assess the combined effect of these variables.[11] Long-term survivors were widely scattered with no suggestion of a straight line relationship. All points fell varying distances below superimposed Strandqvist and Friedman curves. These distances did not correlate with survival times. Supplementary pelvic irradiation from an intra-uterine radium source was given to 6 patients without observed benefit.

TABLE 3. Relationship of Stage, Cell Type, and Histologic Grade to Survival Time

	Stage			Cell Type			Grade		
	IIA	IIB	III	Serous	Mucinous	Undiff.*	I	II	III
No. pts.	3	12	45	41	1	18	3	15	42
MST† (mos.)	65	43	14	18	37	20	96	37	16

* Undiff. = Undifferentiated adenocarcinoma.
† MST = Median survival time.

TABLE 4. Relationship of Radiation Dose and Source to Survival Time

Group		Dose (R)*				Source (>2200 R)	
		<1700	2200–2900	3000–3500	3500–4500	Ortho	Super
A	No. pts.	2	7	13	12	10	22
	MST† (mos.)	18	33	35	31	31	35
B	No. pts.	6	4	11	5	9	11
	MST† (mos.)	7	10	11	13	11	13

* To mid-coronal plane. Roentgen-rad conversion = 0.96.
† Median survival time.

CHEMOTHERAPY

Either chlorambucil 0.1 mg/kg p.o. daily or cyclophosphamide 1.5 mg/kg p.o. daily was administered concurrently with radiotherapy to 25 patients. In order to achieve optimal dosage, leukocyte counts were obtained twice weekly and the daily dose was titrated to maintain a mild leukopenia (WBC 3000–5000/mm³). Since leukopenia below 3000 frequently necessitated interruption of therapy, the drug was continued for 1 to 4 weeks after irradiation in 8 patients.

DEFINITION OF TREATMENT CATEGORIES

The patients in Groups A and B were subdivided into two treatment categories—irradiation alone and irradiation plus chemotherapy.

Systematic chemotherapy for ovarian cancer began in 1959, after which all patients seen by the chemotherapy consultants received alkylating agents during irradiation. Since requests for chemotherapy consultation were based upon the habit of specific surgeons rather than the severity of the disease, a random distribution of patients could be anticipated. Ten of the 28 irradiation alone patients were treated prior to 1959. However, there were no discernible differences in age or extent and grade of tumor between these and the irradiation alone patients treated after 1959.

The pretreatment characteristics of the 53 adequately irradiated patients, as well as their categorical distribution, are outlined in Table 5. The age difference between the four categories was not significant ($p = 0.4$). Since both the stage and the histologic grade correlated with survival time in this study, the Group A-irradiation alone category was favorably weighted by three Stage IIA and two Grade I tumors. The two treatment categories in Group B are comparable in this regard.

The effects of surgical resection and adjuvant chemotherapy were evaluated by comparing median survival times from the date of primary operation, and the mean disease-free intervals to recurrence for each Group A treatment category. In addition to survival time, objective response to treatment was compared in the two categories within Group B. Objective response was defined as a 50% or greater reduction in size of palpable tumor masses; a complete response denoted disappearance of all palpable tumor.

Both the gastrointestinal and hematologic toxicity observed in each patient was graded on a one-to-four plus scale as described elsewhere.*

RESULTS

The life-table method was used to plot survival curves by stage and surgical group for the original 60 patients (Fig. 1). The effect of

TABLE 5. Pretreatment Characteristics by Surgical Group and Treatment Category

Group	No. pts.	Mean age	Stage			Grade		
			IIA	IIB	III	I	II	III
A. Radiation therapy	19	57	3	6	10	2	5	12
Radiation therapy plus chemotherapy	13	52	0	5	8	0	5	8
B. Radiation therapy	9	59			9		1	8
Radiation therapy plus chemotherapy	12	61			12		1	11

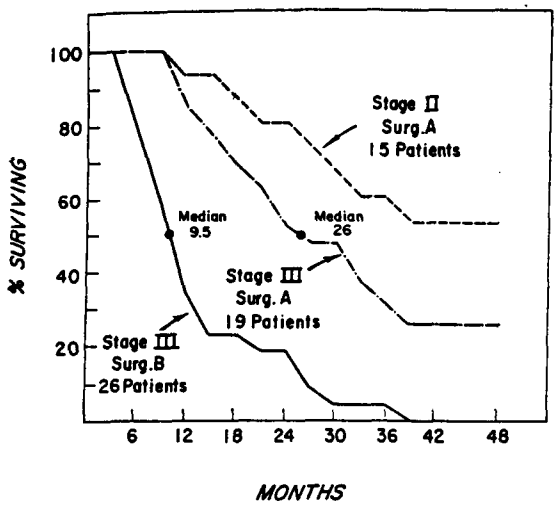


FIG. 1. Survival curves by stage and postoperative status.

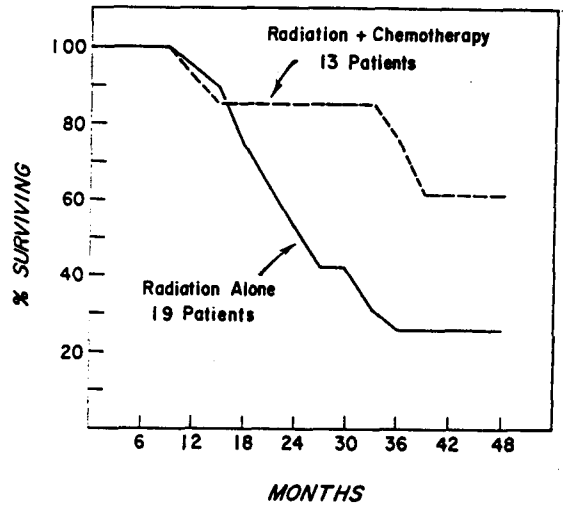


FIG. 2. Survival curves for Group A treatment categories (adequate irradiation).

optimal operation is apparent in comparing the Stage III curves. The Stage III-Group A curve more closely matches the Stage II curve up to 30 months. Despite some divergence at that point, four Stage III-Group A patients are living and well from 4 to 8 years after surgery. No patient in Group B, i.e., less than 50% of tumor excised or with residual palpable masses, survived 38 months.

Figure 2 shows the survival curves of the two Group A treatment categories (adequate irradiation). Although the most marked difference is seen between 15 and 33 months, the improved survival of the radiation therapy-chemotherapy category is sustained through 48 months.

As noted in Table 6, the median survival time of the Group A-combined treatment category is more than double that of the irradiation alone category. In considering only patients whose disease recurred, the mean free interval was significantly longer among those who had received both irradiation and chemotherapy (t test–$p = .02$).

Five Group A patients who received irradiation alone and six patients who received irradiation and chemotherapy are living and well from 4 to 9 years after primary operation. The distribution of survivors by stage and grade is shown in Table 7. Since the favorable stage-grade groupings are in the upper left corner, the irradiation alone survivors are those one would expect to survive after optimal surgery and radiotherapy. On the other hand, the combined treatment survivors occupy the lower right or least favorable position on the chart, and survival would not have been expected after surgery and irradiation alone.

In Group B (Table 6), irradiation or com-

TABLE 6. Comparison of Treatment Results within Each Surgical Group

	No. pts.	Mean FI* (mos.)		Objective responses	Median duration responses (mos.)	MST† (mos.)
Group A						
Radiation therapy	19	10.5	$p = .02$			26
Radiation therapy plus chemotherapy	13	18.3				64+
Group B						*responders*‖
Radiation therapy	9			5 (1 CR)‡	3	9
Radiation therapy plus chemotherapy	12			9 (5 CR)	7	18

*FI = Free interval.
† MST = Median survival time.
‡ CR = Complete response.
‖ Patients having partial or complete objective responses.

TABLE 7. Survivors for Four or More Years without Disease. Distribution by Stage and Histologic Grade (Group A)

Stage	Grade I	Grade II	Grade III
IIA	X	X	
IIB	X	X X C	C
III		C C	C C

X = X-ray alone.
C = X-ray plus chemotherapy.

bined treatment induced a similar proportion of objective responses. However, a greater proportion of complete responses was observed in the latter category, and the median duration of response was more than double that of the irradiation alone responses. No significant difference in median survival time of the whole group was observed (irradiation only—11 months, combined treatment—13 months). However, the median survival time of those responding to radiation therapy and chemotherapy was twice that of those responding to irradiation alone.

No patient suffered severe (3+) or life-threatening toxicity (4+). Although gastrointestinal toxicity was not increased by the addition of chemotherapy, the mean hematologic toxicity score was 1.7 in the combined treatment category and only 0.9 in the irradiation alone category. This is not surprising, since chemotherapy was not interrupted unless the WBC fell below 3000.

Twenty-five patients recieved chemotherapy for recurrent disease. Secondary alkylating agent therapy induced objective responses in 6 of 11 irradiation alone patients and in 6 of 14 combined treatment patients.

DISCUSSION

As a group, the epithelial carcinomas of the ovary are relatively non-invasive and usually disseminate by multiple implantations on serosal surfaces. The overall effect is that of progressive inanition resulting from interference with gastrointestinal function, the production of serous effusions, and the metabolic demands of an enlarging bulk of tumor tissue. Destruction of vital organs or lethal interference with their specific functions are infrequent. Intestinal obstruction is common but results from mechanical interference with peristalsis or bowel angulation and fixation rather than from invasion and compromise of the lumen. Lymph node involvement is frequent, but extra-abdominal dissemination by this route is slow. Hematogenous spread occurs rarely and is a late manifestation.[2,23] In general, the lethal potential of ovarian cancer appears to be related to the volume of proliferating tumor tissue within the peritoneal cavity.

The increased survival time of patients having optimal primary operations observed in this and other studies appears related to the volume of residual tumor. The accomplishment of an optimal operation may depend more upon the original volume and extent of the tumor than upon the skill and temerity of the surgeon. Nevertheless, the surgery-survival relationship supports the concept of a relationship between tumor volume and survival.

Prolonged survival was only achieved when tumor volume was significantly reduced by surgery (Group A). When the postoperative tumor volume is minimal and localized to the pelvis, irradiation alone may effect cure. However, with less favorable tumors which have spread into the abdomen chemotherapy was necessary for control in this study. The delay in recurrence with corresponding increases in survival time in the combined treatment category suggests that the reduction in tumor volume or the decrease in the number of tumor cells accomplished by irradiation was enhanced by chemotherapy. In considering those with palpable tumor (Group B) the additional reduction in tumor volume accomplished by chemotherapy resulted in a better quality of response. This was manifested by more complete responses and a doubling of both the duration of response and the median survival time of the responders.

The observation that multiple drug therapy can induce prolonged unmaintained remissions and possible cures in acute leukemia of childhood has stimulated interest in the concept of first-order kinetics and the chance of killing the last surviving cancer cell. The purpose in giving multiple anticancer agents is to bring about a stepwise fractional reduction in the number of cancer cells to the point where cure will result.[8] Frei's suggestion that these concepts are applicable to the treatment of ovarian cancer is supported by this study.[6]

Since hematopoietic toxicity frequently necessitated interruption of chemotherapy, it seems desirable to await the completion of adequate radiation therapy before beginning chemotherapy. Chemotherapy could then be given for a protracted period.

CONCLUSIONS

1. Survival time with advanced ovarian cancer is inversely proportional to the residual tumor volume at the conclusion of primary therapy.

2. The reduction in tumor volume accomplished by operation and irradiation is enhanced by chemotherapy.

3. The basis for the progressive increase in survival observed with the addition of each therapy is believed to be therapeutically-induced stepwise decrements in numbers of surviving tumor cells.

4. These conclusions are tentative, since they are based upon a retrospective analysis of non-randomized patients. However, the findings of this and other studies are encouraging and suggest the need for further evaluation in a cooperative controlled clinical trial.

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4. Decker, D. G., Mussey, E., and Malkasian, G. D.: Adjuvant therapy for advanced ovarian malignancy. *Amer. J. Obstet. Gynec.* 97:171–180, 1967.

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Event Number:	ACIR71000-E	**Service:**	Army		
Event Title:	Sequential lung scanning of tuberculosis patients under treatment (I-131 and Xe-133)				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	71	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR71000-F	**Service:**	Army		
Event Title:	Diagnosis of functioning metastasis from thyroid carcinoma with 131-I and scintillation camera				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	71	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR71000-G	**Service:**	Army
Event Title:	Comparison of radiation therapy plus chemotherapy in localized bronchogenic carcinoma, WRAMC 7103		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	71	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR71000-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: Holoye PY, et al: Combination chemotherapy and radiation therapy for small cell carcinoma. JAMA 237:1221-4, 1977 describes a similar clinical trial.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>
Unique Identifier
85151554
Authors
Holoye PY. Libnoch JA. Anderson T. Cox JD. Byhardt RW. Hoffmann RG.
Title
Combined methotrexate and high-dose vincristine chemotherapy with radiation therapy for small cell bronchogenic carcinoma.
Source
Cancer. 55(7):1436-45, 1985 Apr 1.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
MeSH Subject Headings

Adult
Aged
*Antineoplastic Agents, Combined/tu [Therapeutic Use]
Bone and Bones/ri [Radionuclide Imaging]
Brain/re [Radiation Effects]
Carcinoma, Bronchogenic/mo [Mortality]
*Carcinoma, Bronchogenic/th [Therapy]
Carcinoma, Small Cell/mo [Mortality]
*Carcinoma, Small Cell/th [Therapy]
Combined Modality Therapy
Cyclophosphamide/tu [Therapeutic Use]
Dactinomycin/tu [Therapeutic Use]
Evaluation Studies
Female
Human
Lung Neoplasms/mo [Mortality]
*Lung Neoplasms/th [Therapy]
Male
Mediastinum/re [Radiation Effects]
Methotrexate/ad [Administration & Dosage]
Middle Age
Neoplasm Metastasis
Neoplasm Recurrence, Local
Tomography, X-Ray Computed
Vincristine/ad [Administration & Dosage]
Vincristine/tu [Therapeutic Use]

Abstract
The addition of methotrexate to a previously described regimen of cyclophosphamide, Adriamycin (doxorubicin), and high-dose vincristine (VAC) was tested in 50 evaluable patients with small cell bronchogenic carcinoma. Prophylactic whole brain radiation therapy was given during the first chemotherapy course and consolidation radiation therapy was given to the mediastinum and primary site after achieving partial or complete remission. The addition of methotrexate did not improve the incidence of complete remission as compared to a previous regimen without it. The addition of radiation therapy improved the local control rate. The high-dose vincristine in this and a previous CAV study improved the incidence of complete remission in both limited and extensive disease presentation as compared with the authors' previous experience and induced an acceptable and reversible neurotoxicity. Moderate dose consolidation radiotherapy to the lung primary and mediastinum was effective in improving local control. The distinction between limited and extensive disease was found to be vague, as 22% of the patients could be shifted from one group to the other depending on definition. The evaluation of the various staging procedures indicates that bone scan gave a small number of truly abnormal tests. Isotopic brain and liver-spleen scan could be duplicated by computerized axial tomography (CAT). CAT scan of abdomen disclosed unexpected extension to the retroperitoneal nodes and adrenals. It is concluded that radionuclide studies of brain, liver-spleen, and bone can be eliminated and can be replaced by CAT scan of brain, chest, and abdomen. Site of recurrence indicate that most intrathoracic recurrences took place outside the radiation therapy field and in the pleural space. An incidental finding was the high incidence of intramedullary spinal cord recurrence.
Registry Numbers
0 (Antineoplastic Agents, Combined). 0 (VAC protocol). 50-18-0 (Cyclophosphamide). 50-76-0 (Dactinomycin). 57-22-7 (Vincristine). 59-05-2 (Methotrexate).

<2>
Unique Identifier
82228274
Authors

Stimson Library - OVID System

Byfield JE.

Title

Radiation therapy, local tumor control, and prognosis in bronchogenic carcinoma: current status and future prospects.

Source

American Journal of Surgery. 143(6):675-9, 1982 Jun.

Local Messages

STIMSON / BAMC

MeSH Subject Headings

Carcinoma, Bronchogenic/mo [Mortality]
*Carcinoma, Bronchogenic/rt [Radiotherapy]
Carcinoma, Bronchogenic/su [Surgery]
Carcinoma, Small Cell/rt [Radiotherapy]
Dose-Response Relationship, Radiation
Human
*Lung Neoplasms/rt [Radiotherapy]
Neoplasm Staging
Postoperative Care
Preoperative Care
Prognosis
Radiotherapy/td [Trends]

Abstract

While the overall prognosis for cure of bronchogenic carcinoma remains poor for most patients, there is a growing body of evidence suggesting that rationally optimized local therapy may benefit a significant subset of patients. Local therapy in this context includes any systemic therapy (such as chemotherapy or immunotherapy) that enhances local tumor control in the chest. Compared with many other human epithelial cancers, the total local tumor burden is large for many nonresectable lung cancers and not within the tolerance for control by radiation alone. Thus there is growing evidence that combined surgery and radiation treatment will improve results, especially in the differentiated tumors. Proper selection of patients is important and must include histologic stratification in addition to conventional TNM staging. It is projected that much useful research can be conducted during this decade using clinical tools now available and those that are being tested in early clinical trials throughout the world. Likely candidates for such improvements are both oxic and hypoxic radiosensitizing drugs that should decrease the death rate from uncontrolled local cancer in the chest.

Stimson Library - OVID System

<1>
Unique Identifier
77121449
Authors
Holoye PY. Samuels ML. Lanzotti VJ. Smith T. Barkley HT Jr.
Title
Combination chemotherapy and radiation therapy for small cell carcinoma.
Source
JAMA. 237(12):1221-4, 1977 Mar 21.
Local Messages
STIMSON / BAMC
MeSH Subject Headings
Brain Neoplasms
Carcinoma, Bronchogenic/dt [Drug Therapy]
Carcinoma, Bronchogenic/rt [Radiotherapy]
*Carcinoma, Bronchogenic/th [Therapy]
Carcinoma, Small Cell/dt [Drug Therapy]
Carcinoma, Small Cell/rt [Radiotherapy]
*Carcinoma, Small Cell/th [Therapy]
*Cyclophosphamide/ad [Administration & Dosage]
*Doxorubicin/ad [Administration & Dosage]
Drug Synergism
Drug Therapy, Combination
Female
Human
Lung Neoplasms/dt [Drug Therapy]
Lung Neoplasms/rt [Radiotherapy]
*Lung Neoplasms/th [Therapy]
Male
Neoplasm Metastasis
Remission, Spontaneous
Time Factors
*Vincristine/ad [Administration & Dosage]
Abstract
A three-drug combination of the chemotherapeutic agents cyclophosphamide, vincristine sulfate, and doxorubicin hydrochloride was given to 45 patients with small cell bronchogenic carcinoma. In addition, patients with limited disease received radiation therapy to the primary tumor. The complete response rate was 44%, with a median survival of 50 weeks. The partial response rate was 29%, with a median survival of 35 weeks. Patients who did not respond to therapy showed a median survival of only 12 weeks. Twenty percent of the patients had their first recurrence in the brain, and the median survival from the time of disease recurrence was ten weeks. Bone marrow metastasis was encountered in 24% of the patient population, but this did not adversely affect survival.

<2>
Unique Identifier
78167219
Authors
Bitran JD. Desser RK. DeMeester T. Shapiro CM. Billings A. Rubenstein L. Evans R. Colman M. Rao CY. Griem M. Golomb HM.
Title
Combined modality therapy for stage IIIMO non-oat cell bronchogenic carcinoma.
Source
Cancer Treatment Reports. 62(3):327-32, 1978 Mar.
MeSH Subject Headings
Carcinoma, Bronchogenic/dt [Drug Therapy]
Carcinoma, Bronchogenic/rt [Radiotherapy]
*Carcinoma, Bronchogenic/th [Therapy]
Clinical Trials
Cyclophosphamide/tu [Therapeutic Use]
Doxorubicin/tu [Therapeutic Use]
Drug Therapy, Combination
Human
Lung Neoplasms/dt [Drug Therapy]
Lung Neoplasms/rt [Radiotherapy]
*Lung Neoplasms/th [Therapy]
Methotrexate/tu [Therapeutic Use]
Neoplasm Staging
Procarbazine/tu [Therapeutic Use]
Abstract
Thirty-nine patients with stage IIIMO non-cell bronchogenic carcinoma (NOBC) were treated with combined modality therapy: radiation therapy and chemotherapy with cyclophosphamide, adriamycin, methotrexate, and procarbazine. The median survival for all patients treated was 9.6 months compared to 6.4 months for historical controls (P = 0.015). Patients who responded to the

treatment program had a significantly longer survival (median, 15.2 months) compared to nonresponders and historical controls (P less than 0.005). It is concluded that combined modality therapy is moderately effective therapy in stage IIIMO NOBC.

Event Number:	ACIR72000-A	**Service:**	Army
Event Title:	Gallium-67 citrate scans in detection of extent of testicular tumors		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Pinsky SM, et al: Gallium-67 tumor scanning. Semin Nuc Med, 6:397-409, 1976 states 67Ga is best available isotope for scanning this tumor.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
76260369
Authors
Jackson FI. Dierich HC. Lentle BC.
Title
Gallium-67 citrate scintiscanning in testicular neoplasia.
Source
Journal of the Canadian Association of Radiologists. 27(2):84-8, 1976 Jun.
MeSH Subject Headings
Adolescence
Adult
Case Report
Citrates/du [Diagnostic Use]
Cryptorchidism/co [Complications]
Dysgerminoma/co [Complications]
*Dysgerminoma/di [Diagnosis]
*Gallium Radioisotopes/du [Diagnostic Use]
Human
Male
Middle Age
Neoplasm Metastasis
*Radionuclide Imaging
Teratoma/di [Diagnosis]
*Testicular Neoplasms/di [Diagnosis]
Abstract
Gallium-67 citrate has been used to evaluate 19 patients with malignant tumors of the testes. Five patients with abnormal uptake of the radiotracer in the abdomen proved to have other evidence confirming metastatic spread to this site. Eight patients, with normal scan findings, surgery and lymphangiorgraphy, provided no conflicting evidence of disease although one of these patients has subsequently developed increased urinary gonadotrophin concentrations. Surgery caused an abnormal scan and such patients were excluded from the analysis pointing to the need for preoperative evaluation. The technique of 67-gallium scintigraphy appears of value in assessing the intra-abdominal spread of malignant tumors of the testes.

<2>
Unique Identifier
79057156
Authors
Sago AL. Montie JE. Novicki DE. Weber CH Jr.
Title
Accuracy of preoperative studies in staging nonseminomatous germ cell testicular tumors.
Source
Urology. 12(4):420-2, 1978 Oct.
Local Messages
BAMC
MeSH Subject Headings
Human
Lymph Nodes/pa [Pathology]
Lymphography
Male
Neoplasm Staging
Neoplasms, Germ Cell and Embryonal/di [Diagnosis]
*Neoplasms, Germ Cell and Embryonal/pa [Pathology]
Retrospective Studies
Testicular Neoplasms/di [Diagnosis]
*Testicular Neoplasms/pa [Pathology]
Urography
Abstract
The preoperative staging procedures used in 45 patients with surgical Stage I and Stage II nonseminomatous germ cell tumors of the testis were analyzed retrospectively. Our results indicate that gallium-67-citrate scan and supraclavicular lymph node biopsy add little information in the routine preoperative evaluation of these patients. Bipedal lymphangiography, in our experience, was no more accurate than excretory urograms in selecting patients with retroperitoneal disease and in addition provides no information regarding the status of the upper urinary tract. Thus, we suggest that physical examination, excretory urography, chest x-ray film, whole lung tomography, serum tumor markers, and liver scan provide sufficient information to proceed with surgical

treatment when appropriate.

<3>

Unique Identifier
77038449

Authors
Pinsky SM. Henkin RE.

Title
Gallium-67 tumor scanning. [Review]

Source
Seminars in Nuclear Medicine. 6(4):397-409, 1976 Oct.

Local Messages
BAMC

MeSH Subject Headings

Acute Disease
Adenocarcinoma/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Brain Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Carcinoma, Hepatocellular/di [Diagnosis]
Carcinoma, Small Cell/di [Diagnosis]
Carcinoma, Squamous Cell/di [Diagnosis]
*Gallium Radioisotopes/du [Diagnostic Use]
Head and Neck Neoplasms/di [Diagnosis]
Hodgkin's Disease/di [Diagnosis]
Human
Kidney Neoplasms/di [Diagnosis]
Leukemia/di [Diagnosis]
Liver Neoplasms/di [Diagnosis]
Lung Neoplasms/di [Diagnosis]
Lymphoma/di [Diagnosis]
Lymphoma, Non-Hodgkin's/di [Diagnosis]
Male
Melanoma/di [Diagnosis]
Neoplasm Metastasis
*Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Sarcoma, Ewing's/di [Diagnosis]
Testicular Neoplasms/di [Diagnosis]
Thyroid Neoplasms/di [Diagnosis]

Abstract

Since its introduction in 1969, 67Ga has become the most widely employed tumor-scanning agent in nuclear medicine. While 67Ga is far from being the ideal tumor-scanning agent, it remains the best available isotope for this purpose. Gallium-67-citrate has been found to be of value in the staging and reevaluation of lymphomas as well as in detecting the extent and recurrence of lung tumors, breast tumors, malignant melanomas, testicular tumors, brain tumors, and malignant lesions involving the liver. In order to obtain maximum diagnostic value from gallium scanning, several technical factors have to be taken into consideration as well as an understanding of the nature of "false-positive" scans. [References: 37]

Event Number:	ACIR72000-B	**Service:**	Army
Event Title:	Gallium-67 citrate in the differentiation of cold nodules found in the liver scan		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR72000-C	**Service:**	Army
Event Title:	Gallium-67 citrate in the differentiation of cold nodules found in the thyroid scan		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR72000-D	**Service:**	Army		
Event Title:	Increasing technetium-99m sulfur colloid uptake in bone marrow				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR72000-E	**Service:**	Army
Event Title:	Technetium-99m polyphosphate for bone imaging		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: Subramanian G, et al: Technetium-99m-methylene diphosphate -- a superior agent skeletal imaging: comparison with other technetium complexes. J Nuc Med 16:744-55, 1975 states technetium-99m is best available isotope for scanning bone.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
77025127
Authors
Thrall JH.
Title
Technetium-99m labeled agents for skeletal imaging. [Review]
Source
CRC Critical Reviews in Clinical Radiology & Nuclear Medicine. 8(1):1-31, 1976.
MeSH Subject Headings

*Bone Diseases/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Brain Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Carcinoma, Bronchogenic/di [Diagnosis]
*Diphosphonates/du [Diagnostic Use]
Female
Femoral Neoplasms/di [Diagnosis]
Human
Hyperostosis Frontalis Interna/di [Diagnosis]
Lung Neoplasms/di [Diagnosis]
Male
Myositis Ossificans/di [Diagnosis]
Neoplasm Metastasis
Osteitis Deformans/di [Diagnosis]
Osteoma, Osteoid/di [Diagnosis]
Osteonecrosis/di [Diagnosis]
Osteosarcoma/di [Diagnosis]
*Phosphates/du [Diagnostic Use]
Prostatic Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Rhabdomyosarcoma/di [Diagnosis]
Spinal Neoplasms/di [Diagnosis]
*Technetium/du [Diagnostic Use]

Abstract
Technetium-99m labeled radiopharmaceuticals are the currently accepted agents of choice for skeletal imaging. Their introduction in 1971 literally initiated a new era in clinical bone scanning. The development of techniques for reducing Tc(VII) with Sn(II) provided the means for complexing this useful radionuclide with various phosphorus-containing compounds which were already known to be avid bone seekers. Long chain polyphosphates were widely used at first, but have been superceded by pyrophosphate and its organic analogs, the diphosphonates. Pyrophosphate is characterized chemically by P--O--P bonds, and the diphosphonates by P--C--P bonds. The chemical forms of their complexes with tin and technetium are not known, but they behave in many respects as weak chelates. Labeling efficiencies for 99mTc of 95% or better are routinely obtainable with both "in house" preparations and commercial kits. Proper molar concentrations and ratios of phosphorus-compound to tin are necessary for both for good labeling and to achieve optimum tissue distribution. Unreacted TcO4- and reduced unbound 99mTc are both potential contaminants in these preparations and must be considered in radiochemical quality control. In vivo tissue distribution and kinetics of the 99mTc-Sn-phosphorus compounds differ with details of preparation, category of agent, and clinical status of the patient. Blood clearance is multi-exponential, with skeletal uptake and urinary clearance accounting for most of the activity. Scanning may be started in 2 1/2 to 4 hr, at which time skeletal activity is on the order of 40 to 50% of the injected dose. The primary indication for bone scanning remains the detection of metastases from extraskeletal malignancies, and the 99mTc labeled agents are more sensitive than either radiographs or Fluorine-18 for demonstrating active lesions. In addition, many new applications in evaluating benign bone disease have widened the clinical scope of skeletal imaging which is rapidly becoming one of the most important studies in nuclear medicine. [References: 128]

<2>
Unique Identifier
76104678
Authors
Davis MA. Jones AL.
Title
Comparison of 99mTc-labeled phosphate and phosphonate agents for skeletal imaging. [Review]
Source
Seminars in Nuclear Medicine. 6(1):19-31, 1976 Jan.
Local Messages

Stimson Library - OVID System

BAMC

MeSH Subject Headings

Animal
Bone and Bones/me [Metabolism]
*Bone Diseases/di [Diagnosis]
Comparative Study
Dogs
Human
*Organophosphorus Compounds/du [Diagnostic Use]
Organophosphorus Compounds/me [Metabolism]
*Phosphates/du [Diagnostic Use]
Phosphates/me [Metabolism]
Rabbits
*Radionuclide Imaging
Rats
Support, U.S. Gov't, P.H.S.
*Technetium

Abstract

The use of 99mTc-labeled phosphate and phosphonate compounds in place of 18F, 85Sr, and 87Sr for bone scintigraphy has become commonplace throughout the world in a relatively short time. The labeling of polyphosphate with 99mTc 4 years ago, followed rapidly by the introduction of 99mTc-labeled pyrophosphate for skeletal imaging, must therefore be regarded as a major contribution to the practice of diagnostic nuclear medicine. The markedly reduced patient radiation exposure and concomitant increase in photon detection efficiency derived from the more favorable physical decay characteristics of 99mTc led to increased sensitivity and resolution and in turn to improved diagnostic efficacy. The subsequent clinical use of the phosphonate complex 99mTc-HEDP represented a further modification of the same basic approach. Current clinical trials with 99mTc-labeled methylene diphosphonic acid (MDP), which appears to demonstrate enhanced biologic properties for scintigraphy of the osseous structures, is the latest example in this series of refinements. This article compares the technetium-labeled agents already in clinical use and, using animal data, contrasts them with several new multifunctional phosphonates and the novel inorganic compound sodium imidodiphosphate (IDP). In addition, an attempt is made to clarify the conflicting evidence in the nuclear medicine literature regarding the relationship between polyphosphate chain length and skeletal uptake. [References: 32]

Stimson Library - OVID System

<1>
Unique Identifier
76026740
Authors
Subramanian G. McAfee JG. Blair RJ. Kallfelz FA. Thomas FD.
Title
Technetium-99m-methylene diphosphonate--a superior agent for skeletal imaging: comparison with other technetium complexes.
Source
Journal of Nuclear Medicine. 16(8):744-55, 1975 Aug.
Local Messages
BAMC
MeSH Subject Headings
Animal
*Bone and Bones
Comparative Study
Diphosphates/du [Diagnostic Use]
Diphosphates/me [Metabolism]
Dogs
Erythrocytes/me [Metabolism]
Etidronate Disodium/du [Diagnostic Use]
Etidronate Disodium/me [Metabolism]
Human
Male
Mice
*Organophosphorus Compounds/du [Diagnostic Use]
Pelvic Bones/me [Metabolism]
Phosphates/du [Diagnostic Use]
Phosphates/me [Metabolism]
Rabbits
Radiation Dosage
*Radionuclide Imaging
*Technetium/du [Diagnostic Use]
Abstract
Methylene diphosphonate (MDP) was formulated as a complex of 99mTc for skeletal imaging. This agent was compared with three other bone-seeking technetium agents: ethane-1-hydroxy-1, 1-diphosphonate (EHDP), pyrophosphate, and polyphosphate. In tissue radioassay experiments in rodents, the technetium complexes of MDP and EHDP were similar, but skeletal concentration with both of these agents was higher than that with pyrophosphate or polyphosphate. The total-body retention of MDP and EHDP complexed with 95mTc was studied in beagle dogs for 35 days by excretion measurements and total-body counting and compared with polyphosphate and pertechnetate. The long-term retention was greater for MDP. The 5-day cumulative fecal excretion of 95mTc was low when administered as EHDP or polyphosphate complexes and negligible when administered as MDP complex. In six human volunteers the blood clearance of 99mTc-mdp was similar to that of 18F and significantly faster than that of 99mTc-EHDP. Pyrophosphate cleared from the blood much faster than polyphosphate but slower than the diphosphonates. The urinary excretion of the MDP complex was greater than for EHDP within the first 2-3 hr after injection. The 24-hr urinary excretion of pyrophosphate and polyphosphate complexes was not as complete as for the diphosphonates. All four 99mTc complexes proved satisfactory for clinical imaging studies. The MDP complex produced images of superior quality as early as 2 hr after administration, attributable to its more rapid clearance from the blood and soft tissues. On the contrary, a longer interval of 3-4 hr after injection was usually needed for 99mTc-EHDP; pyrophosphate and polyphosphate complexes regularly required a waiting period of 4 hr. Comparitive radiation dose estimates were made based on the available biologic distribution data for these 99mTc skeletal-localizing agents.

<2>
Unique Identifier
76026690
Authors
Snow RM. Weber DA.
Title
Time-dependent image quality using 99mTc-pyrophosphate.
Source
Journal of Nuclear Medicine. 16(10):879-82, 1975 Oct.
Local Messages

Stimson Library - OVID System

BAMC

MeSH Subject Headings

*Bone Neoplasms/di [Diagnosis]
Diagnosis, Computer-Assisted
Diphosphates/bl [Blood]
*Diphosphates/du [Diagnostic Use]
Diphosphates/ur [Urine]
Human
Neoplasm Metastasis
*Radionuclide Imaging
Support, U.S. Gov't, Non-P.H.S.
Support, U.S. Gov't, P.H.S.
Technetium
Time Factors

Abstract

Technetium-99m-labeled pyrophosphate has proved to be a useful skeletal-imaging agent. In this study, specific areas of the skeleton were imaged at times ranging from 1/2 to 6 1/2 hr after injection of 99mTc-pyrophosphate. Count ratios between abnormal and normal bone with respect to adjacent soft tissue were obtained for selected regions of interest on computer-stored scintillation camera images. The results show that image quality improves most rapidly from 1/2 to 2 hr, but further modest gain in quality does occur on views recorded between 2 and 6 hr. All lesions detected on the later images were also observed on the early ones and the ratios of uptake between abnormal and normal bone from computer-processed scintillation camera images did not change appreciably with time after the 1/2-hr images. Our results confirm the clinical impression that overall image quality is better on views obtained at least 3 hr after injection. Further delays in imaging beyond 3-4 hr after injection probably will not result in any appreciable gain in diagnostic accuracy.

<3>

Unique Identifier

75078747

Authors

Rosenthall L. Kaye M.

Title

Technetium-99m-pyrophosphate kinetics and imaging in metabolic bone disease.

Source

Journal of Nuclear Medicine. 16(1):33-9, 1975 Jan.

Local Messages

BAMC

MeSH Subject Headings

Adenocarcinoma/co [Complications]
Adult
Aged
Anorexia Nervosa/co [Complications]
*Bone Diseases/di [Diagnosis]
Bone Diseases/et [Etiology]
*Diphosphates/du [Diagnostic Use]
Female
Hemodialysis/ae [Adverse Effects]
Human
Hyperparathyroidism/co [Complications]
Hyperparathyroidism, Secondary/co [Complications]
Middle Age
Osteitis Deformans/di [Diagnosis]
Osteitis Fibrosa Cystica/di [Diagnosis]
Osteomalacia/di [Diagnosis]
Parathyroid Neoplasms/co [Complications]
*Radionuclide Imaging
*Technetium

Abstract

A study was undertaken to investigate the behavior of 99mTc-Sn-pyrophosphate complex in metabolic bone disease. Of clinical importance was the generalized increased periarticular bone accumulation of the radiopharmaceutical in osteomalacia and in combined osteomalacia and osteitis fibrosa as found in patients with chronic renal failure. The pattern in primary hyperparathyroidism was variable. There was no correlation between the initial rates of accumulation of the radiophosphate complex or its bone to soft-tissue uptake ratio at 5 hr when compared with the degree of osteomalacia and osteitis fibrosa. It is postulated that the 99mTc-Sn-pyrophosphate complex has greater affinity for immature collagen than the crystal surface.

<4>

Stimson Library - OVID System

Unique Identifier
75042594
Authors
Kelly JF. Cagle JD. Stevenson JS. Adler GJ.
Title
Technetium-99m radionuclide bone imaging for evaluating mandibular osseous allografts.
Source
Journal of Oral Surgery. 33(1):11-7, 1975 Jan.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings

Animal
*Bone and Bones/tr [Transplantation]
Bone Marrow/cy [Cytology]
Bone Marrow/tr [Transplantation]
Bone Marrow Transplantation
Bone Regeneration
*Bone Transplantation
Comparative Study
Disease Models, Animal
Dogs
Femur/tr [Transplantation]
Gamma Rays
*Mandible/ra [Radiography]
Mandible/su [Surgery]
Osteotomy
Radiography/is [Instrumentation]
Radionuclide Imaging/st [Standards]
Scintillation Counting
Support, U.S. Gov't, Non-P.H.S.
*Technetium
Transplantation, Autologous
Transplantation, Homologous

Abstract
Sequential interpretation of osseous repair, more sensitive than with conventional radiography, is possible with a noninvasive, nondestructive radio-nuclide method. The method was used in the evaluation of the progress of osteogenic activity in mandibular bone grafts in 24 beagle dogs.

<5>
Unique Identifier
76071084
Authors
Subramanian G. McAfee JG. Blair RJ. Rosenstreich M. Coco M. Duxbury CE.
Title
Technetium-99m-labeled stannous imidodiphosphate, a new radiodiagnostic agent for bone scanning: comparison with other 99mTc complexes.
Source
Journal of Nuclear Medicine. 16(12):1137-43, 1975 Dec.
Local Messages
BAMC
MeSH Subject Headings

Adult
Animal
*Bone Diseases/di [Diagnosis]
Comparative Study
Dogs
Female
Human
Lethal Dose 50
Organophosphorus Compounds/du [Diagnostic Use]
*Phosphates/du [Diagnostic Use]
Phosphates/to [Toxicity]
Phosphonic Acids/du [Diagnostic Use]
Rabbits
*Radionuclide Imaging
Strontium Radioisotopes/du [Diagnostic Use]
*Technetium
Tin/du [Diagnostic Use]

Abstract
Imidodiphosphate (IDP) is an analog of pyrophosphate and diphosphonate, with a P-N-P bond instead of P-O-P or P-C-P. We have labeled IDP with 99mTc quantitatively (98%) using stannous ions as the reducing/complexing agent in a freeze-dried kit form. Radiobioassay of this compound was carried out in rabbits and the results were compared with those of eight other Tc-labeled bone-imaging agents, using the performance of simultaneously administered 85Sr as a reference standard. The 99mTc-IDP concentrated 20% higher in the bone, and its soft-tissue and blood levels

were lower than with 85Sr. By comparison, the concentrations in the bone of the other 99mTc agents were 20% less than that of 85Sr. Regarding blood levels, Tc-IDP performed worse than the Tc-diphosphonate but better than the pyrophosphate and the other technetium complexes. Scintillation camera images of 99mTc-IDP in both rabbits and dogs showed excellent details of the skeleton. In a preliminary human study, images with 99mTc-IDP were somewhat inferior to those comparably procured with 99Tc-methylene diphosphonate, but count rates with the IDP complex were about twice those with the MDP compound. Because of its better bone uptake, however, it is suggested that 99mTc-IDP may be clinically useful in spite of its relatively slow blood clearance.

<6>
Unique Identifier
75184649
Authors
Merrick MV.
Title
Review article-Bone scanning.
Source
British Journal of Radiology. 48(569):327-51, 1975 May.
Local Messages
BAMC
MeSH Subject Headings

Adolescence
Aged
*Bone and Bones/me [Metabolism]
*Bone Diseases/di [Diagnosis]
Bone Diseases/me [Metabolism]
Bone Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Comparative Study
Female
Fluorine/me [Metabolism]
Half-Life
Human
Infection/di [Diagnosis]
Joint Diseases/di [Diagnosis]
Lymphoma/di [Diagnosis]
Male
Metabolic Clearance Rate
Middle Age
Neoplasm Metastasis
Osteitis Deformans/di [Diagnosis]
Phosphates/me [Metabolism]
Prostatic Neoplasms/di [Diagnosis]
Radiation Dosage
Radiation-Sensitizing Agents
Radionuclide Imaging/is [Instrumentation]
*Radionuclide Imaging
Technetium/me [Metabolism]
Wound Healing

Abstract
The discovery of a number of phosphate complexes labelled with 99-Tc-m that localize in bone has aroused wide-spread interest in bone scanning. The physiological properties of these and other clinically useful bone-seeking radiopharmaceuticals are compared, and their physical properties assessed in relation to the characteristics and limitations of avilable detector systems. A hypothesis is put forward to explain the behaviour of the technetium-labelled agents. It is concluded that although there are differences in biochemical behaviour between these agents, strontium and fluorine, all three may, under suitable conditions, give similar clinical information. The radiation dose received by the patients is least with the usual dose of 99-Tc-m and the blood clearance of the diphosphonate and pyrophosphate preparations is faster than that of strontium, although slower than fluorine. The psi-ray energy of technetium permits a much greater efficiency of detection than of fluorine. These factors, toghether with the general availability of 99-Tc-m and its relatively low cost make the technetium diphosphonate or pyrophosphate preparations the agents of choice for most skeletal radioisotope imaging. However, there are as yet insufficient follow-up studies to be able to assess the incidence of either false-negative or false-positive findings with these agents.

Event Number:	ACIR72000-F	**Service:**	Army		
Event Title:	Technetium-99m polyphosphate complexes as potential organ imaging and tumor localizing agents				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents

Event Abstract:

EVENT NUMBER: ACIR72000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: Humans may not have been exposed to ionizing radiation in this study.

Event Number:	ACIR72000-G	**Service:**	Army
Event Title:	Production of iodine-123		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: Production of iodine-123 does not involve exposure of humans to ionizing radiation.

Event Number:	ACIR72000-H	**Service:**	Army		
Event Title:	Study of the use of gallium-67 citrate in the staging of Hodgkin's disease				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-H
RECORDS: None available.
CIRS: No references found.
MEDLINE: Richman SD, et: Radionuclide studies in Hodgkin's disease and lymphomas. Semin Nuc Med 5:103-8, 1975 states gallium-67 is best available isotope for scanning Hodgkin's disease.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier
75121882

Authors
Richman SD. Levenson SM. Jones AE. Johnston GS.

Title
Radionuclide studies in Hodgkin's disease and lymphomas.

Source
Seminars in Nuclear Medicine. 5(1):103-8, 1975 Jan.

Local Messages
BAMC

MeSH Subject Headings

Adult
Bleomycin/ae [Adverse Effects]
Burkitt's Lymphoma/di [Diagnosis]
Burkitt's Lymphoma/dt [Drug Therapy]
Burkitt's Lymphoma/rt [Radiotherapy]
Child
Female
*Gallium/du [Diagnostic Use]
Gallium/me [Metabolism]
*Hodgkin's Disease/di [Diagnosis]
Hodgkin's Disease/pa [Pathology]
Hodgkin's Disease/rt [Radiotherapy]
Human
Liver Neoplasms/di [Diagnosis]
Lymph Nodes/me [Metabolism]
*Lymphoma/di [Diagnosis]
Lymphoma/pa [Pathology]
Lymphoma, Large-Cell/di [Diagnosis]
Lymphoma, Non-Hodgkin's/di [Diagnosis]
Male
Middle Age
Pneumonia/et [Etiology]
Pneumonia, Pneumocystis carinii/di [Diagnosis]
Protein Binding
*Radionuclide Imaging
Radiotherapy/ae [Adverse Effects]
Support, U.S. Gov't, P.H.S.

Abstract
A rational, multidisciplinary approach to Hodgkin's disease and the non-Hodgkin's lymphomas has been responsible for major advances in therapy. Invasive diagnostic procedures and exploratory laparotomy, with their associated complications, make nontraumatic radionuclide imaging most appealing in both the clinical staging of disease and in evaluating therapy. Gallium-67-citrate, the tumor scanning agent of the early 1970's, has demonstrated a marked affinity for Hodgkin's disease and the other lymphomas. False positives are few, with sensitivity greater than 70% throughout the spectrum of Hodgkin's disease and the histiocytic lymphomas. In addition to confirming sites of suspected neoplasm, this agent has proved useful in the detection of occult involvement. Moreover, resolution of abnormal gallium-67 concentrations on follow-up studies functions as a visual ancillary index of therapeutic response. The value of wholebody gallium-67 scintigraphy is further enhanced when used in conjunction with routine technetium brain, bone, liver, and spleen scans. While the diagnostic accuracy of gallium-67 studies has been limited in the abdomen due to bowel activity, our attempts to improve these results with the tumor-seeking radiopharmaceutical indium-111-Bleomycin were unrewarding and subsequently were discontinued. Finally, radionuclide lymphography has also been explored. Its diagnostic usefulness in detecting pelvic and abdominal lymph node involvement warrants further investigation.

<2>

Unique Identifier
75096905

Authors
Adler S. Parthasarathy KL. Bakshi SP. Stutzman L.

Title
Gallium-67-citrate scanning for the localization and staging of lymphomas.

Source
Journal of Nuclear Medicine. 16(4):255-60, 1975 Apr.

Local Messages
BAMC

MeSH Subject Headings

Adolescence
Adult
Aged
Child
Child, Preschool
False Negative Reactions
False Positive Reactions
Female
*Gallium/du [Diagnostic Use]
Hodgkin's Disease/di [Diagnosis]
Hodgkin's Disease/pa [Pathology]
Human
*Lymphoma/di [Diagnosis]
Lymphoma/pa [Pathology]
Lymphoma, Large-Cell/di [Diagnosis]
Lymphoma, Large-Cell/pa [Pathology]
Lymphoma, Non-Hodgkin's/di [Diagnosis]
Lymphoma, Non-Hodgkin's/pa [Pathology]
Male
Middle Age
Neoplasm Recurrence, Local/di [Diagnosis]
Radioisotopes/du [Diagnostic Use]
*Radionuclide Imaging

Abstract

One-hundred-eight 67Ga-citrate scans were evaluated in Hodgkin's and non-Hodgkin's lymphomas for staging, diagnosis of recurrence, and for determing the results of treatment. Accuracy as confirmed by comparing the scans with pathologic material or roentgenologic and clinical findings was found to be 83%. Known lymph node involvement was diagnosed correctly in 87% but accuracy was only 48% for extranodal areas. Bone lesions were diagnosed correctly in 83% compared with only 48% of lesions of the lungs and liver. Scans were 75% accurate in 28 patients scanned for initial staging. False negatives were present in 12%; recurrent tumor in an area of prior radiation therapy appeared to be the most common cause. There were 5% false positives. Gallium scanning is a useful adjunct to other methods of detecting lymphoma.

Stimson Library - OVID System

<1>

Unique Identifier
77207738

Authors
Johnston GS. Go MF. Benua RS. Larson SM. Andrews GA. Hubner KF.

Title
Gallium-67 citrate imaging in Hodgkin's disease: final report of cooperative group.

Source
Journal of Nuclear Medicine. 18(7):692-8, 1977 Jul.

Local Messages
BAMC

MeSH Subject Headings
*Gallium Radioisotopes/du [Diagnostic Use]
*Hodgkin's Disease/di [Diagnosis]
Hodgkin's Disease/dt [Drug Therapy]
Hodgkin's Disease/rt [Radiotherapy]
Human
Neoplasm Recurrence, Local/di [Diagnosis]
*Radionuclide Imaging
Support, U.S. Gov't, Non-P.H.S.
Support, U.S. Gov't, P.H.S.

Abstract
A large cooperative study of Ga-67 uptake in Hodgkin's disease showed that 88% of untreated patients had a positive uptake in one or more lesions. The percent of individual lesions seen on scan, however, was significantly lower; this indicated that negative findings at any one site do not argue strongly against the possiblilty of a lesion there. After treatment, the number of visualized lesions decreased sharply, but the exact role of Ga-67 in evaluating therapy is still not clear. Of the various histologic types of Hodgkin's disease, there was a high incidence of localization in all except the lymphocyte-predominance type, which showed a slightly lower uptake. No lesions less than 1 cm in diameter were successfully imaged and the size most easily detected was 4 cm in diameter. As expected, the imaging technique was much less successful for abdominal lesions than for those at other sites because of interfering concentration in bowel and liver. Both radiotherpy and chemotherapy tend to reverse the abnormalities seen on scan. The finding of a significant number of unsuspected positive lesions in asymptomatic patients returning for routine followup suggests that this is a distinctly valuable use of Ga-67, allowing early therpy for recurrences.

<2>

Unique Identifier
76116049

Authors
Horn NL. Ray GR. Kriss JP.

Title
Gallium-67 citrate scanning in Hodgkin's disease and non-Hodgkin's lymphoma.

Source
Cancer. 37(1):250-7, 1976 Jan.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings
Adolescence
Adult
Aged
Child
Evaluation Studies
Female
*Gallium Radioisotopes/du [Diagnostic Use]
*Hodgkin's Disease/di [Diagnosis]
Human
*Lymphoma/di [Diagnosis]
Male
Middle Age
Neoplasm Recurrence, Local/di [Diagnosis]
Radionuclide Imaging/mt [Methods]
*Radionuclide Imaging
Splenic Neoplasms/di [Diagnosis]
Support, U.S. Gov't, P.H.S.

Abstract
Gallium-67 citrate scintigraphy was performed in 33 patients with Hodgkin's disease and 25 patients with non-Hodgkin's lymphoma. Three hundred twenty-eight sites of potential involvement were

investigated. Confirmation of involvement was made by physical examination, roentgenographic evaluation and histopathologic examination of tissue obtained at diagnostic laparotomy. The results of scintigraphy correlated with all other clinicopathologic data in only 35% of patients, the true-positive rate being significantly higher above the diaphragm (61%) than below (40%). The overall true-positive and true-negative rates were 53 and 90%, respectively. A significant correlation existed between tumor histology and scanning accuracy; the true-positive rate in Hodgkin's disease was 74% compared to only 13% in patients with lymphocytic lymphoma. A similar variation of 67Ga concentration with tumor histology was also noted in 70 tissue specimens obtained from 28 patients at the time of diagnostic laparotomy or biopsy. The routine use of 67Ga-citrate to detect splenic involvement with tumor appeared to be precluded by the low true-positive and high false-negative rates of 57 and 27%, respectively. Gallium-67-citrate scintigraphy may be useful as an adjunct to established clinical staging procedures in untreated patients and in the detection of recurrent disease in treated patients. Our data indicate it is not sifficiently reliable to replace established methods presently used for clinical staging.

Stimson Library - OVID System

<1>

Unique Identifier

81254535

Authors

Kotlyarov EV. Elson JD. Quaife MA.

Title

Diagnostic efficiency of gallium 67 citrate scans in Hodgkin's disease.

Source

Annals of Clinical & Laboratory Science. 11(2):173-9, 1981 Mar-Apr.

MeSH Subject Headings

Adolescence
Adult
Aged
Female
*Gallium Radioisotopes/du [Diagnostic Use]
*Hodgkin's Disease/ri [Radionuclide Imaging]
Human
Male
Middle Age
Probability

Abstract

The findings of 49 67Ga citrate scans were correlated with all clinical information obtained by other diagnostic modalities in untreated and treated patients with histopathologically proven Hodgkin's disease (539 sites). Eleven nodal and extranodal sites were analyzed in terms of sensitivity, specificity, accuracy and, subsequently, by calculations of the posterior probability for the presence of disease at positive and negative sites by scan using Bayes' theorem. Lowest posterior probabilities for the presence of disease at positive sites were seen in lung parenchyma (66 percent) and spleen (67 percent) in untreated patients and for treated patients in adbominal nodes an inguinal nodes (both 66 percent), whereas the scan was a good method for detecting Hodgkin's disease at all other sites where posterior probabilities were near 100 percent. Figures for the posterior probability of disease at negative sites by scan showed it was a good modality for ruling out Hodgkin's involvement in axillary nodes, perihilar nodes, lung parenchyma, inguinal nodes, and bone marrow (all less than 10 percent); however, it was not as satisfactory in ruling out disease in untreated cervical nodes (20 percent), supraclavicular nodes (11 percent), and especially in the intraabdominal sites of spleen (35 percent), abdominal nodes (33 percent), and periaortic nodes (27 percent).

Registry Numbers

0 (Gallium Radioisotopes).

Event Number:	ACIR72000-I	**Service:**	Army		
Event Title:	Intergroup rhabdomyosarcoma study: Role of postoperative radiotherapy and combinations of dactinomycin, vincristine, cyclophosphamide, and Adriamycin in childhood, CALGB 7291 rhabdomyosarcoma				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-I
RECORDS: None available.
CIRS: No references found.
MEDLINE: Raney RB, et al: Rhabdomyosarcoma of the ear in childhood. A report from the Intergroup Rhabdomyosarcoma Study. Cancer 51:2356-61, 1983 may be a description of this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier
76001156

Authors
Wilbur JR. Sutow WW. Sullivan MP. Gottlieb JA.

Title
Chemotherapy of sarcomas.

Source
Cancer. 36(2):765-9, 1975 Aug.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adolescence
Adult
Child
Cyclophosphamide/ad [Administration & Dosage]
Cyclophosphamide/tu [Therapeutic Use]
Dacarbazine/ad [Administration & Dosage]
Dacarbazine/tu [Therapeutic Use]
Dactinomycin/ad [Administration & Dosage]
Dactinomycin/tu [Therapeutic Use]
Doxorubicin/ad [Administration & Dosage]
Doxorubicin/tu [Therapeutic Use]
Female
Human
Rhabdomyosarcoma/dt [Drug Therapy]
*Sarcoma/dt [Drug Therapy]
Vincristine/ad [Administration & Dosage]
Vincristine/tu [Therapeutic Use]

Abstract
The development of intensive treatment techniques with combination chemotherapy, radiation, and selected surgery has produced dramatic improvements in the treatment of soft tissue sarcomas. This has been best demonstrated in the long-term disease-free survival of a majority of children with inoperable or metastatic embryonal rhabdomyosarcoma treated with VAC chemotherapy (vincristine, actinomycin D, and cyclophosphamide). The addition of adriamycin and imidazole carboxamide to the combination therapy program for adults with soft tissue sarcomas has resulted in significant improvements in their response rates as well.

Stimson Library - OVID System

<1>

Unique Identifier
72118630

Authors
Pratt CB. Hustu HO. Fleming ID. Pinkel D.

Title
Coordinated treatment of childhood rhabdomyosarcoma with surgery, radiotherapy, and combination chemotherapy.

Source
Cancer Research. 32(3):606-10, 1972 Mar.

Local Messages
BAMC

MeSH Subject Headings

Adolescence
Adult
Anemia/ci [Chemically Induced]
Child
Child, Preschool
Clinical Trials
Constipation/ci [Chemically Induced]
Cyclophosphamide/ae [Adverse Effects]
Cyclophosphamide/tu [Therapeutic Use]
Cystitis/ci [Chemically Induced]
Dactinomycin/ae [Adverse Effects]
Dactinomycin/tu [Therapeutic Use]
Drug Combinations
Eating Disorders/ci [Chemically Induced]
Female
Human
Infant
Leukopenia/ci [Chemically Induced]
Male
Neoplasm Regression, Spontaneous
Radioisotope Teletherapy
Remission, Spontaneous
Rhabdomyosarcoma/dt [Drug Therapy]
Rhabdomyosarcoma/rt [Radiotherapy]
Rhabdomyosarcoma/su [Surgery]
*Rhabdomyosarcoma/th [Therapy]
Stomatitis/ci [Chemically Induced]
Thrombocytopenia/ci [Chemically Induced]
Vincristine/ae [Adverse Effects]
Vincristine/tu [Therapeutic Use]

Stimson Library - OVID System

<1>

Unique Identifier
83206368

Authors
Raney RB Jr. Lawrence W Jr. Maurer HM. Lindberg RD. Newton WA Jr. Ragab AH. Tefft M. Foulkes MA.

Title
Rhabdomyosarcoma of the ear in childhood. A report from the Intergroup Rhabdomyosarcoma Study-I.

Source
Cancer. 51(12):2356-61, 1983 Jun 15.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings
- Child
- Clinical Trials
- Comparative Study
- Ear Neoplasms/dt [Drug Therapy]
- Ear Neoplasms/rt [Radiotherapy]
- *Ear Neoplasms/su [Surgery]
- *Ear, External
- *Ear, Middle
- Follow-Up Studies
- Human
- Lung Neoplasms/rt [Radiotherapy]
- Lung Neoplasms/sc [Secondary]
- Meningeal Neoplasms/dt [Drug Therapy]
- Meningeal Neoplasms/rt [Radiotherapy]
- Neoplasm Recurrence, Local
- Radiotherapy Dosage
- Random Allocation
- Rhabdomyosarcoma/dt [Drug Therapy]
- Rhabdomyosarcoma/rt [Radiotherapy]
- *Rhabdomyosarcoma/su [Surgery]
- Support, U.S. Gov't, P.H.S.

Abstract
Twenty-four children with rhabdomyosarcoma of the middle (22 patients) or external ear (two patients) were entered on the Intergroup Rhabdomyosarcoma Study-I protocol from 1972 to 1978. After surgery, treatment consisted of radiotherapy plus vincristine, dactinomycin, and cyclophosphamide, with or without Adriamycin. Nine of 19 patients (47%) who presented with localized sarcoma are free of disease at 2.2 to 6.5 years after diagnosis (median, 3.6 years). One is alive with regional recurrence at 6.7 years; another developed a contralateral cerebellar astrocytoma 4.4 years from diagnosis and died without evidence of rhabdomyosarcoma 2 months later. The other 13 children died of recurrent rhabdomyosarcoma at 5 to 25 months after diagnosis (median duration of survival, 10 months). Outcome was influenced by the presence of diagnosis of signs indicating meningeal extension; death rates were 5 of 5 patients with intracranial tumor, 3 of 4 with petrous bone erosion, 2 of 6 with facial nerve palsy, and 3 of 9 with no initial evidence of meningeal extension.

><2>

Unique Identifier
82058063

Authors
Maurer HM.

Title
The Intergroup Rhabdomyosarcoma Study: update, november 1978.

Source
National Cancer Institute Monographs. (56):61-8, 1981 Apr.

MeSH Subject Headings
- Adolescence
- Adult
- Antineoplastic Agents/ad [Administration & Dosage]
- Child
- Child, Preschool
- Clinical Trials
- Male
- Postoperative Care
- Prognosis
- Rhabdomyosarcoma/mo [Mortality]
- Rhabdomyosarcoma/pa [Pathology]
- *Rhabdomyosarcoma/th [Therapy]
- Soft Tissue Neoplasms/mo [Mortality]

Comparative Study
Drug Therapy, Combination
Female
Head and Neck Neoplasms/mo [Mortality]
Head and Neck Neoplasms/pa [Pathology]
Head and Neck Neoplasms/th [Therapy]
Human
Soft Tissue Neoplasms/pa [Pathology]
Soft Tissue Neoplasms/th [Therapy]
Support, U.S. Gov't, P.H.S.
Urogenital Neoplasms/mo [Mortality]
Urogenital Neoplasms/pa [Pathology]
Urogenital Neoplasms/th [Therapy]

Abstract

Between 1972 and 1978, 780 patients were entered on the Intergroup Rhabdomyosarcoma Study. The results indicated that postoperative irradiation of the tumor bed was unnecessary when vincristine, dactinomycin, and cyclophosphamide (VAC) were given in combination for 2 years after excision of a localized tumor (group I). This drug combination was no better than vincristine combined with dactinomycin given to patients with grossly resected tumors (group II) who also received postoperative irradiation. Intensive chemotherapy regimens, "pulse" VAC alone or VAC combined with adriamycin followed by irradiation, were equally effective in advanced stages and induced tumor regression in 85% of the patients who had gross residual disease after surgery (group III) and in 68--74% of the patients with metastatic disease at diagnosis (group IV). Two-year relapse-free survival rates were projected to be 83% for group I, 72% for group II, 65% for group III, and 28% for group IV; the overall survival rates were higher for each group. Patients with local and distant recurrences had equally poor prognoses.

Registry Numbers

0 (Antineoplastic Agents).

<3>

Unique Identifier

82058039

Authors

Lawrence W Jr. Hays DM.

Title

Surgical lessons from the Intergroup Rhabdomyosarcoma Study.

Source

National Cancer Institute Monographs. (56):159-63, 1981 Apr.

MeSH Subject Headings

Arm
Child
Clinical Trials
Female
Head and Neck Neoplasms/su [Surgery]
Human
Leg
Neoplasm Metastasis
Neoplasm Staging
Neoplasms/su [Surgery]
Rhabdomyosarcoma/pa [Pathology]
*Rhabdomyosarcoma/su [Surgery]
Soft Tissue Neoplasms/su [Surgery]
Support, U.S. Gov't, P.H.S.
Urogenital Neoplasms/su [Surgery]

Abstract

The Intergroup Rhabdomyosarcoma Study, initiated in 1972, has admitted more than 700 patients with childhood rhabdomyosarcoma in a 6-year period. Although it was designed primarily to answer specific questions about various aspects of radiotherapy and chemotherapy, some lessons have been learned concerning the surgical approach to this disease. Operative resection, which is not always feasible, is determined chiefly by the clinical stage and anatomic site. Thus far, data for some anatomic sites indicated that total gross resection at some point in the treatment schedule achieved better results than did incomplete resection. A possible exception to this occurred when the orbit is the primary site. The incidence of lymphatic metastases from lesions in some anatomic sites (e.g., paratesticular, pelvic genito-urinary, and extremity) was higher than was previously appreciated. This finding will influence decisions concerning surgical biopsy or dissection of regional lymph nodes for many of these lesions. Differences in histology, particularly those relating to the alveolar type, indicated the need for a more aggressive approach to selected lesions, but we need more data to confirm this determination. Lastly, patients who initially received radiotherapy or chemotherapy to pelvic sites have had striking benefits, and this finding should encourage the

development of schedules that specify operative resection of these lesions later in the program rather than as the initial treatment.

Event Number:	ACIR72000-J	**Service:**	Army
Event Title:	Intergroup Ewing's sarcoma study. Clinical trial of radiotherapy and chemotherapy in managing non-metastatic Ewing's sarcoma, CALGB 7299		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-J
RECORDS: None available.
CIRS: No references found.
MEDLINE: Perez CA, et al: Analysis of local tumor control in Ewing's sarcoma: preliminary results of a cooperative intergroup study. Cancer 40:2864-73, 1977 may be a description of this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier
78062445

Authors
Perez CA. Razek A. Tefft M. Nesbit M. Burgert EO Jr. Kissane J. Vietti T. Gehan EA.

Title
Analysis of local tumor control in Ewing's sarcoma: preliminary results of a cooperative intergroup study.

Source
Cancer. 40(6):2864-73, 1977 Dec.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adolescence
Adult
*Antineoplastic Agents/tu [Therapeutic Use]
*Bone Neoplasms/th [Therapy]
Child
Child, Preschool
Clinical Trials
Comparative Study
Cyclophosphamide/tu [Therapeutic Use]
Dactinomycin/tu [Therapeutic Use]
Dose-Response Relationship, Radiation
Doxorubicin/tu [Therapeutic Use]
Drug Therapy, Combination
Female
Human
Infant
Lung Neoplasms/th [Therapy]
Male
Neoplasm Metastasis/th [Therapy]
Pelvic Neoplasms/th [Therapy]
Remission, Spontaneous
*Sarcoma, Ewing's/th [Therapy]
Support, U.S. Gov't, P.H.S.
Time Factors
Vincristine/tu [Therapeutic Use]

Stimson Library - OVID System

<1>
Unique Identifier
73063127
Authors
Hustu HO. Pinkel D. Pratt CB.
Title
Treatment of clinically localized Ewing's sarcoma with radiotherapy and combination chemotherapy.
Source
Cancer. 30(6):1522-7, 1972 Dec.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
MeSH Subject Headings
Adolescence
Adult
Antineoplastic Agents/tu [Therapeutic Use]
Child
Child, Preschool
Cobalt Isotopes/ad [Administration & Dosage]
Cyclophosphamide/ad [Administration & Dosage]
Cyclophosphamide/ae [Adverse Effects]
Cyclophosphamide/tu [Therapeutic Use]
Female
Human
Male
Radioisotope Teletherapy
Radiotherapy/ae [Adverse Effects]
Radiotherapy Dosage
Remission, Spontaneous
Sarcoma, Ewing's/dt [Drug Therapy]
*Sarcoma, Ewing's/rt [Radiotherapy]
Time Factors
Vincristine/ad [Administration & Dosage]
Vincristine/ae [Adverse Effects]
Vincristine/tu [Therapeutic Use]

<2>
Unique Identifier
68364952
Authors
Hustu HO. Holton C. James D Jr. Pinkel D.
Title
Treatment of Ewing's sarcoma with concurrent radiotherapy and chemotherapy.
Source
Journal of Pediatrics. 73(2):249-51, 1968 Aug.
Local Messages
BAMC
MeSH Subject Headings
Adolescence
Adult
Bone Neoplasms/rt [Radiotherapy]
*Bone Neoplasms/th [Therapy]
Cyclophosphamide/tu [Therapeutic Use]
Female
Human
Male
Radiotherapy Dosage
Sarcoma, Ewing's/mo [Mortality]
Sarcoma, Ewing's/rt [Radiotherapy]
*Sarcoma, Ewing's/th [Therapy]
Vincristine/tu [Therapeutic Use]

Stimson Library - OVID System

<1>

Unique Identifier
83102818

Authors
Thomas PR. Foulkes MA. Gilula LA. Burgert EO. Evans RG. Kissane J. Nesbit ME. Pritchard DJ. Tefft M. Vietti TJ.

Title
Primary Ewing's sarcoma of the ribs. A report from the intergroup Ewing's sarcoma study.

Source
Cancer. 51(6):1021-7, 1983 Mar 15.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adolescence
Adult
Antineoplastic Agents/ad [Administration & Dosage]
Bone Neoplasms/dt [Drug Therapy]
Bone Neoplasms/rt [Radiotherapy]
Bone Neoplasms/sc [Secondary]
*Bone Neoplasms/su [Surgery]
Child
Child, Preschool
Drug Therapy, Combination
Female
Human
Infant
Lung Neoplasms/sc [Secondary]
Male
Neoplasm Recurrence, Local
Prognosis
Random Allocation
*Ribs
Sarcoma, Ewing's/dt [Drug Therapy]
Sarcoma, Ewing's/rt [Radiotherapy]
*Sarcoma, Ewing's/su [Surgery]
Support, U.S. Gov't, P.H.S.

Abstract
Thirty-six patients with primary Ewing's sarcoma of the ribs have been reviewed. Of these, 21 had clinically localized disease at diagnosis and were entered on protocol IESS 7299, eight had regional and seven metastatic disease at diagnosis and were entered on protocol 7450. The 21 with localized disease were treated with surgical excision or biopsy, followed by local radiotherapy (in all but one patient) and randomization to one of three chemotherapy regimens. Eleven patients (52%) remain disease-free for periods ranging from 18 to 64 months, respectively. Seven of eight patients who underwent complete surgical excision of the primary lesion remain disease-free, compared with four of 12 (excluding one patient who died disease-free) who remain disease-free after partial excision or biopsy. However, analysis of size of tumor at diagnosis reveals that smaller primary tumors have a better prognosis irrespective of extent of surgery. Protocol IESS 7450, consisted of radiotherapy to all areas of known disease and four drug chemotherapy. Four (50%) with regional disease but none with metastatic disease have remained alive and continuously disease-free. It is concluded that an aggressive approach to Ewing's sarcoma of the ribs is justified by the results, as even regional disease may be curable. The apparent prognostic advantage for those patients undergoing surgical excision may be explained by patient selection.

Registry Numbers
0 (Antineoplastic Agents).

<2>

Unique Identifier
80243831

Authors
Razek A. Perez CA. Tefft M. Nesbit M. Vietti T. Burgert EO Jr. Kissane J. Pritchard DJ. Gehan EA.

Title
Intergroup Ewing's Sarcoma Study: local control related to radiation dose, volume, and site of primary lesion in Ewing's sarcoma.

Source
Cancer. 46(3):516-21, 1980 Aug 1.

Local Messages

Stimson Library - OVID System

STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Bone Neoplasms/pa [Pathology]
Bone Neoplasms/rt [Radiotherapy]
Human
Lung Neoplasms/pa [Pathology]
Lung Neoplasms/rt [Radiotherapy]
Lung Neoplasms/sc [Secondary]
Neoplasm Metastasis
Neoplasm Recurrence, Local
Pelvic Bones
Prognosis
Radiotherapy Dosage
Radiotherapy, High-Energy
Sarcoma, Ewing's/pa [Pathology]
*Sarcoma, Ewing's/rt [Radiotherapy]
Skull Neoplasms/rt [Radiotherapy]
Spinal Neoplasms/rt [Radiotherapy]
Support, U.S. Gov't, P.H.S.

Abstract

One hundred ninety-three patients with localized Ewing's sarcoma treated at participating instutitions of the Intergroup Ewing's Sarcoma Study form the basis for this report. All patients received radiation therapy to the primary lesion and were randomized to receive vincristine, actinomycin-D, and cyclophosphamide (VAC) plus adriamycin (Regimen I); VAC alone (Regimen II); or VAC and bilateral pulmonary irradiation (Regimen III). Local control was achieved in 96% of the patients in Regimen I, and 86% of the patients in both Regimens II and III. The median duration of follow up was 83 weeks and median survival time was 172 weeks. Incremental doses of irradiation did not result in significant changes in the rate of local control of primary lesions. The local control rate was the same (92%) for tumors treated by means of whole-bone irradiation or with at least 5 cm of free margin around the lesion. The local control rate decreased to 79% for lesions treated with less than 5-cm margin. Excellent control was obtained for lesions involving the skull or spine (100%), and distal bones (fibula, 96% and tibia, 91%). Less favorable control rates were noted for pelvic and humeral lesions (84% and 79%, respectively). Bilateral pulmonary irradiation for subclinical disease played a role in lowering the incidence of lung metastases from 38% to 20% for patients treated with VAC. Lung metastases were similarly decreased (10%) when adriamycin was added to VAC chemotherapy.

<3>

Unique Identifier

82128491

Authors

Le Mevel BP.

Title

Ewing's sarcoma: 5-year survival under adjuvant chemotherapy.

Source

Recent Results in Cancer Research. 80:128-33, 1982.

MeSH Subject Headings

Clinical Trials
Cyclophosphamide/tu [Therapeutic Use]
Dactinomycin/tu [Therapeutic Use]
Doxorubicin/tu [Therapeutic Use]
Drug Administration Schedule
Drug Therapy, Combination
Follow-Up Studies
Human
Procarbazine/tu [Therapeutic Use]
*Sarcoma, Ewing's/dt [Drug Therapy]
Sarcoma, Ewing's/rt [Radiotherapy]
Vincristine/tu [Therapeutic Use]

Abstract

The results at 5 years of an adjuvant chemotherapy trial in primary Ewing's sarcoma, started in 1973, are presented. Twenty-three eligible patients were treated with radiotherapy (60 Gy) to the tumor site and given polychemotherapy either using the E3 protocol (12 patients) or the E76 protocol (11 patients). Overall survival at 5 years was 37%, with 34% disease-free survival. There was no significant difference between the two chemotherapy groups. Only three local relapses and one major orthopedic failure were reported. Among the distal relapses, no metastases to the brain have been observed. These results are encouraging and show a clear improvement over the classical survival rate. However, further improvement is necessary and may be obtained by using new active drugs, as well as earlier and probably more aggressive cyclic chemotherapy. But primary surgical amputation and prophylactic CNS irradiation are not indicated for treatment of primary

Ewing's sarcoma.
Registry Numbers
23214-92-8 (Doxorubicin). 50-18-0 (Cyclophosphamide). 50-76-0 (Dactinomycin). 57-22-7 (Vincristine). 671-16-9 (Procarbazine).

<4>
Unique Identifier
82058057
Authors
Vietti TJ. Gehan EA. Nesbit ME Jr. Burgert EO Jr. Pilepich M. Tefft M. Kissane J. Pritchard DJ.
Title
Multimodal therapy in metastatic Ewing's sarcoma: an Intergroup Study.
Source
National Cancer Institute Monographs. (56):279-84, 1981 Apr.
MeSH Subject Headings
Bone Neoplasms/mo [Mortality]
*Bone Neoplasms/th [Therapy]
Child
Child, Preschool
Clinical Trials
Cyclophosphamide/ad [Administration & Dosage]
Cyclophosphamide/ae [Adverse Effects]
Doxorubicin/ad [Administration & Dosage]
Doxorubicin/ae [Adverse Effects]
Drug Therapy, Combination
Human
Infant
Male
Neoplasm Metastasis
Sarcoma, Ewing's/mo [Mortality]
*Sarcoma, Ewing's/th [Therapy]
Support, U.S. Gov't, P.H.S.
Vincristine/ad [Administration & Dosage]
Vincristine/ae [Adverse Effects]
Abstract
Multimodal therapy consisting of radiation therapy to all areas of gross disease and intensive combination chemotherapy was administered to 44 patients with Ewing's sarcoma. Seven of these patients had regional disease and the others had clinical evidence of distant metastases. The median duration of time on study for all patients was 75 weeks. A complete response occurred in 31 of the patients and 17 are currently free of disease. Four deaths resulted from complications of therapy; 2 were due to infection and 2 due to adriamycin-related cardiomyopathy.
Registry Numbers
23214-92-8 (Doxorubicin). 50-18-0 (Cyclophosphamide). 57-22-7 (Vincristine).

<5>
Unique Identifier
82058055
Authors
Perez CA. Tefft M. Nesbit ME Jr. Burgert EO Jr. Vietti TJ. Kissane J. Pritchard DJ. Gehan EA.
Title
Radiation therapy in the multimodal management of Ewing's sarcoma of bone: report of the Intergroup Ewing's Sarcoma Study.
Source
National Cancer Institute Monographs. (56):263-71, 1981 Apr.
MeSH Subject Headings
Adolescence
Adult
Bone Neoplasms/dt [Drug Therapy]
Bone Neoplasms/mo [Mortality]
*Bone Neoplasms/rt [Radiotherapy]
Child
Child, Preschool
Clinical Trials
Cyclophosphamide/ad [Administration &
Drug Therapy, Combination
Female
Human
Infant
Lung/re [Radiation Effects]
Lung Neoplasms/sc [Secondary]
Male
Neoplasm Metastasis
Sarcoma, Ewing's/dt [Drug Therapy]

Dosage]
Dactinomycin/ad [Administration & Dosage]
Dose-Response Relationship, Radiation
Doxorubicin/ad [Administration & Dosage]
Sarcoma, Ewing's/mo [Mortality]
*Sarcoma, Ewing's/rt [Radiotherapy]
Support, U.S. Gov't, P.H.S.
Vincristine/ad [Administration & Dosage]

Abstract

This paper is a progress report on the role of radiation therapy (RT) in local tumor control and the decreased incidence of pulmonary metastasis in 251 patients entered in the Intergroup Ewing's Sarcoma Study. All were followed for more that 1 year, and their RT records were reviewed. Doses to the primary tumor in the range of 4,500--6,500 rad were administered over approximately 5 to 6 weeks in combination with 4 drugs, i.e., vincristine (VCR), dactinomycin (DAC), cyclophosphamide (CY), and adriamycin, or only the first 3. One group of patients received the 3 drugs and bilateral pulmonary irradiation (approximately 1,500 rad in 2 wk). Preliminary analysis showed a local primary tumor control of approximately 90%. Patients with lesions in the pelvis and humerus had local failure rates of 13% (7 of 54) and 21.4% (6 of 28), respectively. The treatment groups differed significantly in the incidence of pulmonary metastasis. Patients treated with the 4 drugs (regimen 1) had a 14% incidence, whereas 42% of those treated with only 3 drugs (regimen 2) developed pulmonary metastases. Of all patients treated with 3 drugs and pulmonary irradiation (regimen 3), 18% showed lung metastases. The study indicated that intensive chemotherapy and RT significantly improved the local control and survival of patients with localized Ewing's sarcoma. However, the high incidence of metastasis indicated the need for more effective systemic chemotherapy for further improvement of treatment results. More studies are needed so we can define the volume to be treated and the optimal dose of irradiation to determine a therapeutic strategy that will yield optimal survival and tumor control with the fewest sequelae.

Registry Numbers

23214-92-8 (Doxorubicin). 50-18-0 (Cyclophosphamide). 50-76-0 (Dactinomycin). 57-22-7 (Vincristine).

<6>

Unique Identifier

82058054

Authors

Nesbit ME Jr. Perez CA. Tefft M. Burgert EO Jr. Vietti TJ. Kissane J. Pritchard DJ. Gehan EA.

Title

Multimodal therapy for the management of primary, nonmetastatic Ewing's sarcoma of bone: an Intergroup Study.

Source

National Cancer Institute Monographs. (56):255-62, 1981 Apr.

MeSH Subject Headings

Adolescence
Adult
Bone Neoplasms/mo [Mortality]
Bone Neoplasms/rt [Radiotherapy]
*Bone Neoplasms/th [Therapy]
Child
Clinical Trials
Cyclophosphamide/ad [Administration & Dosage]
Dactinomycin/ad [Administration & Dosage]
Doxorubicin/ad [Administration & Dosage]
Drug Therapy, Combination
Female
Human
Male
Neoplasm Metastasis
Prognosis
Sarcoma, Ewing's/mo [Mortality]
Sarcoma, Ewing's/rt [Radiotherapy]
*Sarcoma, Ewing's/th [Therapy]
Support, U.S. Gov't, P.H.S.
Time Factors
Vincristine/ad [Administration & Dosage]

Abstract

A randomized study of 264 children and adults with previously untreated localized Ewing's sarcoma of bone was undertaken between 1973 and 1978 by 83 institutions of three national study groups: Children's Cancer Study Group, Southwest Oncology Group, and Cancer and Leukemia Group B. The Intergroup Study was designed to determine if the addition of adriamycin (ADR) or bilateral pulmonary radiotherapy (RT) to vincristine, dactinomycin, and cyclophosphamide (VAC therapy)

would improve survival and reduce local recurrences and metastases. All patients received RT to the primary lesion, and the survival rate after 3 years was 65%. The most effective treatment regimen was VAC plus ADR; 74% of the patients were free of disease at 2 years. The lengths of disease-free status and survival of patients treated with VAC plus ADR or VAC plus RT did not differ. However, both regimens were significantly superior to treatment with VAC alone. The addition of ADR or bilateral pulmonary RT to VAC was highly advantageous to patients with nonpelvic primaries. Bone and lung were the major sites of distant relapse, but the addition of bilateral pulmonary RT showed no advantage over that of ADR in reducing the occurrence of lung metastases. These recent results should eliminate some of the pessimism that has accompanied a diagnosis of Ewing's sarcoma, although distant metastases continued to be a major reason for failure in the control of this tumor. Survival of these patients can be improved through well-controlled clinical trials designed to determine optimal adjuvant chemotherapy and treatment of the primary lesion.

Registry Numbers
23214-92-8 (Doxorubicin). 50-18-0 (Cyclophosphamide). 50-76-0 (Dactinomycin). 57-22-7 (Vincristine).

<7>
Unique Identifier
81167697
Authors
Perez CA. Tefft M. Nesbit M. Burgert EO Jr. Vietti T. Kissane J. Pritchard DJ. Gehan EA.
Title
The role of radiation therapy in the management of non-metastatic Ewing's sarcoma of bone. Report of the Intergroup Ewing's Sarcoma Study.
Source
International Journal of Radiation Oncology, Biology, Physics. 7(2):141-9, 1981 Feb.
Local Messages
CHECK HOLDINGS LISTS
MeSH Subject Headings
- Adolescence
- Bone Neoplasms/dt [Drug Therapy]
- *Bone Neoplasms/rt [Radiotherapy]
- Child
- Child, Preschool
- Clinical Trials
- Cyclophosphamide/ad [Administration & Dosage]
- Dactinomycin/ad [Administration & Dosage]
- Doxorubicin/ad [Administration & Dosage]
- Drug Therapy, Combination
- Human
- Lung Neoplasms/pc [Prevention & Control]
- Lung Neoplasms/sc [Secondary]
- Neoplasm Recurrence, Local
- Radiotherapy Dosage
- Random Allocation
- Sarcoma, Ewing's/dt [Drug Therapy]
- *Sarcoma, Ewing's/rt [Radiotherapy]
- Sarcoma, Ewing's/sc [Secondary]
- Support, U.S. Gov't, P.H.S.
- Vincristine/ad [Administration & Dosage]

Registry Numbers
23214-92-8 (Doxorubicin). 50-18-0 (Cyclophosphamide). 50-76-0 (Dactinomycin). 57-22-7 (Vincristine).

<8>
Unique Identifier
81235388
Authors
Pant GC. Sanyal B. Sahni K. Tuli SM. Srivastava TP.
Title
Ewing's sarcoma: A combined approach in the management.
Source
Clinical Radiology. 32(4):471-4, 1981 Jul.
Local Messages

Stimson Library - OVID System

BAMC

MeSH Subject Headings

Adolescence
Adult
*Bone Neoplasms/rt [Radiotherapy]
Child
Child, Preschool
Cyclophosphamide/tu [Therapeutic Use]
Dactinomycin/tu [Therapeutic Use]
Drug Therapy, Combination
Female
Follow-Up Studies
Human
Male
Radiotherapy Dosage
*Sarcoma, Ewing's/rt [Radiotherapy]

Abstract

Twenty-seven histologically confirmed cases of localised Ewing's sarcoma were treated by two different regimes. Radiotherapy alone was used in 13 cases and a combination of chemotherapy and radiotherapy in 14. Single agent chemotherapy (cyclophosphamide) was given sequentially in nine patients and cyclophosphamide and actinomycin-D in five. There is a significant difference in the response to these different regimes. Only 69.2% of patients treated by radiotherapy alone were disease-free, for a median period of 10.4 months and metastases were noticed in 53.8% of cases. The disease-free survival in patients treated by combination therapy (radiotherapy and chemotherapy) was 18.4 months and metastases were seen in only 42.9%. However, no metastases were seen in patients who received cyclophosphamide and actinomycin-D, during a period of 14 months and only one patient showed residual disease. It is concluded that the addition of cyclophosphamide alone is not adequate in the management of Ewing's sarcoma. Actinomycin-D in addition to cyclophosphamide has improved the disease-free survival period significantly. The optimum dose of radiotherapy and its combination with other chemotherapeutic agents needs further trials to find the best and most suitable schedule.

Registry Numbers

50-18-0 (Cyclophosphamide). 50-76-0 (Dactinomycin).

<9>

Unique Identifier

81186015

Authors

Pilepich MV. Vietti TJ. Nesbit ME. Tefft M. Kissane J. Burgert EO. Pritchard D.

Title

Radiotherapy and combination chemotherapy in advanced Ewing's Sarcoma-Intergroup study.

Source

Cancer. 47(8):1930-6, 1981 Apr 15.

Local Messages

STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adolescence
Antineoplastic Agents/ae [Adverse Effects]
Antineoplastic Agents/tu [Therapeutic Use]
Child
Child, Preschool
Drug Therapy, Combination
Female
Human
Infant
Male
Neoplasm Invasiveness
Neoplasm Metastasis
Neoplasm Recurrence, Local
Prognosis
Radiotherapy/ae [Adverse Effects]
Radiotherapy Dosage
Sarcoma, Ewing's/dt [Drug Therapy]
*Sarcoma, Ewing's/rt [Radiotherapy]
Support, U.S. Gov't, P.H.S.

Abstract

Forty-four patients with metastatic (36 patients) and advanced regional (eight patients) Ewing's sarcoma were treated on a protocol employing intensive combination chemotherapy and radiotherapy to all sites of overt disease (primary site and metastatic sites). Thirty-one patients achieved a complete remission, eight achieved a partial remission, and five patients did not respond to treatment. Of the 31 patients who achieved a complete remission (12 had metastases and six had regional spread), 18 remained disease-free with a median follow-up of 34 months, while

recurrences occurred in nine patients. Four patients died of complications of treatment. Although late relapses can still be expected, it appears that intensive multimodal management in metastatic Ewing's sarcoma can produce prolonged disease-free survival and possibly cure in a significant percentage of patients.

Registry Numbers

0 (Antineoplastic Agents).

Event Number:	ACIR72000-K	**Service:**	Army
Event Title:	Conservative surgery following preoperative radiotherapy of lung cancer		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-K
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

Event Number:	ACIR72000-L	**Service:**	Army		
Event Title:	Evaluation of gallium-67 as a scanning agent for malignant neoplasms				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-L
RECORDS: None available.
CIRS: No references found.
MEDLINE: Teates CD, et al: Tumor detection with 67Ga-citrate: a literature survey (1970-1978). Clin Nuc Med, 3:456-60, 1978 reports this imaging technique.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier

74307042

Authors

Kornblut AD. Silberstein EB. Saenger EL. Shumrick DA.

Title

Scintiscanning with gallium citrate 67. Diagnosis of head and neck malignant neoplasms.

Source

Archives of Otolaryngology. 100(3):201-5, 1974 Sep.

MeSH Subject Headings

Aged
*Carcinoma, Squamous Cell/di [Diagnosis]
Carcinoma, Squamous Cell/ra [Radiography]
Carcinoma, Squamous Cell/su [Surgery]
Citrates
*Facial Neoplasms/di [Diagnosis]
Facial Neoplasms/ra [Radiography]
Facial Neoplasms/su [Surgery]
Gallium/ad [Administration & Dosage]
*Gallium/du [Diagnostic Use]
*Head and Neck Neoplasms/di [Diagnosis]
Head and Neck Neoplasms/ra [Radiography]
Head and Neck Neoplasms/su [Surgery]
Human
Injections, Intravenous
Male
*Mouth Neoplasms/di [Diagnosis]
Mouth Neoplasms/ra [Radiography]
Mouth Neoplasms/su [Surgery]
Radioisotopes/ad [Administration & Dosage]
*Radioisotopes/du [Diagnostic Use]
*Radionuclide Imaging

Stimson Library - OVID System

<1>
Unique Identifier
76116089
Authors
Kaplan WD. Adelstein SJ.
Title
The radionuclide identification of tumors.
Source
Cancer. 37(1 suppl):487-95, 1976 Jan.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
MeSH Subject Headings
Antibodies, Neoplasm
Bleomycin/du [Diagnostic Use]
Brain Neoplasms/di [Diagnosis]
Carcinoembryonic Antigen
Carcinoma, Bronchogenic/di [Diagnosis]
*Gallium Radioisotopes/du [Diagnostic Use]
Hodgkin's Disease/di [Diagnosis]
Human
*Indium/du [Diagnostic Use]
Leukemia/di [Diagnosis]
Lung Neoplasms/di [Diagnosis]
Neoplasm Metastasis/di [Diagnosis]
Neoplasm Recurrence, Local/di [Diagnosis]
*Neoplasms/di [Diagnosis]
Neoplasms/ra [Radiography]
Radioisotopes
*Radionuclide Imaging
Support, U.S. Gov't, P.H.S.
Technetium/du [Diagnostic Use]
Tetracycline/du [Diagnostic Use]
Abstract
Tumor-seeking radiopharmaceuticals have been employed in the diagnosis of primary neoplasms, in the detection of distant disease, particularly in the localization of tumor foci to facilitate biopsies and the planning of radiation portals, and in assessing the response to tumor therapy. At the present, there is no ideal tumor-scanning agent. However, several approaches appear to be useful and offer promise for further study. The greatest experience has been with Gallium-67, which has major utility in the staging of Hodgkin's disease, in the diagnosis of bronchogenic carcinoma, in the detection of certain metastatic brain tumors, in the identification of recurrent disease, and in the noninvasive diagnosis of leukemic complications. A number of radiolabeled antibiotic and chemotherapeutic agents have shown promise, including tetracycline and bleomycin. A major drawback, however, of these agents which is shared with Gallium-67 is that they appear to be sequestered by inflammatory as well as neoplastic tissue. A most intriguing approach is the use of radiolabeled antibodies to tumor-associated antigens. Animal and clinical experiments have employed antifibrin, antifibrinogen, anticarcinoembryonic antigen, and antiferritin. Theoretically, agents such as these should allow for greater tumor specificity.

<2>
Unique Identifier
79106093
Authors
Teates CD. Bray ST. Williamson BR.
Title
Tumor detection with 67Ga-citrate: a literature survey (1970--1978). [Review]
Source
Clinical Nuclear Medicine. 3(12):456-60, 1978 Dec.
Local Messages
BAMC
MeSH Subject Headings
Citrates/du [Diagnostic Use]
False Negative Reactions
False Positive Reactions
*Gallium Radioisotopes/du [Diagnostic Use]
Human
*Neoplasms/ri [Radionuclide Imaging]
Abstract
Gallium scan detection of various neoplasms is tabulated by anatomic and histologic categories. The experience with many neoplasms is sufficient to accurately predict the likelihood of detection

with gallium. This tabulation helps to point out other areas where the cumulative experience is insufficient to accurately predict sensitivity rates. [References: 51]

<3>
Unique Identifier
79056151
Authors
Hauser MF. Alderson PO.
Title
Gallium-67 imaging in abdominal disease. [Review]
Source
Seminars in Nuclear Medicine. 8(3):251-70, 1978 Jul.
Local Messages
BAMC
MeSH Subject Headings
*Abdomen
Abdominal Neoplasms/ri [Radionuclide Imaging]
Abscess/et [Etiology]
Abscess/ri [Radionuclide Imaging]
Child
Child, Preschool
Comparative Study
False Positive Reactions
*Gallium Radioisotopes/du [Diagnostic Use]
Human
*Inflammation/ri [Radionuclide Imaging]
Kidney Diseases/ri [Radionuclide Imaging]
Liver Diseases/ri [Radionuclide Imaging]
Lymph Nodes
Lymphoma/pa [Pathology]
Lymphoma/ri [Radionuclide Imaging]
Neoplasm Metastasis
Neoplasm Recurrence, Local
Neuroblastoma/ri [Radionuclide Imaging]
Postoperative Complications/ri [Radionuclide Imaging]
Sarcoma/ri [Radionuclide Imaging]
Soft Tissue Neoplasms/ri [Radionuclide Imaging]
Tomography, X-Ray Computed
Ultrasonics/du [Diagnostic Use]
Abstract
Gallium-67 imaging is useful for detecting sites of intra-abdominal inflammation, including subphrenic abscesses, postoperative infection, pyelonephritis or perinephric abscesses, and peritonitis. Positive images may be obtained within several hours of injection, but are more reliable at 24 hr. The results may be used to guide ultrasound or computed tomography studies, which give a detailed anatomic picture of the abscess. Gallium-67 imaging has also been used to detect abdominal neoplasms, but results are less impressive. Abdominal lymphoma is detected in just over 50% of sites. Gastrointestinal, renal, and gynecologic neoplasms are detected even less frequently. However, 67Ga is useful for detecting recurrence of 67Ga-avid neoplasms, and has been reliable in detecting hepatomas and nodal spread of seminoma. When used selectively in patients with neoplastic disease and suspected abscesses, 67Ga is an effective method for diagnosing abdominal disease. [References: 100]

<4>
Unique Identifier
79056150
Authors

Diagnosis, Differential
Evaluation Studies
*Gallium Radioisotopes/du [Diagnostic Use]
Human
Lung Diseases/ra [Radiography]
*Lung Diseases/ri [Radionuclide Imaging]
Lung Neoplasms/ri [Radionuclide Imaging]
Lymphoma/ri [Radionuclide Imaging]
Pneumoconiosis/ri [Radionuclide Imaging]
Pneumonia/ri [Radionuclide Imaging]
Pulmonary Fibrosis/ri [Radionuclide Imaging]
Sarcoidosis/ri [Radionuclide Imaging]
Support, U.S. Gov't, P.H.S.
Tuberculosis, Pulmonary/ri [Radionuclide Imaging]

Abstract

Imaging of the chest cage with gallium-67 (67Ga) citrate is relatively easier to perform and interpret than imaging of the abdomen, because normally pulmonary concentration is low after 48 hr and physiologic accumulation in bones and breast can be recognized by its distribution. Modern scintillation detectors, particularly large field cameras with multiple pulse-height analyzers, give substantially better gallium images than those available in the past. Because of the nonspecific affinity of gallium through neoplastic and inflammatory processes, its value in the differential diagnosis of pulmonary diseases is limited. However, based on the literature and our own observations in over 1100 patients with established diagnosis of a variety of pulmonary diseases, we feel that the judicious use of 67Ga in selected patients is helpful in answering specific questions. These include preoperative evaluation of hilar and mediastinal involvement in pulmonary neoplasms, differential diagnosis of pulmonary infarctions and bacterial pneumonias, evaluation of pulmonary infiltrates regarding infectious etiology, follow-up of sarcoidosis on corticosteroid treatment, assessment of inflammatory activity in interstitial fibrosis and, in selected cases, early detection of neoplastic and inflammatory diseases before radiography becomes abnormal, such as diffuse carcinomatosis and Pneumocystis carinii infection. Potential large-scale application of pulmonary gallium imaging could be found in the screening of subjects exposed occupationally to noxious dust and in long-term serial follow-up of pulmonary tuberculosis patients for treatment response and reactivation. However, it remains to be seen whether gallium imaging statistically provides essential additional information in these indications when compared to cheaper conventional techniques.

<5>

Unique Identifier

77023643

Authors

Edeling CJ.

Title

Tumor imaging in children.

Source

Cancer. 38(2):921-30, 1976 Aug.

Local Messages

STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Abdominal Neoplasms/di [Diagnosis]
Adolescence
Bone Neoplasms/di [Diagnosis]
Child
Child, Preschool
Female
Gallium Radioisotopes
Human
Infant
Jaw Neoplasms/di [Diagnosis]
Male
Mediastinal Neoplasms/di [Diagnosis]
Neoplasm Metastasis
Neoplasm Recurrence, Local/di [Diagnosis]
*Neoplasms/di [Diagnosis]
Orbital Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Thoracic Neoplasms/di [Diagnosis]

Abstract

Twnty-six children suspected of having malignant diseases were examined by Gallium-67 scintigraphy. The scintigrams were pathologic in the 20 children with final diagnoses of malignancy. The lesions visualized by scintigraphy were 12 primary tumors and eight cases of local recurrence or dissemination of cancer. Gallium-67 did not accumulate in a hematoma of the liver, and

scintigraphy was normal in five children with no clinical evidence of tumor recurrence. Several cases are reported and the clinical value of 67Ca scintigraphy for detection and control of childhood neoplasms is emphasized.

Stimson Library - OVID System

<1>

Unique Identifier
82061903

Authors
Chew FS. Hudson TM. Enneking WF.

Title
Radionuclide imaging of soft tissue neoplasms.

Source
Seminars in Nuclear Medicine. 11(4):266-76, 1981 Oct.

Local Messages
BAMC

MeSH Subject Headings
Bleomycin/du [Diagnostic Use]
Bone Neoplasms/ri [Radionuclide Imaging]
Diphosphonates/du [Diagnostic Use]
Gallium Radioisotopes/du [Diagnostic Use]
Human
Methods
Sarcoma/ri [Radionuclide Imaging]
*Soft Tissue Neoplasms/ri [Radionuclide Imaging]
Technetium/du [Diagnostic Use]

Abstract
Two classes of radiopharmaceuticals may be used for imaging tumors of the musculoskeletal system. The first is comprised of soft tissue or tumor specific agents such as gallium-67, bleomycin, and radionuclide-labeled antibodies, which may be useful for detecting and localizing these tumors. The other class of tracer is comprised of those with avidity for bone. The 99mTc-labeled-phosphate skeletal imaging compounds have been found to localize in a variety of soft tissue lesions, including benign and malignant tumors. In 1972, Enneking began to include bone scans in the preoperative evaluation of soft tissue masses. Later, he and his associates reported that these scans were useful in planning operative treatment of sarcomas by detecting involvement of bone by the tumors. Nearly all malignant soft tissue tumors take up bone-seeking radiopharmaceuticals, and bone involvement was indicated in two-thirds of the scans we reviewed. About half of benign soft tissue lesions had normal scans, but the other half showed uptake within the lesion and a few also showed bone involvement. Careful, thorough imaging technique is essential to proper evaluation. Multiple, high-resolution static gamma camera images in different projections are necessary to adequately demonstrate the presence or absence of soft tissue abnormality and to define the precise relationship of the tumor to the adjacent bone.

Registry Numbers
0 (Diphosphonates). 0 (Gallium Radioisotopes). 11056-06-7 (Bleomycin). 23288-60-0 (Sodium Pertechnetate Tc 99m). 52997-55-4 (technetium Tc 99m diphosphonate). 7440-26-8 (Technetium).

<2>

Unique Identifier
85040420

Authors
Bekerman C. Hoffer PB. Bitran JD.

Title
The role of gallium-67 in the clinical evaluation of cancer. [Review]

Source
Seminars in Nuclear Medicine. 14(4):296-323, 1984 Oct.

Local Messages
BAMC

MeSH Subject Headings
Adult
Aged
Bone Neoplasms/ri [Radionuclide Imaging]
Brain Neoplasms/ri [Radionuclide Imaging]
Breast Neoplasms/ri [Radionuclide Imaging]
Child
Liver Neoplasms/ri [Radionuclide Imaging]
Lung Neoplasms/ri [Radionuclide Imaging]
Lymphoma/ri [Radionuclide Imaging]
Male
Melanoma/ri [Radionuclide Imaging]
Middle Age

Female
*Gallium Radioisotopes/du [Diagnostic Use]
Gastrointestinal Neoplasms/ri [Radionuclide Imaging]
Head and Neck Neoplasms/ri [Radionuclide Imaging]
Human
*Neoplasms/ri [Radionuclide Imaging]
Nephroblastoma/ri [Radionuclide Imaging]
Neuroblastoma/ri [Radionuclide Imaging]
Testicular Neoplasms/ri [Radionuclide Imaging]
Thyroid Neoplasms/ri [Radionuclide Imaging]

Abstract

This review is based primarily on historic data, and it examines the indications for and limitations of gallium-67 scanning in the evaluation of patients with neoplasms. The use of gallium-67 scans is discussed according to tumor type, and data from the most representative and comprehensive studies are included. The results described, some of which were obtained primarily with older imaging techniques, should be regarded as representing the minimum that can be expected from application of this imaging procedure. [References: 188]

Registry Numbers

0 (Gallium Radioisotopes).

<3>

Unique Identifier

81015517

Authors

Bekerman C. Hoffer PB. Bitran JD. Gupta RG.

Title

Gallium-67 citrate imaging studies of the lung. [Review]

Source

Seminars in Nuclear Medicine. 10(3):286-301, 1980 Jul.

Local Messages

BAMC

MeSH Subject Headings

Adenocarcinoma/ri [Radionuclide Imaging]
Adolescence
Adult
Carcinoma, Squamous Cell/ri [Radionuclide Imaging]
Child
Female
*Gallium Radioisotopes/du [Diagnostic Use]
Hodgkin's Disease/ri [Radionuclide Imaging]
Human
*Lung Diseases/ri [Radionuclide Imaging]
Lung Neoplasms/ri [Radionuclide Imaging]
Lung Neoplasms/sc [Secondary]
Lymphoma/ri [Radionuclide Imaging]
Male
Mesothelioma/sc [Secondary]
Pneumoconiosis/ri [Radionuclide Imaging]
Pneumonia, Pneumocystis carinii/ri [Radionuclide Imaging]
Pulmonary Embolism/ri [Radionuclide Imaging]
Pulmonary Fibrosis/ri [Radionuclide Imaging]
Sarcoidosis/ri [Radionuclide Imaging]
Substance Dependence/di [Diagnosis]
Tuberculosis, Pulmonary/ri [Radionuclide Imaging]

Abstract

In spite of localization of gallium in the lungs in a large variety of inflammatory pulmonary diseases, the chest radiograph is and will continue to be the principal diagnostic tool for evaluation of pulmonary inflammatory disease. The 67Ga-citrate scan, however, serves as a study complementary to chest radiography because it indicates the extent, localization, and degree of activity of the inflammatory disease with greater accuracy than do the radiographic studies. It also permits the physician to follow progression of the disease or response to treatment and possible to detect disseminated interstitial disease not visualized on radiographs. Gallium-67 scanning may be used in the evaluation of patients with lymphorecticular neoplasms (Hodgkin's disease and malignant lymphomas) both during initial staging and in evaluation of the response to therapy. The 67Ga-citrate scan is useful in the evaluation of patients with lung cancer provided its limitations are kept in mind. It cannot and should not replace the pathologist's microscope. The scan is useful as a screening test only in patients who have radiographic lesions not consistent with inflammatory disease and in whom invasive diagnostic procedures or exploratory surgery are contraindicated

unless the probability of detecting a resectable tumor is high. However, the limited resolution of the scanning system restricts the possibility of detecting lesions before they become radiographically visible. The histologic type of the lesion appears to have no effect on the probability of detection. As a noninvasive procedure, the 67Ga-citrate scan complements mediastinoscopy by indicating which lymph nodes should be biopsied. It is also useful in evaluation of the controlateral hilar node region. The scan frequently detects clinically unsuspected extrathoracic lesions. It may therefore be a useful initial procedure in guiding the work-up of the patient with a known or strongly suspected tumor. The combination of the 67Ga scan with the chest radiograph could provide the information necessary for presurgical clinical staging in patients who have no symptoms that suggest distant metastases. Gallium-67 scans may be useful in indicating the effectiveness of treatment and the sensitivity of a tumor to radiation. [References: 105]

Registry Numbers
0 (Gallium Radioisotopes).

<4>

Unique Identifier
82119271

Authors
Pabst HW. Kempken K. Langhammer H.

Title
Diagnostic evaluation of gallium-67 scanning of intrathoracical neoplasms-clinical and experimental results.

Source
International Journal of Nuclear Medicine & Biology. 8(4):295-302, 1981.

MeSH Subject Headings
*Carcinoma, Bronchogenic/ri [Radionuclide Imaging]
Comparative Study
False Negative Reactions
False Positive Reactions
*Gallium Radioisotopes/du [Diagnostic Use]
Gallium Radioisotopes/me [Metabolism]
*Hodgkin's Disease/ri [Radionuclide Imaging]
Human
*Lung Neoplasms/ri [Radionuclide Imaging]
Tissue Distribution

Registry Numbers
0 (Gallium Radioisotopes).

Event Number:	ACIR72000-M	**Service:**	Army
Event Title:	Fluorine-18 on the diagnosis of bone disease		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-M
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
77194930
Authors
Buck AC. Chisholm GD. Merrick MV.
Title
Follow-up of prostate carcinoma with serial bone scanning using cyclotron-produced 18-fluorine.
Source
Recent Results in Cancer Research. (60):91-6, 1977.
MeSH Subject Headings

- Aged
- *Bone Neoplasms/di [Diagnosis]
- *Fluorine/du [Diagnostic Use]
- Follow-Up Studies
- Human
- Indium/du [Diagnostic Use]
- Male
- Middle Age
- Neoplasm Metastasis
- *Prostatic Neoplasms/co [Complications]
- *Radioisotopes/du [Diagnostic Use]
- *Radionuclide Imaging

Abstract
Seventy-four patients with carcinoma of the prostate were studied annually by combined radiological and 18F scintigraphy over a 5-year period. Of the patients who have no radiological evidence of bone metastases, 25% have a positive 18F bone scan. Follow-up of these patients has shown that scan abnormalities perceded x-ray changes from between 1 to 4 years. False negative scans were not seen with 18F which allows for greater accuracy in the detection of skeletal metastases. Teh accurate staging of carcinoma of the prostate cannot be made without bone scanning. Preliminary results with 111In bleomycin as an adjunct to 18F have shown this to be a useful radio-pharmaceutical to distinguish metastases from benign lesions, and further studies are warranted.

<2>
Unique Identifier
76191240
Authors
Gorten RJ. Cooley RN.
Title
Bone scans with fluorine-18 in diagnosing osteonecrosis in divers. pp. 171-6. [Review]
Source
In: Beckman EL, Elliott DH, ed. Dysbarism-related osteonecrosis. Washington, US Department of Health Education and Welfare, 1974. WE 200 S99d 1972.
MeSH Subject Headings

- *Atmospheric Pressure
- *Bone Diseases/di [Diagnosis]
- Bone Diseases/et [Etiology]
- *Diving
- *Fluorine/du [Diagnostic Use]
- Human
- Necrosis/di [Diagnosis]
- *Occupational Diseases/di [Diagnosis]
- Radioisotopes
- *Radionuclide Imaging

Stimson Library - OVID System

<1>
Unique Identifier
75184692
Authors
Buck AC. Chisholm GD. Merrick MV. Lavender JP.
Title
Serial Fluorine-18 bone scans in the follow-up of carcinoma of the prostate.
Source
British Journal of Urology. 47(3):287-94, 1975 Jun.
Local Messages
BAMC
MeSH Subject Headings
Aged
*Bone Neoplasms/di [Diagnosis]
Cardiovascular Diseases/et [Etiology]
Castration
Clinical Trials
Diethylstilbestrol/ae [Adverse Effects]
Diethylstilbestrol/tu [Therapeutic Use]
Fluorine/du [Diagnostic Use]
Follow-Up Studies
Human
Male
Middle Age
Neoplasm Metastasis
Prostatic Neoplasms/di [Diagnosis]
Prostatic Neoplasms/dt [Drug Therapy]
Prostatic Neoplasms/su [Surgery]
Radioisotopes
*Radionuclide Imaging
Abstract
74 patients with prostatic cancer were studied annually by combined radiological and fluorine-18 scan survey over a 5-year period. The results of the long term follow-up of bone cans is reported. At the time of the initial diagnosis 71-5% of the patients had advanced disease and 56% had radiological or scan evidence of metastases. A critical evaluation of the scans resulted in the detection of early bone lesions in 25% of patients with no radiological evidence of metastases. Follow-up of these patients has shown that scan abnormalities preceded radiological changes from between 1 to 4 years and there was good correlation proven histologically by bone biopsy or autopsy in more than half of the patients. In patients with a positive bone scan and positive X-rays the scan abnormalities were more extensive than the corresponding X-ray lesions. When bone healing occurred with endocrine treatment this was more readily apparent on the X-rays. False negative scans were not seen with fluorine-18 which allows for greater accuracy in the detection of skeletal metastases. Bone scanning has enabled correct staging to be carried out. This study confirms the high incidence of cardiac and vascular complications in patients treated with oestrogens.

<2>
Unique Identifier
75184649
Authors
Merrick MV.
Title
Review article-Bone scanning.
Source
British Journal of Radiology. 48(569):327-51, 1975 May.
Local Messages
BAMC
MeSH Subject Headings
Adolescence
Aged
*Bone and Bones/me [Metabolism]
*Bone Diseases/di [Diagnosis]
Bone Diseases/me [Metabolism]
Bone Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Lymphoma/di [Diagnosis]
Male
Metabolic Clearance Rate
Middle Age
Neoplasm Metastasis
Osteitis Deformans/di [Diagnosis]
Phosphates/me [Metabolism]

Comparative Study
Female
Fluorine/me [Metabolism]
Half-Life
Human
Infection/di [Diagnosis]
Joint Diseases/di [Diagnosis]
Prostatic Neoplasms/di [Diagnosis]
Radiation Dosage
Radiation-Sensitizing Agents
Radionuclide Imaging/is [Instrumentation]
*Radionuclide Imaging
Technetium/me [Metabolism]
Wound Healing

Abstract

The discovery of a number of phosphate complexes labelled with 99-Tc-m that localize in bone has aroused wide-spread interest in bone scanning. The physiological properties of these and other clinically useful bone-seeking radiopharmaceuticals are compared, and their physical properties assessed in relation to the characteristics and limitations of avilable detector systems. A hypothesis is put forward to explain the behaviour of the technetium-labelled agents. It is concluded that although there are differences in biochemical behaviour between these agents, strontium and fluorine, all three may, under suitable conditions, give similar clinical information. The radiation dose received by the patients is least with the usual dose of 99-Tc-m and the blood clearance of the diphosphonate and pyrophosphate preparations is faster than that of strontium, although slower than fluorine. The psi-ray energy of technetium permits a much greater efficiency of detection than of fluorine. These factors, toghether with the general availability of 99-Tc-m and its relatively low cost make the technetium diphosphonate or pyrophosphate preparations the agents of choice for most skeletal radioisotope imaging. However, there are as yet insufficient follow-up studies to be able to assess the incidence of either false-negative or false-positive findings with these agents.

<3>

Unique Identifier

74080796

Authors

McNeil BJ. Cassady JR. Geiser CF. Jaffe N. Traggis D. Treves S.

Title

Fluorine-18 bone scintigraphy in children with osteosarcoma or Ewing's sarcoma.

Source

Radiology. 109(3):627-31, 1973 Dec.

Local Messages

STIMSON / BAMC

MeSH Subject Headings

Adolescence
*Bone Neoplasms/di [Diagnosis]
Bone Neoplasms/ra [Radiography]
Bone Neoplasms/rt [Radiotherapy]
Child
Clavicle
Female
*Fluorine
Human
Lung Neoplasms/di [Diagnosis]
Lung Neoplasms/ra [Radiography]
Male
Neoplasm Metastasis
*Osteosarcoma/di [Diagnosis]
Osteosarcoma/ra [Radiography]
Osteosarcoma/rt [Radiotherapy]
Pelvic Bones
*Radionuclide Imaging
Ribs
*Sarcoma, Ewing's/di [Diagnosis]
Sarcoma, Ewing's/ra [Radiography]
Sarcoma, Ewing's/rt [Radiotherapy]

<4>

Unique Identifier

73130765

Authors

Jones AE. Ghaed N. Dunson GL. Hosain F.

Title

Clinical evaluation of orally administered fluorine 18 for bone scanning.

Source

Stimson Library - OVID System

Radiology. 107(1):129-31, 1973 Apr.
Local Messages
STIMSON / BAMC
MeSH Subject Headings
Administration, Oral
*Bone Neoplasms/di [Diagnosis]
*Fluorine/ad [Administration & Dosage]
Fluorine/du [Diagnostic Use]
Human
Leukemia/pa [Pathology]
Male
Neoplasm Metastasis/di [Diagnosis]
Prostatic Neoplasms/pa [Pathology]
*Radioisotopes/ad [Administration & Dosage]
Radioisotopes/du [Diagnostic Use]
*Radionuclide Imaging

<5>
Unique Identifier
73022403
Authors
Hopkins GB. Kristensen KA. Blickenstaff DE.
Title
Fluorine 18 bone scans in the detection of early metastatic bone tumors.
Source
JAMA. 222(7):813-4, 1972 Nov 13.
Local Messages
STIMSON / BAMC
MeSH Subject Headings
*Bone Neoplasms/di [Diagnosis]
Bone Neoplasms/ra [Radiography]
Breast Neoplasms/di [Diagnosis]
Colonic Neoplasms/di [Diagnosis]
Comparative Study
Female
Fluorine/ad [Administration & Dosage]
*Fluorine/du [Diagnostic Use]
Half-Life
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Lung Neoplasms/di [Diagnosis]
Male
Methods
Multiple Myeloma/di [Diagnosis]
*Neoplasm Metastasis/di [Diagnosis]
Prostatic Neoplasms/di [Diagnosis]
Radiation Dosage
Radioisotopes
*Radionuclide Imaging

<6>
Unique Identifier
72181705
Authors
Gerber FH. Hinn G. Allen D. Nelp WB.
Title
Fluorine-18 bone scanning for metastasis detection of bone.
Source
Northwest Medicine. 71(5):380-4, 1972 May.
MeSH Subject Headings
*Bone Neoplasms/di [Diagnosis]
Female
*Fluorine
Human
Male
Methods
Neoplasm Metastasis
Radiation Dosage
*Radioisotopes
*Radionuclide Imaging

<7>
Unique Identifier
69190792
Authors

Stimson Library - OVID System

Harmer CL. Burns JE. Sams A. Spittle M.

Title

The value of fluorine-18 for scanning bone tumours.

Source

Clinical Radiology. 20(2):204-12, 1969 Apr.

Local Messages

BAMC

MeSH Subject Headings

Adolescence
Bone and Bones/me [Metabolism]
*Bone Neoplasms/di [Diagnosis]
Diagnosis, Differential
Female
Fluorine/me [Metabolism]
*Fluorine
Human
Hydrogen Peroxide
Male
Methods
Middle Age
Neoplasm Metastasis
Neoplasm Recurrence, Local
Radioisotopes
*Radionuclide Imaging
Strontium/me [Metabolism]
Strontium Isotopes

Event Number:	ACIR72000-N	**Service:**	Army		
Event Title:	Seminoma of the testicle: Prophylactic mediastinum irradiation vs periaortic and pelvic irradiation alone				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-N
RECORDS: None available.
CIRS: No references found.
MEDLINE: Ytredal DO, Bradfield JS: Seminoma of the testicle: prophylactic mediastinal irradiation versus periaortic and pelvic irradiation alone. Cancer 300:628-33, 1972 describes this study. The study was retrospective and involved 80 adult males treated during 1947 to 1971.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier
73012851

Authors
Ytredal DO. Bradfield JS.

Title
Seminoma of the testicle: prophylactic mediastinal irradiation versus periaortic and pelvic irradiation alone.

Source
Cancer. 30(3):628-33, 1972 Sep.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adult
Aged
Aorta
Clavicle
Cobalt Isotopes
Dysgerminoma/mo [Mortality]
*Dysgerminoma/rt [Radiotherapy]
Follow-Up Studies
Human
Lymphatic Metastasis
Male
Mediastinum
Middle Age
Neoplasm Metastasis
Pelvis
Radiotherapy Dosage
Testicular Neoplasms/mo [Mortality]
*Testicular Neoplasms/rt [Radiotherapy]
Time Factors

SEMINOMA OF THE TESTICLE: PROPHYLACTIC MEDIASTINAL IRRADIATION VERSUS PERIAORTIC AND PELVIC IRRADIATION ALONE

DUANE O. YTREDAL, MD,* AND JOHN S. BRADFIELD, MD†

An analysis of 80 patients with seminoma of the testis treated at Brooke General Hospital, from July 1947 to March 1971, is presented. Forty-nine patients with Stage I disease were treated prophylactically to the mediastinum and left supraclavicular area in addition to receiving periaortic and pelvic irradiation. Twenty-two patients with Stage I disease received only periaortic and pelvic irradiation. No recurrences have been observed in Stage I patients with either method of treatment. The crude survival rates for the entire group of 80 patients at 5, 10, and 15 years were 97, 93, and 92%, respectively.

THE IMPORTANCE OF IRRADIATION IN THE management of patients with seminoma of the testicle has been recognized for many years. It is generally understood that this form of cancer has the best prognosis of the many different cancers that afflict mankind.

The work of Friedman[4–6] represents a milestone in the development of improved treatment techniques providing better understanding of optimum dosage and normal tissue tolerances. Friedman and Moore[7] and Dixon and Moore[2] classified testicular cancer into clinical groups enabling investigators to attain a more organized approach to treatment and improving the ability to evaluate results.

Maier[12] and Kurohara[10] each reported a series of patients who received prophylactic mediastinal irradiation. Kurohara[9] also has presented a group of patients who received periaortic and pelvic irradiation alone following orchiectomy. Johnson[8] and Castro[1] have both advocated periaortic and pelvic irradiation alone after orchiectomy for patients with Stage I seminoma of the testicle.

We present here the results of a retrospective study of 80 patients with seminoma of the testicle seen at Brooke General Hospital from July 1, 1947 to March 31, 1971.

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MATERIALS AND METHODS

The tumor registry records of all patients with testicular cancer seen at Brooke General Hospital, from July 1947 to March 1971, were reviewed. There were 210 cases; 83 were classified as seminomas. Three patients were excluded from the study because they received their entire initial evaluation and treatment at other institutions, and adequate records were not available for review. All 80 patients entered into the study have been reviewed and registered at the Armed Forces Institute of Pathology. Seventy-six were classified as pure seminoma, two as anaplastic seminoma, and two were predominantly seminoma with foci of embryonal carcinoma.

The patients' age range was from 19 to 68, with 89% of the cases occurring in the 20 to 40-year age group. The average age in this series was 30 years. Two Stage I patients were lost to follow-up at 7 and 8 months without evidence of recurrence at that time. One of the cases was in the group who received prophylactic mediastinal irradiation, and the other received periaortic and pelvic irradiation alone. The remaining 78 patients were evaluated and staged retrospectively. The number of patients in each stage grouping is as follows: Stage I, 71 patients; Stage II, six

TABLE 1. Method of Staging for Testicular Cancer (Moss)

Stage I	The disease is limited to the testicle and the excised portion of the spermatic cord.
Stage II	Metastases are present but are limited to lymph nodes below the diaphragm.
Stage III	Metastases involve mediastinal or supraclavicular lymph nodes.
Stage IV	Metastases are more widespread than Stage III.

TABLE 2. Clinical Symptomatology in 80 Patients with Seminoma of the Testicle

Mass	78
Pain	7
Epididymitis	5
Previous trauma	7
Symptom duration:	
0–2 months	36
2–10 months	26
over 10 months	18

patients; Stage III, None; Stage IV, one patient. Following orchiectomy, 49 patients with Stage I seminoma received irradiation to the pelvic, periaortic, mediastinal, and left supraclavicular regions, whereas 22 Stage I patients were treated with irradiation to the pelvic and periaortic areas without prophylactic mediastinal irradiation. In the earlier years, eight patients underwent laparotomy and lymphadenectomy following orchiectomy. One of the cases was in the prophylactic mediastinal treatment group, and seven patients were in the periaortic and pelvic irradiation group. Just one of the eight had involvement of the periaortic nodes, and the disease was unresectable. This patient was treated with irradiation to the periaortic and pelvic areas without mediastinal irradiation and was included in the Stage I group on the basis of the original clinical stage.

curred in a patient with Stage II disease who was treated with 2200 rads in 2½ weeks to the periaortic and pelvic lymph node regions. Seven months after irradiation, the patient developed metastases in the left lung and was treated with 1800 rads in 2 weeks to the left lung and mediastinum with no further evidence of recurrence at 21½ years follow-up. Five other patients with Stage II seminoma received irradiation to the pelvic, periaortic, mediastinal, and left supraclavicular lymph node regions, and all are alive without evidence of recurrence.

Of the 71 patients with clinical Stage I seminoma, there were 49 cases in the group treated with prophylactic mediastinal and left supraclavicular irradiation and 22 in the group who received treatment to the periaortic and pelvic areas alone. There were no recurrences in either group. The 5-year survival

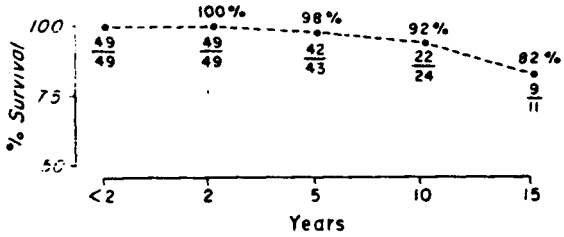


FIG. 1. Crude survival rate for patients with Stage I seminoma of the testicle treated with prophylactic mediastinal and left supraclavicular irradiation in addition to periaortic and pelvic irradiation. Excludes one patient lost to follow-up at 7 months without recurrence at that time.

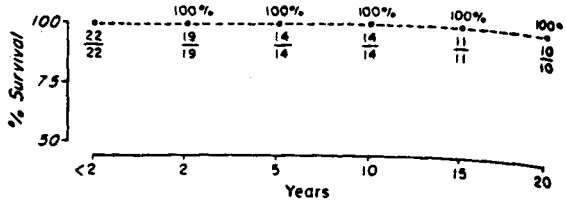


FIG. 2. Crude survival rate for patients with Stage I seminoma of the testicle treated with periaortic and pelvic irradiation without prophylactic mediastinal and left supraclavicular irradiation. Excludes one patient lost to follow-up at 8 months without recurrence at that time.

only one death; the patient died 22 years and 9 months after treatment in a hotel fire accident. There have been six deaths in the prophylactic mediastinal irradiation group: one patient was killed in a terrorist attack on a Saigon floating restaurant in 1965, 13 years 5 months after treatment; three patients died of other causes without any apparent relation to the cancer or to treatment, and two patients died from second primary cancers 6 years and 17 years, respectively, after treatment.

The complications encountered are shown in Table 4. There were two cases of intestinal obstruction, one in each treatment group. In the prophylactic mediastinal irradiation group, there were six patients who later developed second primary tumors; there were none in the group who did not receive mediastinal irradiation.

DISCUSSION

The rationale for prophylactic irradiation of the mediastinum and left supraclavicular

TABLE 4. Clinical Factors Relating to 71 Patients with Stage I Seminoma

	Periaortic and pelvic irradiation alone	Periaortic and pelvic plus mediastinal and left supraclavicular irradiation
Total number of patients	22	49
Alive	21	43
Dead	1	6
	Accident 22 1/2 yrs. later	1–Accident 13 1/2 yrs. later
		3–Other causes with no apparent relation to cancer or to treatment
		1–Malignant melanoma 6 yrs. later
		1–Carcinoma of the pancreas 17 yrs. later
Recurrent seminoma	None	None
Second primary tumors	None	6
		1–Carcinoma of the pancreas 17 yrs. later
		1–Malignant melanoma 6 yrs. later
		1–Pituitary adenoma 14 yrs. later
		1–Warthin's tumor of the parotid 3 yrs. later
		1–Seminoma of the opposite testicle 6 yrs. later
		1–Teratocarcinoma of the opposite testicle 17 yrs. later
Complications	3	5
	1–Chronic colitis	1–Chronic bilateral lymphedema
	1–Intestinal obstruction 2 yrs. after lymphadenectomy and postoperative irradiation	1–Anal fissure and proctitis
		1–Gastric ulceration and recurrent intestinal obstruction due to excessive dose
		1–Inguino-iliac abscess
	1–Moderate bilateral lower extremity edema 5 yrs. after lymphadenectomy and irradiation	1–Severe esophagitis requiring temporary hospitalization during treatment

area in clinical Stage I seminoma of the testis is based on the observation that there is, in most cases of pure seminoma, an orderly progression of lymphatic metastases from the nodes at the renal hilum and periaortic area to the left supraclavicular and mediastinal nodes. This is in contrast to embryonal carcinoma, teratocarcinoma, and choriocarcinoma of the testis in which hematogenous spread occurs more frequently.[10]

Seminoma can be eradicated with relatively low doses (2000–2500 rads in 2 to 3 weeks) which when delivered to the mediastinum and left supraclavicular area should be effective in sterilizing occult metastases. This dose is well tolerated by patients, and complications are infrequent.

Excellent results have been reported in patients treated prophylactically above the diaphragm in Stage I seminoma of the testis, and equal results in terms of survival have been achieved in patients treated only to the periaortic and pelvic nodes (Table 5). Two of the questions which could be mentioned when considering prophylactic mediastinal irradiation are: 1. What are the potential long-term consequences of irradiating large segments of the bone marrow to lower doses? 2. What are the risks of normal tissue injury at the junction of the periaortic and mediastinal treatment fields where overlap of treated volumes may occur if care is not exercised in properly aligning the treatment portals?

In this series, there were no recurrences outside the treatment fields for Stage I patients, but, in other series, prophylactic irradiation of the mediastinum and left supraclavicular area does not appear to be an absolute guarantee against metastases outside the treatment field. MacKay reported a recurrence rate of 16.5% in 79 Stage I patients treated prophylactically above the diaphragm. A recurrence rate of 12.5% was found in 208 patients irradiated only to the periaortic and pelvic nodes.[11]

The ability to cure those few patients who do have a recurrence after treatment may in-

TABLE 5. Seminoma of the Testicle (Stage I)

Identification	Group*	No. alive/ total pts.	Minimum follow-up	Comment
Castro (1971)	1	49/51	3 yrs.	1 dead distant metastases 11 mos. later 1 dead second primary, opposite testicle
	2	6/7	3 yrs.	1 dead acute leukemia, hypoplastic marrow 17 mos. later
Earle (1968)	1	49/49		
	2	None		
Johnson (1963)	1	28/31	2 yrs.	2 dead of other causes at 20 and 73 mos. 1 dead of metastatic embryonal carcinoma at 19 mos.
	2	0/1	2 yrs.	1 dead from bone marrow depression at 19 mos.
Kurohara (1967)	1	None		
	2	57/57	2 yrs.	
Kurohara (1968)	1	114/120	3 yrs.	10 cases of recurrent seminoma
	2	None		
MacKay (1966)	1	174/208	5 yrs.	26 cases of recurrent seminoma (12.5%)
	2	69/79	5 yrs.	13 cases of recurrent seminoma (16.5%)
Maier (1968)	1 and 2	192/212	5 yrs.	5 dead after mediastinal recurrence and later metastases at 9, 13, 15, 16, and 77 months in patients not receiving mediastinal irradiation. 2 dead from distant metastases at 20 and 27 mos. in patients with Stage I disease receiving mediastinal irradiation
Notter (1964)	1	117/132	5 yrs.	8% of Stage I patients developed metastases in the mediastinum
	2	None		
Smithers (1971)	1	43/43	2 yrs.	
	2	None		
Van Der Werf-Messing (1971)	1	73/91	5 yrs.	
	2	None		

* Group 1: Periaortic and pelvic irradiation alone; Group 2: Prophylactic mediastinal and left supraclavicular irradiation.



FIG. 3. Treatment field used for patients with Stage I seminoma.

fluence one's decision regarding treatment of the mediastinum and left supraclavicular area. In a series of 24 cases of recurrent seminoma reported by Friedman, a survival rate of 50% at 10 years from the date of first recurrence was achieved.[7] Kurohara reported that 4 of 10 patients, initially Stage I, were salvaged for 3 years following the date of first recurrence.[9] Maier reported five deaths from tumor occurring in patients with Stage I seminoma not given prophylactic treatment to the mediastinum or supraclavicular regions.[12] Irradiation controlled the first metastases for varying periods of time in these five patients, but subsequent distant metastases resulted in the death of these patients.

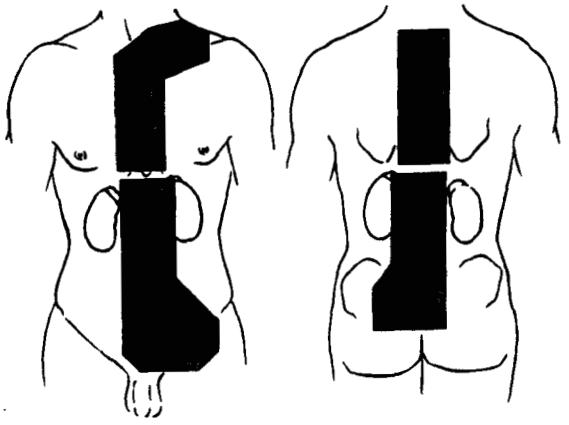


FIG. 4. Radiation treatment fields used for patients with Stage II seminoma of the testicle.

The decision as to whether or not the mediastinum and supraclavicular area should be treated must be weighed on the one hand by the small incidence of recurrence, particularly in those patients with pure seminoma in whom an intravenous urogram and a lymphangiogram were normal, against the risk of future complications from prophylactic irradiation of the mediastinum.

TREATMENT TECHNIQUE

The Hippocratics in ancient Greece recognized that in some cases it is "possible to pursue different courses, some of which will have the same result; consequently, it would fall to the practitioner to make a choice."

We have chosen to treat patients with clinical Stage I seminoma of the testicle with periaortic and ipsilateral pelvic irradiation without prophylactic mediastinal treatment. The dose given is 2500–3000 rads midplane tumor dose in 2½ to 3 weeks. The treatment field used in the treatment of Stage I patients is demonstrated in Fig. 3. During the years, 1955–1968, when prophylactic mediastinal and left supraclavicular irradiation was routinely used in the treatment of Stage I patients, less attention was given to diagnostic attempts to evaluate the status of the retroperitoneal lymph nodes. The survival results with this approach were excellent. In recent years, more emphasis has been placed on diagnostic attempts to evaluate the retroperitoneal lymph node regions, and correspondingly, prophylactic mediastinal irradiation is no longer used in Stage I patients who have negative excretory urograms and lymphangiograms. The difficulty in delineating early metastases to the renal pedicle region with the use of pedal lymphangiograms is recognized; however, when more extensive metastases to the periaortic nodes are present, pedal lymphangiograms may be helpful and, in addition, aid in outlining the proper treatment portals. Patients with Stage II disease receive prophylactic mediastinal and left supraclavicular irradiation

to a total dose of 2000 rads in 2 weeks. A 3- to 4-week rest period is given after completing periaortic treatment before proceeding to the mediastinal and supraclavicular fields. In patients with invasion of the capsule or involvement of the epididymis, the contralateral inguino-iliac nodes are included in the abdominal treatment field.

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Event Number:	ACIR72000-O	**Service:**	Army		
Event Title:	Phase I protocol for the evaluation of combined radiotherapy and chemotherapy for stage IIb, IIIa, and IIIb Hodgkin's disease, SWOG				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-O
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>
Unique Identifier
78001863
Authors
Fuller LM. Gamble JF. Butler JJ. Sinkovics JG. Wallace S. Martin RG. Gehan EA. Shullenberger CC.
Title
Team approach to management of non-Hodgkin's lymphomas: past and present.
Source
Cancer Treatment Reports. 61(6):1137-48, 1977 Sep.
Abstract
A detailed review of our results of radiotherapy for stage I and II non-Hodgkin's lymphomas has been presented as background for our current multidisciplinary approach which uses multiple-agent chemotherapy, radiotherapy, and immunotherapy for nodular and diffuse stage I, II, and III lymphomas of the poorly differnetiated lymphocytic, mixed, and histiocytic varieties. Optimum management is based on coordinated efforts of medicine, radiotherapy, pathology, diagnostic radiology, and surgery. In stage I, II, and III disease, routine staging procedures include lymphangiography, bilateral iliac crest needle biopsies of the bone marrow, and percutaneous needle biopsies of the liver. Staging laparotomy is considered essential to our present program for stage I, IE, II and IIE disease. In our opinion, staging laparotomy is not indicated in stage II or IIIE disease. Although very preliminary, results for these programs are encouraging. This paper presents the concept of team management and a specific plan for its implementation.

<2>
Unique Identifier
77243907
Authors
Bonadonna G. Zucali R. De Lena M. Valagussa P.
Title
Combined chemotherapy (MOPP or ABVD)-radiotherapy approach in advanced Hodgkin's disease.
Source
Cancer Treatment Reports. 61(5):769-77, 1977 Aug.

Stimson Library - OVID System

<1>
Unique Identifier
75074061
Authors
Rosenberg SA. Kaplan HS.
Title
The management of stages I, II, and III Hodgkin's disease with combined radiotherapy and chemotherapy.
Source
Cancer. 35(1):55-63, 1975 Jan.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
Abstract
An analysis and progress report is presented of the randomized clinical trials testing the value of adjuvant MOPP chemotherapy with irradiation in the management of Hodgkin's disease. The 213 patients with Stages IA through IIIB have been followed for periods of up to 64 months. The chemotherapy controls the occult disease, resulting in significant improvement in disease-free survival (p = .002). Over-all survival is not yet affected, however, with combined 5-year survival results of 92% and 88% in the two groups. The treatment program is difficult but feasible. No increased incidence of second malignancies has been observed in this study group. It is premature to conclude that adjuvant MOPP chemotherapy is indicated in the radiation management of Hodgkin's disease.

<2>
Unique Identifier
76143507
Authors
Stutzman L. Shah NK. Nissen NI. Spurr C.
Title
Childhood Hodgkin's disease. pp. 117-34. [Review]
Source
In: Sinks LF, Godden JO, ED. Conflicts in childhood cancer: an evaluation of current management. New York, Liss, 1975. W1 PR668E v.4 1975.
Abstract
Despite former pessimism regarding the prognosis of childhood Hodgkin's disease, the application of intensive radiotherapy and combination chemotherapy for this lymphoma has produced dramatic improvement in survival rate. At Roswell Park Memorial Institute the five-year survival was 30% in 1921 to 1949, 60% in 1949 to 1964, and nearly 90% in 1965 to 1973. Regional radiotherapy of types IA and IIA disease in a series of children treated at Roswell Park Memorial Institute presented in this report and in series with other centers had produced favorable survival, with five-year values of 80 to 95% and 10-year survival of 76 to 80%. The advantage of total nodal radiotherapy for early stage disease has not been proved. The choice of therapy for Stage III disease is unsettled for children as well as adults. Trials of regional radiotherapy plus intensive chemotherapy deserves direct comparison with routines of total nodal radiotherapy or multiple-agent chemotherapy. Although children treated with total nodal radiotherapy tolerate the therapy well, they are likely to have some degree of asymptomatic axial growth retardation. The chemotherapy response and survival of children with Stage III or IV disease treated by various intensive six months or longer, multiple-agent routines from 1967 to 1973 by protocols of the Acute Leukemia Group B, was superior to that of adults. Seventy percent of the responders remain in remission two years after onset of therapy and a projected median of over five years was obtained. An actuarial survival at two years was 84%, no deaths have been reported since that time in 33 patients, and survival periods have been as long as four and one-half years. Children tolerate intensive therapy of Hodgkin's disease well with a small tolerable cost in immediate and late lethal or disabling toxicity. [References: 23]

Stimson Library - OVID System

<3>
Unique Identifier
76113646
Authors
Landberg T.
Title
Radiotherapy and chemotherapy in the treatment of Hodgkin's disease. pp. 257.
Source
In: Astaldi G et al., ed. Current studies on standardization problems in clinical pathology, haematology, and radiotherapy in Hodgkin's disease. Amsterdam, Excerpta Medica, 1975. W3 EX89 no.348 1974.

<4>
Unique Identifier
76112627
Authors
Tura S. Babini L. Lauria F. Emiliani E. Fiacchini M.
Title
Chemotherapy associated with radiotherapy in the treatment of Hodgkin's lymphoma. pp. 263-7.
Source
In: Astaldi G et al., ed. Current studies on standardization problems in clinical pathology, haematology, and radiotherapy in Hodgkin's disease. Amsterdam, Excerpta Medica, 1975. W3 EX89 no.348 1974.
Abstract
Chemotherapy plays an important role in the management of Hodgkin's disease. Polychemotherapy, which is better than single drugs, is very useful before laparotomy and before radiotherapy in cases where symptoms, and in particular fever, may prevent surgery or total lymphoid irradiation therapy. MOPP is the best drug combination for the control of this lymphoma and may be used for consolidation after radiotherapy in a more radical treatment programme, as well as being a good alternative treatment when radiotherapy cannot be utilised.

<5>
Unique Identifier
75106578
Authors
Rosner F. Grunwald H.
Title
Hodgkin's disease and acute leukemia. Report of eight cases and review of the literature. [Review]
Source
American Journal of Medicine. 58(3):339-53, 1975 Mar.
Local Messages
STIMSON / BAMC
Abstract
Eight cases of Hodgkin's disease and acute leukemia are reported. An additional 74 cases of acute myelocytic leukemia or one of its variants, 11 cases of acute lymphocytic leukemia, 12 cases of chronic myelocytic leukemia and 37 cases of chronic lymphocytic leukemia associated with Hodgkin's disease are reviewed from the literature. In 3 of the 82 patients with acute myelocytic leukemia and Hodgkin's disease, the two diseases occurred simultaneously. Of the remaining 79 patients, 76 had received radiation therapy for their Hodgkin's disease and acute myelocytic leukemia had developed 1.2 to 19 years later (mean 6.5 years). Thirty-four of these patients also received antineoplastic chemotherapy. Only three patients with Hodgkin's disease were treated with multiple chemotherapy alone; in these, Hodgkin's disease developed 1.2, 1.5 and 3.2 years later. In 4 of 11 patients with acute lymphocytic leukemia and Hodgkin's disease, the two disorders occurred simultaneously. The other seven patients were all treated with radiation for their Hodgkin's disease, and acute lymphocytic leukemia developed 2 to 8 years later (mean 4.5 years). Three of the 7

patients also received alkylating agents. It is concluded that the development of acute leukemia, mostly acute myelocytic leukemia but also acute lymphocytic leukemia, during the course of Hodgkin's disease, is most likely related to radiation therapy. There is as yet insufficient evidence to implicate intensive chemotherapy in the causation of acute leukemia since in only three patients with Hodgkin's disease treated with chemotherapy alone has the development of acute leukemia been reported. It is possible, however, that chemotherapy potentiates the effect of radiotherapy. 2t is also possible that acute leukemia is part of the natural history of Hodgkin's disease and is occurring with greater frequency because of improved survival in Hodgkin's disease since the introduction of better radiotherapeutic and chemotherapeutic treatment regimens. [References: 151]

<6>
Unique Identifier
76028723
Authors
Say C. Lee YT. Hori J. Spratt JS Jr.
Title
Prognostic factors in Hodgkin's disease.
Source
Journal of Surgical Oncology. 7(4):255-67, 1975.
Abstract
The clinical records and treatment results of 163 patients with Hodgkin's disease, who were seen at Ellis Fischel State Cancer Hospital (EFSCH) between 1940 and 1971, were reviewed and analyzed. More than 200 clinical and histological variables were recorded for each case of Hodgkin's disease, including details of radiotherapy and chemotherapy. Statistical studies were carried out in order to evaluate the independent prognosis significance of each of these factors. All of the lesions were reclassified according to the Lukes proposal which was modified and recommended at the 1965 Rye classification (except for hepatomegaly which was included in Stage IV). This is a retrospective study, and the modern techniques of staging were rarely used in pretreatment studies (since 1965, only ten patients have had an abdominal exploration). The basic work-up consisted of a complete blood count, urinalysis, blood type, chest X ray, and EKG. Lymphangiogram and radioisotope liver scans were used on less than 10% of the patients. About 30% of the patients had gastrointestinal X rays and 70% had IVP. Bone marrow biopsies -- the majority of which were done by needle aspiration -- were obtained for approximatley 50% of the patients. Clinical stage, histological type, and presence of absence of systemic symptoms appeared to be themost significant prognostic factors. The classification of systemic symptoms according to the criteria of either the Rye or Ann Arbor conferences showed no particular difference in determining the survival rate. Among the systemic symptoms, fever appeared to be the most important for survival rate. Survival rates were higher in nonanemic and nonlymphocytopenic patients. Eosinophilia, blood group, and Rh factor had no prognostic significance. The relapse-free interval was an important indicator of long-term prognosis. The unfavorable influence of relapse in ultimate prognosis was clearly seen; however, the extent of the relapse site was shown to have no significant influence on survival.

<7>
Unique Identifier
76018445
Authors
Rosenberg SA.
Title
Combination chemotherapy in Hodgkin's disease: relation to radiotherapy.
Source
Bibliotheca Haematologica. (40):731-5, 1975.
Abstract
The results of modern radiotherapy for Hodgkin's disease are correlated to the stage of the disease. Five-year disease-free survival for pathologically staged patients can be estimated as follows: PS I & II A...90%, PS III A & IIIsA...60%, PS I & II B ...75%, PS III B & IIIsB ...40%. Combination

chemotherapy of the MOPP (nitrogen mustard, vincristine, procarbazine, and prednisone) type can be successfully employed for patients who develop recurrent disease after total lymphoid irradiation. There have been several randomized clinical trials attempting to improve the curative potential of radiotherapy by combining modern chemotherapy with the irradiation as an adjuvant. The tolerance of patients to total lymphoid irradiation and chemotherapy will be presented. The Stanford trial, initiated 5 years ago (1968), has demonstrated prolonged disease free survival when both forms of treatment are used initially in certain stages of the disease. However, actual survival has not yet improved, probably because the chemotherapy is successful in inducing durable remissions for patients who recur after irradiation.

<8>
Unique Identifier
75110569
Authors
O'Connell MJ. Wiernik PH. Brace KC. Byhardt RW. Greene WH.
Title
A combined modality approach to the treatment of Hodgkin's disease. Preliminary results of a prospectively randomized clinical trial.
Source
Cancer. 35(4):1055-65, 1975 Apr.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
Abstract
Eighty-seven previously untreated patients with pathologic Stage IA, II (A or B), or IIIA Hodgkin's disease were randomized over a 48-month period to receive either megavoltage extended field radiotherapy alone or megavoltage radiotherapy limited to involved lymph node sites (including at least an upper mantle field) followed by combination chemotherapy with nitrogen mustard, vincristine, prednisone, and procarbazine (MOPP). Four patients (4.6%) failed to achieve remission with initial radiotherapy. Seventy-two evaluable patients have currently completed therapy. Ten of 41 patients achieving remission with radiation alone have relapsed, compared to only 1 of 31 receiving radiation plus chemotherapy. Seven patients have died, 3 of whom failed to achieve remission with initial radiotherapy. The other 4 had Stage IIIA disease treated with radiation alone. Severe myelosuppression occurred infrequently during chemotherapy, and neither serious infections nor second neoplasms have observed. Although these preliminary results are encouraging, longer followup is required to determine the ultimate effects of combined modality therapy on survival and long-term complications.

<9>
Unique Identifier
75091991
Authors
Hays DM.
Title
The staging of Hodgkin's disease in children reviewed.
Source
Cancer. 35(3 suppl):973-8, 1975 Mar.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
Abstract
The accurate staging of Hodgkin's disease is of greater importance in children than in adults, because the deleterious effects of extensive radiation therapy and of prolonged multiple-agent chemotherapy are of greater significance in this age group. The physician concerned with Hodgkin's disease in children must separate those aspects of developments in this field which are applicable to the pediatric age group from the relatively large adult experience. Isotope scanning is effective in demonstrating disseminated disease in pediatric patients. Lymphangiograms are useful, but are

more difficult to perform and to interpret in children. When laparotomy is performed in children with clinical Stage I, II, or III Hodgkin's disease, stage will be altered (upward or downward) in approximately 40% of children subjected to the procedure. As growth retardation, skeletal deformity, and secondary neoplasia follow radiotherapy in children, the major function of the laparotomy is to delineate the extent of the disease and thus define appropriate limitations of therapy.

<10>
Unique Identifier
74009326
Authors
De Lena M. Monfardini S. Beretta G. Fossati-Bellani F. Bonadonna G.
Title
Clinical trials with intensive chemotherapy and radiotherapy in Hodgkin's disease.
Source
National Cancer Institute Monographs. 36:403-20, 1973 May.

<11>
Unique Identifier
74005374
Authors
Brace K. Serpick AA. Block JB. Wiernik PH.
Title
Combination radiotherapy and chemotherapy in the treatment of early Hodgkin's disease.
Source
Oncology. 27(6):484-92, 1973.

<12>
Unique Identifier
73128782
Authors
Fuller LM. Gamble JF.
Title
Updated Hodgkin's disease. C. Advanced disease and special problems. Combined chemotherapy-radiotherapy program.
Source
JAMA. 223(2):168-9, 1973 Jan 8.
Local Messages
STIMSON / BAMC

<13>
Unique Identifier
73124357
Authors
Gamble JF. Fuller LM. Ibrahim E. Butler JJ. Shullenberger CC.
Title
Combined chemotherapy radiotherapy management of stage 3 Hodgkin's disease.
Source
Archives of Internal Medicine. 131(3):435-8, 1973 Mar.
Local Messages
STIMSON / BAMC

<14>

Stimson Library - OVID System

Unique Identifier
73124356
Authors
Hoogstraten B. Holland JF. Kramer S. Glidewell OJ.
Title
Combination chemotherapy-radiotherapy for stage 3 Hodgkin's disease. An acute leukemia group B study.
Source
Archives of Internal Medicine. 131(3):424-8, 1973 Mar.
Local Messages
STIMSON / BAMC

<15>
Unique Identifier
73063124
Authors
Rosenberg SA. Moore MR. Bull JM. Jones SE. Kaplan HS.
Title
Combination chemotherapy and radiotherapy for Hodgkin's disease.
Source
Cancer. 30(6):1505-10, 1972 Dec.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

<16>
Unique Identifier
72261902
Authors
Cannellos GP. Young RC. DeVita VT.
Title
Combination chemotherapy for advanced Hodgkin's disease in relapse following extensive

Stimson Library - OVID System

Authors
Gamble JF. Fuller LM. Butler JJ. Shullenberger CC.
Title
Combined chemotherapy and radiotherapy for advanced Hodgkin's disease and reticulum cell sarcoma: a preliminary report.
Source
Southern Medical Journal. 64(7):775-83, 1971 Jul.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

Event Number:	ACIR72000-P	**Service:**	Army		
Event Title:	Study of the use of gallium-67 citrate to localize lymphomas, WRAMC 7108				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-P
RECORDS: None available.
CIRS: No references found.
MEDLINE: Richman SD, et al: Radionuclide studies in Hodgkin's disease and lymphomas. Semin Nuc Med, 5:103-8, 1975 states gallium-67 is excellent for imaging Hodgkin's disease.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
75121882
Authors
Richman SD. Levenson SM. Jones AE. Johnston GS.
Title
Radionuclide studies in Hodgkin's disease and lymphomas.
Source
Seminars in Nuclear Medicine. 5(1):103-8, 1975 Jan.
Local Messages
BAMC
MeSH Subject Headings

Adult
Bleomycin/ae [Adverse Effects]
Burkitt's Lymphoma/di [Diagnosis]
Burkitt's Lymphoma/dt [Drug Therapy]
Burkitt's Lymphoma/rt [Radiotherapy]
Child
Female
*Gallium/du [Diagnostic Use]
Gallium/me [Metabolism]
*Hodgkin's Disease/di [Diagnosis]
Hodgkin's Disease/pa [Pathology]
Hodgkin's Disease/rt [Radiotherapy]
Human
Liver Neoplasms/di [Diagnosis]
Lymph Nodes/me [Metabolism]
*Lymphoma/di [Diagnosis]
Lymphoma/pa [Pathology]
Lymphoma, Large-Cell/di [Diagnosis]
Lymphoma, Non-Hodgkin's/di [Diagnosis]
Male
Middle Age
Pneumonia/et [Etiology]
Pneumonia, Pneumocystis carinii/di [Diagnosis]
Protein Binding
*Radionuclide Imaging
Radiotherapy/ae [Adverse Effects]
Support, U.S. Gov't, P.H.S.

Abstract
A rational, multidisciplinary approach to Hodgkin's disease and the non-Hodgkin's lymphomas has been responsible for major advances in therapy. Invasive diagnostic procedures and exploratory laparotomy, with their associated complications, make nontraumatic radionuclide imaging most appealing in both the clinical staging of disease and in evaluating therapy. Gallium-67-citrate, the tumor scanning agent of the early 1970's, has demonstrated a marked affinity for Hodgkin's disease and the other lymphomas. False positives are few, with sensitivity greater than 70% throughout the spectrum of Hodgkin's disease and the histiocytic lymphomas. In addition to confirming sites of suspected neoplasm, this agent has proved useful in the detection of occult involvement. Moreover, resolution of abnormal gallium-67 concentrations on follow-up studies functions as a visual ancillary index of therapeutic response. The value of wholebody gallium-67 scintigraphy is further enhanced when used in conjunction with routine technetium brain, bone, liver, and spleen scans. While the diagnostic accuracy of gallium-67 studies has been limited in the abdomen due to bowel activity, our attempts to improve these results with the tumor-seeking radiopharmaceutical indium-111-Bleomycin were unrewarding and subsequently were discontinued. Finally, radionuclide lymphography has also been explored. Its diagnostic usefulness in detecting pelvic and abdominal lymph node involvement warrants further investigation.

<2>
Unique Identifier
75096905
Authors
Adler S. Parthasarathy KL. Bakshi SP. Stutzman L.
Title
Gallium-67-citrate scanning for the localization and staging of lymphomas.
Source
Journal of Nuclear Medicine. 16(4):255-60, 1975 Apr.
Local Messages
BAMC
MeSH Subject Headings

Adolescence
Adult
Aged
Child
Child, Preschool
False Negative Reactions
False Positive Reactions
Female
*Gallium/du [Diagnostic Use]
Hodgkin's Disease/di [Diagnosis]
Hodgkin's Disease/pa [Pathology]
Human
*Lymphoma/di [Diagnosis]
Lymphoma/pa [Pathology]
Lymphoma, Large-Cell/di [Diagnosis]
Lymphoma, Large-Cell/pa [Pathology]
Lymphoma, Non-Hodgkin's/di [Diagnosis]
Lymphoma, Non-Hodgkin's/pa [Pathology]
Male
Middle Age
Neoplasm Recurrence, Local/di [Diagnosis]
Radioisotopes/du [Diagnostic Use]
*Radionuclide Imaging

Abstract

One-hundred-eight 67Ga-citrate scans were evaluated in Hodgkin's and non-Hodgkin's lymphomas for staging, diagnosis of recurrence, and for determing the results of treatment. Accuracy as confirmed by comparing the scans with pathologic material or roentgenologic and clinical findings was found to be 83%. Known lymph node involvement was diagnosed correctly in 87% but accuracy was only 48% for extranodal areas. Bone lesions were diagnosed correctly in 83% compared with only 48% of lesions of the lungs and liver. Scans were 75% accurate in 28 patients scanned for initial staging. False negatives were present in 12%; recurrent tumor in an area of prior radiation therapy appeared to be the most common cause. There were 5% false positives. Gallium scanning is a useful adjunct to other methods of detecting lymphoma.

Stimson Library - OVID System

<1>

Unique Identifier
77038449

Authors
Pinsky SM. Henkin RE.

Title
Gallium-67 tumor scanning. [Review]

Source
Seminars in Nuclear Medicine. 6(4):397-409, 1976 Oct.

Local Messages
BAMC

MeSH Subject Headings

Acute Disease
Adenocarcinoma/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Brain Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Carcinoma, Hepatocellular/di [Diagnosis]
Carcinoma, Small Cell/di [Diagnosis]
Carcinoma, Squamous Cell/di [Diagnosis]
*Gallium Radioisotopes/du [Diagnostic Use]
Head and Neck Neoplasms/di [Diagnosis]
Hodgkin's Disease/di [Diagnosis]
Human
Kidney Neoplasms/di [Diagnosis]
Leukemia/di [Diagnosis]
Liver Neoplasms/di [Diagnosis]
Lung Neoplasms/di [Diagnosis]
Lymphoma/di [Diagnosis]
Lymphoma, Non-Hodgkin's/di [Diagnosis]
Male
Melanoma/di [Diagnosis]
Neoplasm Metastasis
*Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Sarcoma, Ewing's/di [Diagnosis]
Testicular Neoplasms/di [Diagnosis]
Thyroid Neoplasms/di [Diagnosis]

Abstract

Since its introduction in 1969, 67Ga has become the most widely employed tumor-scanning agent in nuclear medicine. While 67Ga is far from being the ideal tumor-scanning agent, it remains the best available isotope for this purpose. Gallium-67-citrate has been found to be of value in the staging and reevaluation of lymphomas as well as in detecting the extent and recurrence of lung tumors, breast tumors, malignant melanomas, testicular tumors, brain tumors, and malignant lesions involving the liver. In order to obtain maximum diagnostic value from gallium scanning, several technical factors have to be taken into consideration as well as an understanding of the nature of "false-positive" scans. [References: 37]

Stimson Library - OVID System

<1>

Unique Identifier
81015517

Authors
Bekerman C. Hoffer PB. Bitran JD. Gupta RG.

Title
Gallium-67 citrate imaging studies of the lung. [Review]

Source
Seminars in Nuclear Medicine. 10(3):286-301, 1980 Jul.

Local Messages
BAMC

MeSH Subject Headings
Adenocarcinoma/ri [Radionuclide Imaging]
Adolescence
Adult
Carcinoma, Squamous Cell/ri [Radionuclide Imaging]
Child
Female
*Gallium Radioisotopes/du [Diagnostic Use]
Hodgkin's Disease/ri [Radionuclide Imaging]
Human
*Lung Diseases/ri [Radionuclide Imaging]
Lung Neoplasms/ri [Radionuclide Imaging]
Lung Neoplasms/sc [Secondary]
Lymphoma/ri [Radionuclide Imaging]
Male
Mesothelioma/sc [Secondary]
Pneumoconiosis/ri [Radionuclide Imaging]
Pneumonia, Pneumocystis carinii/ri [Radionuclide Imaging]
Pulmonary Embolism/ri [Radionuclide Imaging]
Pulmonary Fibrosis/ri [Radionuclide Imaging]
Sarcoidosis/ri [Radionuclide Imaging]
Substance Dependence/di [Diagnosis]
Tuberculosis, Pulmonary/ri [Radionuclide Imaging]

Abstract
In spite of localization of gallium in the lungs in a large variety of inflammatory pulmonary diseases, the chest radiograph is and will continue to be the principal diagnostic tool for evaluation of pulmonary inflammatory disease. The 67Ga-citrate scan, however, serves as a study complementary to chest radiography because it indicates the extent, localization, and degree of activity of the inflammatory disease with greater accuracy than do the radiographic studies. It also permits the physician to follow progression of the disease or response to treatment and possible to detect disseminated interstitial disease not visualized on radiographs. Gallium-67 scanning may be used in the evaluation of patients with lymphorecticular neoplasms (Hodgkin's disease and malignant lymphomas) both during initial staging and in evaluation of the response to therapy. The 67Ga-citrate scan is useful in the evaluation of patients with lung cancer provided its limitations are kept in mind. It cannot and should not replace the pathologist's microscope. The scan is useful as a screening test only in patients who have radiographic lesions not consistent with inflammatory disease and in whom invasive diagnostic procedures or exploratory surgery are contraindicated unless the probability of detecting a resectable tumor is high. However, the limited resolution of the scanning system restricts the possibility of detecting lesions before they become radiographically visible. The histologic type of the lesion appears to have no effect on the probability of detection. As a noninvasive procedure, the 67Ga-citrate scan complements mediastinoscopy by indicating which lymph nodes should be biopsied. It is also useful in evaluation of the controlateral hilar node region. The scan frequently detects clinically unsuspected extrathoracic lesions. It may therefore be a useful initial procedure in guiding the work-up of the patient with a known or strongly suspected tumor. The combination of the 67Ga scan with the chest radiograph could provide the information necessary for presurgical clinical staging in patients who have no symptoms that suggest distant metastases. Gallium-67 scans may be useful in indicating the effectiveness of treatment and the sensitivity of a tumor to radiation. [References: 105]

Registry Numbers
0 (Gallium Radioisotopes).

Event Number:	ACIR72000-Q	**Service:**	Army
Event Title:	Clinical evaluation of postoperative radiotherapy and drug combination in the treatment of childhood rhabdomyosarcoma, CALGB 7291		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	72	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-Q
RECORDS: None available.
CIRS: The investigator was LTC Jeffrey L. Berenberg, MC. The study was approved on 27 Mar 73 and terminated on 15 Apr 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> A0374

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 3                                  STUDY STATUS=> A

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF POST-OPERATIVE RADIOTHERAPY AND DRUG
     => COMBINATION IN THE TREATMENT OF CHILDHOOD RHABDOMYOSARCOMA.
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> BERENBERG              > JEFFREY L             > P   > LTC MC
            =>                        >                       >     >
            =>                        >                       >     >
            =>                        >                       >     >
            =>                        >                       >     >
            =>                        >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. A0374

ONCOLOGY STUDY GROUP--NAME=> CALGB     NO.=> 7291      STUDY CLASS=> 5 > 1 <

        GENERIC NAME                        BRAND NAME
DRUGS=> VINCRISTINE                      =>
     => DACTINOMYCIN                     =>
     => CYCLOPHOSPHAMIDE (CYTOXAN)       =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
      =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   VINCRISTINE, DACTINOMYCIN, CYTOXAN

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. A0374
                                                                    VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __ ___ __     ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...       4
I) HSRRB ACTION.................... 27 MAR 73     AP      _         4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     ___     _         2,3,4
M) PROGRESS REPORT RECD AT HURO.... 15 APR 80     ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...       ALL
P) ADVERSE EFFECTS (AE) REPORTED... __ ___ __   NO. REPORTED TO DATE=> 0
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ACTION:  (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14       TRANSACTION COMPLETED - PF4/16       CONTINUE - ENTER



  C CHANGE       SCREEN=> 4      HSC ACCESS NO. 0          HURO LOG NO. A0874

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=>    >    >      CLASS=> 1   > 2   >       SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=>      HMJFAMM=>     ACQ=>      GIFT/HSC=>      GIFT/SA=>      GRANTS=>

DISEASE CLASS=>                                  =>
              =>                                 =>

COMMENTS=>
         =>
         =>
         =>

INITIATOR HSC       LAST UPDATED 29JUL87                PROTOCOL ADDED 00 ? 00

CANCEL -- PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER
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Event Number:	ACIR72000-S	**Service:**	Army		
Event Title:	Clinical use of technetium-99m polyphosphate				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-S
RECORDS: None available.
CIRS: The investigator was COL Merrill C. Johnson, MC. The study was approved on 30 May 72 and terminated on 18 Feb 75. The IND number was 9169.
MEDLINE: Thrall JH, et al: Pitfalls in Tc99m polyphospahte skeletal imaging. Am J Roent, Rad Ther, Nuc Med 121:739-47, 1974 and Thrall JH, et al:: Abnormal radionuclide patterns adjacent to focal skeletal lesions. Radiology, 115:659-63, 1975 may report this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC498

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL USE OF TECHNETIUM-99M POLYPHOSPHATE.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> JOHNSON                > MERRILL C.          > P   > COL MC
             =>                       >                     >     >
             =>                       >                     >     >
             =>                       >                     >     >
             =>                       >                     >     >
             =>                       >                     >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC498

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>    >    >

        GENERIC NAME                          BRAND NAME
DRUGS=> TECHNETIUM-99M POLYPHOSPHATE    =>
     =>                                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>

DEVICES=>
       =>

DA------IND#=> 9169     IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC498
                                                                  VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 18 FEB 75     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... 30 MAY 72      AP      _      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __      _      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

(A)PPROVED, (C)ONTINUING APPROVAL, (D)EFERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC496

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMOFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 07Nov96 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Stimson Library - OVID System

<1>

Unique Identifier
75052569

Authors
Thrall JH. Ghaed N. Geslien GE. Pinsky SM. Johnson MC.

Title
Pitfalls in Tc99m polyphosphate skeletal imaging.

Source
American Journal of Roentgenology, Radium Therapy & Nuclear Medicine. 121(4):739-47, 1974 Aug.

Local Messages
CHECK HOLDINGS LISTS

MeSH Subject Headings

Adolescence
Adult
Age Factors
Aged
Bladder
Bone and Bones/me [Metabolism]
*Bone Diseases/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Female
Human
Hyperemia/me [Metabolism]
Male
*Phosphates/du [Diagnostic Use]
Phosphates/me [Metabolism]
Quality Control
Radionuclide Imaging/st [Standards]
*Radionuclide Imaging
Skull
Technetium/me [Metabolism]
Technetium/ur [Urine]
*Technetium
Urinary Tract/me [Metabolism]

Abstract
The quality of Tc-PP scans is best in younger patients. In all age groups quality is adversely affected by free TcO4-. This should be suspected if excessive background is present or marked accumulation is noted in the thyroid gland. Direct physician supervision of all studies is recommended. Symptomatic and roentgenographically positive areas may then be determined for special interpretative attention. Objects which attenuate activity should be removed or noted. Potential sources of superficial contamination (product spill, urine, saliva) must be known and considered when extraneous activity does not correlate with skeletal structures or clinical findings. Normal variations in skeletal uptake of Tc-PP include asymmetries between periarticular areas on the right and left, local increases due to physiologic calvarial thickening and uptake in persistently visualized sternal ossification centers. Apparent variations in the vertebral activity may be due to focal plane effects of rectilinear scanners. Hyperemia can cause diffusely increased Tc-PP localization in an entire extremity. This effect may completely obscure a lesion or obscure the extent of a lesion. Tc-PP excretion through the kidneys occasionally provides useful morphologic or functional information concerning the urinary tract which should be inspected on all scans. Abnormal soft tissue uptake occurs in a variety of conditions including healing wounds and some malignant tumors. A large percentage of patients over 40 years of age demonstrate localization of Tc-PP in the walls of the femoral vessels.

<2>

Unique Identifier
74258869

Authors
Geslien GE. Thrall JH. Johnson MC.

Title
Gallium scanning in acute hepatic amebic abscess.

Source
Journal of Nuclear Medicine. 15(7):561-3, 1974 Jul.

Local Messages
BAMC

MeSH Subject Headings

Adult
Citrates/du [Diagnostic Use]
Colloids
Comparative Study
*Gallium/du [Diagnostic Use]
Human
*Liver Abscess, Amebic/di [Diagnosis]
Male
Radioisotopes/du [Diagnostic Use]
*Radionuclide Imaging
Sulfur
Technetium/du [Diagnostic Use]

<3>

Unique Identifier

75159096

Authors

Thrall JH. Geslien GE. Corcoron RJ. Johnson MC.

Title

Abnormal radionuclide deposition patterns adjacent to focal skeletal lesions.

Source

Radiology. 115(3):659-63, 1975 Jun.

Local Messages

BAMC / STIMSON

MeSH Subject Headings

*Bone Diseases/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Femoral Neoplasms/di [Diagnosis]
Femoral Neoplasms/ra [Radiography]
Fractures/di [Diagnosis]
Giant Cell Tumors/di [Diagnosis]
Giant Cell Tumors/ra [Radiography]
Human
Ilium
Necrosis/di [Diagnosis]
Neoplasm Metastasis
Osteomyelitis/di [Diagnosis]
Osteosarcoma/di [Diagnosis]
Osteosarcoma/ra [Radiography]
*Phosphates/du [Diagnostic Use]
*Phosphonic Acids/du [Diagnostic Use]
*Radionuclide Imaging
Ribs/su [Surgery]
Sarcoma, Ewing's/di [Diagnosis]
Sarcoma, Ewing's/ra [Radiography]
*Technetium
Thrombophlebitis/di [Diagnosis]
Tibia

Abstract

A scintigraphic pattern is described for bone scans with 99m-Tc-polyphosphate and 99m-Tc-diphosphonate in which abnormal tracer accumulation extends beyond the known limits of certain skeletal lesions. The associated pathologic entities include benign and malignant tumors, infection, and trauma. The pathogenesis of "extended patterns" has not been proved but probably relates to regional hyperemia induced by associated lesions. Increased blood flow results in more tracer delivery to otherwise normal bone in the "watershed" areas of hyperemia, producing these patterns.

<4>

Unique Identifier

74264327

Authors

Ghaed N. Thrall JH. Pinsky SM. Johnson MC.

Title

Detection of extraosseous metastases from osteosarcoma with 99mTc-polyphosphate bone scanning.

Source

Radiology. 112(2):373-5, 1974 Aug.

Local Messages

BAMC / STIMSON

MeSH Subject Headings

Adult
Child
*Femoral Neoplasms/di [Diagnosis]
Human
*Lung Neoplasms/di [Diagnosis]
Male
Neoplasm Metastasis
*Osteosarcoma/di [Diagnosis]
*Radionuclide Imaging
*Technetium

Event Number:	ACIR72000-R	**Service:**	Army		
Event Title:	Clinical trial of radiotherapy and chemotherapy (cyclophosphamide, vincristine, and actodactinomycin) in managing non-metastatic Ewing's sarcoma, SWOG 7299				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-R
RECORDS: None available.
CIRS: The investigator was LTC Fredrich H. Stutz, MC. The study was approved on 15 Nov 77 and terminated on 5 May 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

ACTION: (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

R RETRIEVE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. A1839

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> adult SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  R RETRIEVE     SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> A1839

FACILITY===> MAMC                                  WORK UNIT #==>
STUDY TYPE=> 3                                     STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL TRIAL OF RADIOTHERAPY AND CHEMOTHERAPY (CYCLOPHOSPHAMIDE,
     => VINCRISTINE, AND ACTO-DACTINOMYCIN) IN MANAGING NON-METASTATIC EWING'S
     => SARCOMA.
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE     RANK/TITLE
INVESTIGATOR=> [redacted]                [redacted]            [redacted]
              =>                         >                     >        >
              =>                         >                     >        >
              =>                         >                     >        >
              =>                         >                     >        >
              =>                         >                     >        >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  R RETRIEVE     SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. A1839

ONCOLOGY STUDY GROUP--NAME=> SWOG      NO.=> 7299      STUDY CLASS=> 5 > 1 >

        GENERIC NAME                          BRAND NAME
DRUGS=> VINCRISTINE                      =>
     => CYCLOPHOSPHAMIDE (CYTOXAN)       =>
     => ADRIAMYCIN                       =>
     => ACTINOMYCIN-D                    =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT----
HSC =>
MRDC=>   VINCRISTINE, CYTOXAN, ADRIAMYCIN, ACTINOMYCIN-D

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  R RETRIEVE     SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. A1839

                                                                      VALID FOR
                                  DD MMM YY   ACTION   PROTOCOL   STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __    ...        ...        2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __    ...        ...        2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __    ...        ...        ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __    ...        ...        2,3,4
E) [redacted]                                    ...        ...        ALL
F) EXPEDITED REVIEW................ __ ___ __    ...        ...        4
I) HSRRB ACTION.................... 13 NOV 77    CO          _         4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __    __          _         2,3,4
M) PROGRESS REPORT RECD AT HURO.... 5_ MAY 80    ...        ...        ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __    ...        ...        ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __    ...        ...        ALL
C) ADVERSE EFFECTS LAST REPORTED... __ ___ __    NO. REPORTED TO DATE=> 0__
```

Stimson Library - OVID System

<1>

Unique Identifier

83102818

Authors

Thomas PR. Foulkes MA. Gilula LA. Burgert EO. Evans RG. Kissane J. Nesbit ME. Pritchard DJ. Tefft M. Vietti TJ.

Title

Primary Ewing's sarcoma of the ribs. A report from the intergroup Ewing's sarcoma study.

Source

Cancer. 51(6):1021-7, 1983 Mar 15.

Local Messages

STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adolescence
Adult
Antineoplastic Agents/ad [Administration & Dosage]
Bone Neoplasms/dt [Drug Therapy]
Bone Neoplasms/rt [Radiotherapy]
Bone Neoplasms/sc [Secondary]
*Bone Neoplasms/su [Surgery]
Child
Child, Preschool
Drug Therapy, Combination
Female
Human
Infant
Lung Neoplasms/sc [Secondary]
Male
Neoplasm Recurrence, Local
Prognosis
Random Allocation
*Ribs
Sarcoma, Ewing's/dt [Drug Therapy]
Sarcoma, Ewing's/rt [Radiotherapy]
*Sarcoma, Ewing's/su [Surgery]
Support, U.S. Gov't, P.H.S.

Abstract

Thirty-six patients with primary Ewing's sarcoma of the ribs have been reviewed. Of these, 21 had clinically localized disease at diagnosis and were entered on protocol IESS 7299, eight had regional and seven metastatic disease at diagnosis and were entered on protocol 7450. The 21 with localized disease were treated with surgical excision or biopsy, followed by local radiotherapy (in all but one patient) and randomization to one of three chemotherapy regimens. Eleven patients (52%) remain disease-free for periods ranging from 18 to 64 months, respectively. Seven of eight patients who underwent complete surgical excision of the primary lesion remain disease-free, compared with four of 12 (excluding one patient who died disease-free) who remain disease-free after partial excision or biopsy. However, analysis of size of tumor at diagnosis reveals that smaller primary tumors have a better prognosis irrespective of extent of surgery. Protocol IESS 7450, consisted of radiotherapy to all areas of known disease and four drug chemotherapy. Four (50%) with regional disease but none with metastatic disease have remained alive and continuously disease-free. It is concluded that an aggressive approach to Ewing's sarcoma of the ribs is justified by the results, as even regional disease may be curable. The apparent prognostic advantage for those patients undergoing surgical excision may be explained by patient selection.

Registry Numbers

0 (Antineoplastic Agents).

Event Number:	ACIR72000-T	**Service:**	Army		
Event Title:	Technetium-99m stannous polyphosphate in the diagnosis of bone disease in patients				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	72	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR72000-T
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier
75159859

Authors
Letts RM. Afifi A. Sutherland JB.

Title
Technetium bone scanning as an aid in the diagnosis of atypical acute osteomyelitis in children.

Source
Surgery, Gynecology & Obstetrics. 140(6):899-902, 1975 Jun.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Acute Disease
Adolescence
*Bone and Bones
Child
Child, Preschool
Female
Femur
Human
Infant
Male
*Osteomyelitis/di [Diagnosis]
Pelvic Bones
*Radionuclide Imaging
Scapula
*Technetium
Tibia

Abstract
Technetium bone scanning is a simple, safe and accurate method for the diagnosis of acute osteomyelitis in children whose presenting clinical findings are atypical of bone infection. Bone scanning was effective in the localization of the exact site of osteomyelitis, thus facilitating needle aspiration as well as subsequent surgical decompression. Tehcnetium bone scanning is a diagnostic technique for determining bone infection in children who are unable to communicate adequately or in those whose signs have been modified by previous inadequate antibacterial therapy.

Stimson Library - OVID System

<1>

Unique Identifier

79208280

Authors

Donato AT. Ammerman EG. Sullesta O.

Title

Bone scanning in the evaluation of patients with lung cancer.

Source

Annals of Thoracic Surgery. 27(4):300-4, 1979 Apr.

Local Messages

BAMC

MeSH Subject Headings

Adult
Aged
Biopsy
Bone Neoplasms/ra [Radiography]
*Bone Neoplasms/ri [Radionuclide Imaging]
Diagnostic Errors
Human
Lung Neoplasms/ra [Radiography]
*Lung Neoplasms/ri [Radionuclide Imaging]
Male
Middle Age
Neoplasm Metastasis
Technetium/du [Diagnostic Use]
Time Factors

Abstract

Sixty patients suspected of having lung cancer were evaluated for bone metastasis by means of technetium 99m stannous-polyphosphate bone scanning and correlative radiographic bone survey. Diagnosis of lung cancer was histologically proved in all patients. Scans demonstrated evidence of bone metastasis in 20 patients (33.4%) and radiographs, in 10 patients (16.6%). Twenty-four patients had repeat skeletal evaluation at one to eleven months after the first study. Of these patients, 7 initially demonstrating both negative scans and radiographs showed abnormal scans within five months. Bone scans correlated with radiographs in 53.3% and with accompanying bone pain in 33.3% of patients. False negative and false equivocal results were noted in 4 patients. This study suggests that bone scanning with 99mTc stannous-polyphosphate detected early bone metastasis in patients with lung cancer before these lesions became evident clinically or radiographically. Bone scanning is of value during the initial evaluation to determine operability in patients with lung cancer.

Stimson Library - OVID System

<1>

Unique Identifier
76127240

Authors
Treves S. Khettry J. Broker FH. Wilkinson RH. Watts H.

Title
Osteomyelitis: early scintigraphic detection in children.

Source
Pediatrics. 57(2):173-86, 1976 Feb.

Local Messages
STIMSON / BAMC

MeSH Subject Headings

Abscess/di [Diagnosis]
Adolescence
Bone Diseases/di [Diagnosis]
Cellulitis/di [Diagnosis]
Child
Child, Preschool
Female
Human
Male
*Osteomyelitis/di [Diagnosis]
Osteomyelitis/ra [Radiography]
*Radionuclide Imaging
Technetium/du [Diagnostic Use]
Time Factors

Abstract
The value of scintigraphy in the early detection of osteomyelitis is demonstrated in children who had signs and symptoms suggestive of bone infection. Nine patients between 2 and 13 years of age were evaluated with technetium Tc 99m diphosphonate bone scintigrams and roentgenograms. Blood cultures were performed in all patients, and bone biopsy or drainage was obtained in six patients. The diagnosis of osteomyelitis was made in seven patients; one patient had a subperiosteal abscess surrounded by osteomyelitis, and one patient had cellulitis. The seven children with osteomyelitis had focal increase of radiopharmaceutical uptake in the bone. The child with the subperiosteal abscess had an area of decreased uptake in the center of the abscess surrounded by a zone of increased uptake of the radioactive bone-seeker. The patient with cellulitis had soft tissue changes by X-ray and a normal bone scintigram. In the seven patients with osteomyelitis, the bone scintigram was performed during the early phase of the disease and no bony changes were present on the roentgenogram. In one patient with subacute osteomyelitis, soft tissue changes were seen radiologically. Only three of the seven children with osteomyelitis developed radiological bony changes. Since bone scintigraphy can detect early local bone derangement, it is recommended in the initial evaluation of children in whom osteomyelitis is suspected.

Event Number:	ACIR73000-A	**Service:**	Army
Event Title:	Study of 99m-Tc sulfide colloid as an agent for radioisotope lymphography		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Kaplan WD, et al: A comparison of two technetium-99m-labeled radiopharmaceuticals for lymphoscintigraphy. J Nuc Med 20:933-7, 1979 describes this imaging technique.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier
80139367

Authors
Kaplan WD. Davis MA. Rose CM.

Title
A comparison of two technetium-99m-labeled radiopharmaceuticals for lymphoscintigraphy: concise communication.

Source
Journal of Nuclear Medicine. 20(9):933-7, 1979 Sep.

Local Messages
BAMC

Abstract
A comparison of stannous phytate and antimony sulfide colloid, both labeled with Tc-99m, was conducted during the performance of internal mammary lymphoscintigraphy in 46 patients. Thirteen of these patients were randomized to receive both radiotracers in two consecutive studies. The results indicated a statistical difference between agents; Tc-99m antimony sulfide allowed visualization of a greater number of more intense nodes, better delineation of the total length of the internal mammary lymph-node chain, and a more consistent visualization of supraclavicular nodes. Although previously published animal data suggest utility of Tc-99m stannous phytate for lymph-node imaging, Tc-99m antimony sulfide was shown in this clinical comparison to provide a more reliable representation of lymph-node anatomy.

Registry Numbers
0 (technetium Tc 99m antimony sulfide). 0 (technetium Tc 99m stannous phytate). 7440-26-8 (Technetium). 7440-36-0 (Antimony). 83-86-3 (Phytic Acid).

Event Number:	ACIR73000-B	**Service:**	Army
Event Title:	Comparison of the use of radioactive phosphorus and radio-iodinated chloroquine in the diagnosis of melanoma tumors of the eye		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR73000-C	**Service:**	Army
Event Title:	99m-Tc polyphosphate in the diagnosis of bone disease in patients		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents

Event Abstract:

EVENT NUMBER: ACIR73000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
77078540
Authors
Edeling CJ.
Title
Bone scintigraphy in children.
Source
Nuklearmedizin. 15(5):228-32, 1976 Oct.
MeSH Subject Headings
Adolescence
*Bone Diseases/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Case Report
Child
Child, Preschool
Diphosphates/du [Diagnostic Use]
Female
Human
Infant
Male
Phosphates/du [Diagnostic Use]
*Radionuclide Imaging
Technetium/du [Diagnostic Use]
Abstract
Bone scintigraphy with 99mTc-polyphosphate or 99mTc-pyrophosphate was carried out in 54 children suspected of bone disease. Signs of skeletal metastases were recognized in 13 children by scintigraphy whereas X-ray examination showed lesions in only 10 of these. In 5 children with primary osteosarcoma, three cases of fibrous dysplasia, and 4 cases of osteomyelitis, the lesions were clearly demonstrated by scintigraphy. Abnormal accumulation of radioactivity in soft tissue lesions was observed in primary adrenal neuroblastoma, Hodgkin's granuloma, and metastatic Burkitt's lymphoma. Several cases are reported, and the value of bone scintigraphy in children is discussed.

<2>
Unique Identifier
77121199
Authors
Wilson ES.
Title
Positive 99mTechnetium polyphosphate bone scan in eosinophilic granuloma.
Source
Journal of the Medical Society of New Jersey. 74(3):247-9, 1977 Mar.
MeSH Subject Headings
Adult
*Bone Diseases/di [Diagnosis]
Case Report
*Eosinophilic Granuloma/di [Diagnosis]
Human
Male
*Radionuclide Imaging
Technetium/du [Diagnostic Use]

<3>
Unique Identifier
79208280
Authors
Donato AT. Ammerman EG. Sullesta O.
Title
Bone scanning in the evaluation of patients with lung cancer.
Source
Annals of Thoracic Surgery. 27(4):300-4, 1979 Apr.
Local Messages
BAMC
MeSH Subject Headings
Adult
Lung Neoplasms/ra [Radiography]

Aged
Biopsy
Bone Neoplasms/ra [Radiography]
*Bone Neoplasms/ri [Radionuclide Imaging]
Diagnostic Errors
Human
*Lung Neoplasms/ri [Radionuclide Imaging]
Male
Middle Age
Neoplasm Metastasis
Technetium/du [Diagnostic Use]
Time Factors

Abstract

Sixty patients suspected of having lung cancer were evaluated for bone metastasis by means of technetium 99m stannous-polyphosphate bone scanning and correlative radiographic bone survey. Diagnosis of lung cancer was histologically proved in all patients. Scans demonstrated evidence of bone metastasis in 20 patients (33.4%) and radiographs, in 10 patients (16.6%). Twenty-four patients had repeat skeletal evaluation at one to eleven months after the first study. Of these patients, 7 initially demonstrating both negative scans and radiographs showed abnormal scans within five months. Bone scans correlated with radiographs in 53.3% and with accompanying bone pain in 33.3% of patients. False negative and false equivocal results were noted in 4 patients. This study suggests that bone scanning with 99mTc stannous-polyphosphate detected early bone metastasis in patients with lung cancer before these lesions became evident clinically or radiographically. Bone scanning is of value during the initial evaluation to determine operability in patients with lung cancer.

<4>

Unique Identifier

79027361

Authors

Sneppen O. Heerfordt J. Dissing I. Jensen M. Moller J. Norbjerg M.

Title

Numerical assessment of bone scintigraphy in primary bone tumors and tumor-like conditions.

Source

Journal of Bone & Joint Surgery - American Volume. 60(7):966-9, 1978 Oct.

Local Messages

STIMSON / BAMC

MeSH Subject Headings

Adolescence
Adult
Age Factors
Aged
Bone and Bones/me [Metabolism]
Bone Diseases/me [Metabolism]
*Bone Diseases/ri [Radionuclide Imaging]
Bone Neoplasms/me [Metabolism]
*Bone Neoplasms/ri [Radionuclide Imaging]
Child
Child, Preschool
Diagnosis, Differential
Evaluation Studies
Female
Human
Infant
Male
Middle Age
Technetium/du [Diagnostic Use]
Technetium/me [Metabolism]

Abstract

Fifty-four tumors or tumor-like conditions in bone were studied by numerically assessed 99m-technetium polyphosphate scintigraphy. The uptake was expressed as a ratio of the uptake in the tumor region to the uptake in a corresponding region in the contralateral part of the body. In the malignant tumors there was marked variation in the uptake within each individual tumor group, a variation that rendered a differential diagnosis impossible. In general, the uptake was fairly high in malignant tumors and lower in benign ones. A ratio below 1.5 suggested the likelihood that the lesion was benign. The ratios also varied considerably with the site of the tumor and the patients' ages. Relatively low ratios were found for tumors of the trunk and for juxta-articular tumors in children, whereas higher and more varied ratios were observed in tumors of the peripheral skeleton in adults. It is concluded that numerically assessed scintigraphy is not a useful supplement to other methods used for diagnosing bone tumors.

Stimson Library - OVID System

<5>

Unique Identifier
76159056

Authors
Lentle BC. Russell AS. Percy JS. Scott JR. Jackson FI.

Title
Bone scintiscanning updated.

Source
Annals of Internal Medicine. 84(3):297-303, 1976 Mar.

Local Messages
STIMSON / BAMC

MeSH Subject Headings
*Bone Diseases/di [Diagnosis]
Human
Radionuclide Imaging/mt [Methods]
*Radionuclide Imaging
Strontium Isotopes
Strontium Radioisotopes
Technetium/du [Diagnostic Use]
Technetium/me [Metabolism]

Abstract
Use of modern materials and methods has given bone scintiscanning a larger role in clinical medicine, The safety and ready availability of newer agents have led to its greater use in investigating both benign and malignant disease of bone and joint. Present evidence suggests that abnormal accumulation of 99mTc-polyphosphate and its analogues results from ionic deposition at crystal surfaces in immature bone, this process being facilitated by an increase in bone vascularity. There is, also, a component of matrix localization. These factors are in keeping with the concept that abnormal scintiscan sites represent areas of increased osteoblastic activity, although this may be an oversimplification. Increasing evidence shows that the bone scintiscan is more sensitive than conventional radiography in detecting focal disease of bone, and its ability to reflect the immediate status of bone further complements radiographic findings. The main limitation of this method relates to nonspecificity of the results obtained. [References: 63]

Stimson Library - OVID System

<1>
Unique Identifier
76167702
Authors
Paul DJ. Gilday DL.
Title
Polyphosphate bone scanning of non-malignant bone disease in children.
Source
Journal of the Canadian Association of Radiologists. 26(4):285-90, 1975 Dec.
MeSH Subject Headings
Adolescence
*Bone and Bones
*Bone Diseases/di [Diagnosis]
Bone Neoplasms/ra [Radiography]
Case Report
Child
Femur Head/bs [Blood Supply]
Fractures/ra [Radiography]
Hand Injuries/ra [Radiography]
Human
Legg-Perthes Disease/ra [Radiography]
Male
Osteoma, Osteoid/di [Diagnosis]
Osteomyelitis/ra [Radiography]
Phosphates/du [Diagnostic Use]
*Radionuclide Imaging
*Technetium/du [Diagnostic Use]
Abstract
The advent of 99mTechnetium phosphate bone scanning radiopharmaceuticals has opened new methods of investigation of pediatric bone diseases. In axial skeleton pain, suspected osteomyelitis, evaluation of vascular integrity and suspected but undetected fractures, the bone scan has proved to be a highly complementary study to the radiologic examination.

<2>
Unique Identifier
76001102
Authors
Belliveau RE. Spencer RP.
Title
Incidence and sites of bone lesions detected by 99mTc-polyphosphate scans in patients with tumors.
Source
Cancer. 36(2):359-63, 1975 Aug.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
MeSH Subject Headings
Alkaline Phosphatase/bl [Blood]
*Bone Neoplasms/di [Diagnosis]
Breast Neoplasms
Comparative Study
Evaluation Studies
Female
Human
Hypercalcemia/et [Etiology]
Lung Neoplasms
Male
Middle Age
Neoplasm Metastasis
Pelvic Neoplasms/di [Diagnosis]
Prostatic Neoplasms
*Radionuclide Imaging
Ribs
Skull Neoplasms/di [Diagnosis]
Spinal Neoplasms/di [Diagnosis]
Strontium Radioisotopes
Support, U.S. Gov't, Non-P.H.S.
*Technetium/du [Diagnostic Use]
Abstract
The value of bone scanning with 99mTc-polyphosphate was assessed in 186 patients with various types of tumors. The sensitivity of this technique was greater than that of metastatic roentgenographic series and the reported results of 85-Sr-bone scans, in the detection of osseous involvement by tumors. Three cases with normal bone scans and abnormal roentgenographic studies illustrated the necessity and complementary value of comparing bone scan findings with radiographic studies. Patients with carcinoma of the breast, lung, or prostate displayed

characteristic patterns of bone involvement by their tumors. The importance of clinical information, including bone symptoms, antecedent bone disease, and serum calcium and alkaline phosphatase, was stressed in the detection and interpretation of bone scan abnormalities.

<3>
Unique Identifier
73031077
Authors
Lavender JP. Merrick MV. Burn JI. Witt J.
Title
Bone scanning with technetium-labelled polyphosphate.
Source
Lancet. 2(787):1143, 1972 Nov 25.
Local Messages
STIMSON / BAMC
MeSH Subject Headings
*Bone Diseases/di [Diagnosis]
Human
*Phosphates/du [Diagnostic Use]
*Radionuclide Imaging
*Technetium/du [Diagnostic Use]

<4>
Unique Identifier
74089952
Authors
Citrin DL. Greig WR. Calder JF. Bessent RG. Tuohy JB. Blumgart LH.
Title
Preliminary experience of bone scanning with 99mTc-labelled polyphosphate in malignant disease.
Source
British Journal of Surgery. 61(1):73-5, 1974 Jan.
Local Messages
BAMC
MeSH Subject Headings
Aged
Bone and Bones
*Bone Neoplasms/di [Diagnosis]
Bone Neoplasms/ra [Radiography]
Breast Neoplasms
Comparative Study
Diphosphates/du [Diagnostic Use]
Female
Human
Intestinal Neoplasms
Lung Neoplasms
Neoplasm Metastasis
Phosphates/du [Diagnostic Use]
*Radionuclide Imaging
*Technetium/du [Diagnostic Use]

<5>
Unique Identifier
74052369
Authors
Kaplan WD. Holman BL. Liebow PA. Davis MA.
Title
Enhanced detection of a skeletal lesion with delayed 99mTc-polyphosphate bone scanning.
Source
Journal of Nuclear Medicine. 15(1):47-9, 1974 Jan.
Local Messages
BAMC
MeSH Subject Headings
Aged
Lung Neoplasms/pa [Pathology]

*Bone Neoplasms/di [Diagnosis]
*Carcinoma, Bronchogenic/di [Diagnosis]
Carcinoma, Small Cell/di [Diagnosis]
Female
Human
Methods
Neoplasm Metastasis
Phosphates
*Radionuclide Imaging
Technetium/du [Diagnostic Use]

<6>
Unique Identifier
75198866
Authors
Bright RW. Nelson FR. Stevenson JS. Strash AM.
Title
Polyphosphate 99m-Tc scans: a quantitative method for evaluating clinical bone formation rates.
Source
Surgical Forum. 24:475-6, 1973.
Local Messages
BAMC
MeSH Subject Headings
Animal
*Bone and Bones/tr [Transplantation]
*Bone Development
*Bone Transplantation
Dogs
Graft Rejection/di [Diagnosis]
Phosphates/du [Diagnostic Use]
Radionuclide Imaging
Support, U.S. Gov't, Non-P.H.S.
*Technetium/du [Diagnostic Use]
Transplantation, Homologous

<7>
Unique Identifier
74272155
Authors
Redman JF. Turley JT.
Title
Technetium polyphosphate bone scans in carcinoma of prostate.
Source
Urology. 1(3):218-20, 1973 Mar.
Local Messages
BAMC
MeSH Subject Headings
*Adenocarcinoma/di [Diagnosis]
*Bone Neoplasms/di [Diagnosis]
Human
Male
Middle Age
Neoplasm Metastasis
*Phosphates/du [Diagnostic Use]
*Prostatic Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Technetium/du [Diagnostic Use]

<8>
Unique Identifier
74086209
Authors
Desaulniers M. Lacourciere Y. Lisbona R. Rosenthall L.
Title
A detailed comparison of bone scanning with 99mTc-polyphosphate and radiographic skeletal surveys for neoplasm.
Source
Journal of the Canadian Association of Radiologists. 24(4):340-3, 1973 Dec.
MeSH Subject Headings

Bone and Bones/ra [Radiography]
Bone Neoplasms/di [Diagnosis]
Bone Neoplasms/ra [Radiography]
Comparative Study
Female
Human
Male
Neoplasm Metastasis
*Neoplasms/di [Diagnosis]
Neoplasms/ra [Radiography]
*Radionuclide Imaging
*Technetium/du [Diagnostic Use]

<9>

Unique Identifier

73196828

Authors

Park CH. Glassman LM. Thompson NL. Mata JS.

Title

Reliability of renal imaging obtained incidentally in 99m Tc-polyphosphate bone scanning.

Source

Journal of Nuclear Medicine. 14(7):534-6, 1973 Jul.

Local Messages

BAMC

MeSH Subject Headings

Adenocarcinoma/di [Diagnosis]
Adolescence
Adult
Aged
*Bone Diseases/di [Diagnosis]
*Bone Neoplasms/di [Diagnosis]
Female
Human
Hydronephrosis/di [Diagnosis]
*Kidney Diseases/di [Diagnosis]
*Kidney Neoplasms/di [Diagnosis]
Kidney, Cystic/di [Diagnosis]
Male
Middle Age
Phosphates/du [Diagnostic Use]
*Radionuclide Imaging
*Technetium/du [Diagnostic Use]
Ureteral Diseases/di [Diagnosis]

Event Number:	ACIR73000-D	**Service:**	Army
Event Title:	Treatment of small cell carcinoma of lung: Combination chemotherapy + radiation vs single agent chemotherapy + radiation with and w/o prophylactic whole brain radiation. Comparison of cyclophos + vincristine + methotrex vs cyclophosph, CALGB 7283		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: Chahinian AP, et al: Small cell anaplastic carcinoma of the lung. The Cancer and leukemia Group B Experience. Bulletin du Cancer 69:79-82, 1982 describes this study (CALGB 7283).
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier

82183259

Authors

Chahinian AP. Comis RL. Maurer LH. Pajak TF.

Title

Small cell anaplastic carcinoma of the lung. The Cancer and Leukemia Group B Experience.

Source

Bulletin du Cancer. 69(1):79-82, 1982.

MeSH Subject Headings

*Antineoplastic Agents/tu [Therapeutic Use]
Brain Neoplasms/rt [Radiotherapy]
Brain Neoplasms/sc [Secondary]
*Carcinoma, Small Cell/dt [Drug Therapy]
Carcinoma, Small Cell/rt [Radiotherapy]
Clinical Trials
Comparative Study
Drug Administration Schedule
Drug Therapy, Combination
Human
*Lung Neoplasms/dt [Drug Therapy]
Lung Neoplasms/rt [Radiotherapy]

Abstract

Three protocols have been evaluated by the Cancer and Leukemia Group B (CALGB) for the treatment of small cell anaplastic cancer of the lung between 1972 to 1980. The first protocol (CALBG 7283) was a randomized comparison between 4 arms: high dose cyclophosphamide alone, cyclophosphamide plus methotrexate, cyclophosphamide plus methotrexate plus vincristine, and cyclophosphamide plus high-dose methotrexate plus vincristine. Response rate and survival were not significantly different among the 4 arms. Effectiveness of prophylactic brain radiotherapy and usefulness of maintenance chemotherapy were demonstrated. The next protocols (CALGB 7781 and 7782) compared two adriamycin containing regimens: MACC (methotrexate, adriamycin, cyclophosphamide, CCNU) versus CCV/AV (cyclophosphamide, CCNU, vincristine, alternating with adriamycin and vincristine). Split course radiotherapy (total 45 Gy over 4 weeks) was also given to all patients with limited disease (CALGB 7781) as well as prophylactic brian irradiation. Radiotherapy to the chest was also given in an additional arm of CALGB 7782 for patients with extensive disease. No significant differences were seen for response and survival within categories defined by extent of disease. Overall about 25 per cent of patients achieving complete remission remain alive at 2 years. The prognostic impact of different factors including extent of disease, performance of status, age and sex are discussed.

Registry Numbers

0 (Antineoplastic Agents).

Stimson Library - OVID System

<1>
Unique Identifier
73248925
Authors
Maurer LH. Tulloh M. Eagan RT. Forcier RJ. House R.
Title
Combination chemotherapy and radiation therapy for small cell carcinoma of the lung.
Source
Cancer Chemotherapy Reports - Part 3. 4(2):171-6, 1973 Mar.
MeSH Subject Headings

*Carcinoma, Bronchogenic/th [Therapy]
Carcinoma, Small Cell/dt [Drug Therapy]
Carcinoma, Small Cell/mo [Mortality]
Carcinoma, Small Cell/rt [Radiotherapy]
Carcinoma, Small Cell/th [Therapy]
Cyclophosphamide/tu [Therapeutic Use]
Human
Lung Neoplasms/co [Complications]
Lung Neoplasms/dt [Drug Therapy]
Lung Neoplasms/mo [Mortality]
Lung Neoplasms/rt [Radiotherapy]
*Lung Neoplasms/th [Therapy]
Methotrexate/tu [Therapeutic Use]
Neoplasm Metastasis
Procarbazine/tu [Therapeutic Use]
Time Factors
Vincristine/tu [Therapeutic Use]

<2>
Unique Identifier
73230207
Authors
Eagan RT. Maurer LH. Forcier RJ. Tulloh M.
Title
Combination chemotherapy and radiation therapy in small cell carcinoma of the lung.
Source
Cancer. 32(2):371-9, 1973 Aug.
Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC
MeSH Subject Headings

Adult
Aged
Bone Marrow
Carcinoma, Bronchogenic/dt [Drug Therapy]
Carcinoma, Bronchogenic/rt [Radiotherapy]
*Carcinoma, Bronchogenic/th [Therapy]
Cyclophosphamide/ad [Administration & Dosage]
Cyclophosphamide/tu [Therapeutic Use]
Evaluation Studies
Female
Human
Lung Neoplasms/dt [Drug Therapy]
Lung Neoplasms/rt [Radiotherapy]
*Lung Neoplasms/th [Therapy]
Male
Methotrexate/ad [Administration & Dosage]
Methotrexate/tu [Therapeutic Use]
Middle Age
Neoplasm Metastasis
Neoplastic Endocrine-Like Syndromes/co [Complications]
Procarbazine/ad [Administration & Dosage]
Procarbazine/tu [Therapeutic Use]
Radiotherapy Dosage
Time Factors
Vincristine/ad [Administration & Dosage]
Vincristine/tu [Therapeutic Use]

Stimson Library - OVID System

<1>
Unique Identifier
78250285
Authors
Matthiessen W.
Title
Controlled clinical trial of radiotherapy alone, against radiotherapy plus chemotherapy in small-cell carcinoma of the lung: comparison of radiation damage (preliminary results).
Source
Scandinavian Journal of Respiratory Diseases - Supplementum. 102:209-11, 1978.
MeSH Subject Headings
*Antineoplastic Agents/tu [Therapeutic Use]
Carcinoma, Small Cell/rt [Radiotherapy]
*Carcinoma, Small Cell/th [Therapy]
Clinical Trials
Human
Lung Neoplasms/rt [Radiotherapy]
*Lung Neoplasms/th [Therapy]
Neoplasm Metastasis
Palliative Care
Radiation Injuries
Radiation Tolerance
Radiotherapy Dosage
Radiotherapy, High-Energy

<2>
Unique Identifier
78122273
Authors
Livingston RB. Moore TN. Heilbrun L. Bottomley R. Lehane D. Rivkin SE. Thigpen T.
Title
Small-cell carcinoma of the lung: combined chemotherapy and radiation: a Southwest Oncology Group study.
Source
Annals of Internal Medicine. 88(2):194-9, 1978 Feb.
Local Messages
STIMSON / BAMC
MeSH Subject Headings
Brain Neoplasms/dt [Drug Therapy]
Brain Neoplasms/rt [Radiotherapy]
Carcinoma, Small Cell/dt [Drug Therapy]
Carcinoma, Small Cell/mo [Mortality]
Carcinoma, Small Cell/rt [Radiotherapy]
*Carcinoma, Small Cell/th [Therapy]
*Cyclophosphamide/ad [Administration & Dosage]
Cyclophosphamide/tu [Therapeutic Use]
*Doxorubicin/ad [Administration & Dosage]
Doxorubicin/tu [Therapeutic Use]
Drug Therapy, Combination
Human
Lung Neoplasms/dt [Drug Therapy]
Lung Neoplasms/mo [Mortality]
Lung Neoplasms/rt [Radiotherapy]
*Lung Neoplasms/th [Therapy]
Remission, Spontaneous
Support, U.S. Gov't, P.H.S.
*Vincristine/ad [Administration & Dosage]
Vincristine/tu [Therapeutic Use]
Abstract
Chemotherapy (doxorubicin, cyclophosphamide, and vincristine) was given in a sequential fashion with radiation of the primary tumor and brain to 358 patients with small-cell lung carcinoma (extensive disease in 250, limited in 108). Complete regression of tumor was obtained in 14% of patients with extensive disease and 41% of patients with limited disease, and complete or partial response in 57% and 75%, respectively. Median survival was 26 weeks for patients with extensive disease and 52 weeks for those with limited disease. Response duration was longer for patients in complete remission; one third had disease-free survival greater than 1 year. Toxicity from the combined treatment modalities was no greater than expected from the components given separately: fatal in 3.9%, and life-threatening but reversible in 8.4% of patients. Whole-brain radiation was effective in preventing isolated relapse at that site. This therapy appears both feasible and effective, with acceptable risks and some benefit to most patients.

Stimson Library - OVID System

<1>

Unique Identifier

81243558

Authors

Takita H. Edgerton F. Conway D. Marabella PC. Vincent RG.

Title

Surgical treatment of locally far-advanced lung carcinoma.

Source

Journal of Surgical Oncology. 17(3):283-6, 1981.

MeSH Subject Headings

Adenocarcinoma/mo [Mortality]
*Adenocarcinoma/su [Surgery]
Adenocarcinoma/th [Therapy]
Carcinoma, Squamous Cell/mo [Mortality]
*Carcinoma, Squamous Cell/su [Surgery]
Carcinoma, Squamous Cell/th [Therapy]
Human
Immunotherapy
Lung Neoplasms/mo [Mortality]
*Lung Neoplasms/su [Surgery]
Lung Neoplasms/th [Therapy]
Support, U.S. Gov't, P.H.S.
Time Factors

Abstract

It has been our policy to employ radical lung resection as a primary treatment whenever possible in locally far-advanced lung cancer. In order to assess the therapeutic results, a total of 132 patients with locally far-advanced lung cancer who had radical lung resection were reviewed. Postoperative mortality was 10%. A significant difference in survival was seen between those patients receiving no adjuvant therapy, radiation or single agent chemotherapy and those receiving cis-platinum-based polychemotherapy and/or immunotherapy (respective median survivals 14.25 and 25.68 months, P less than 0.05 Breslow test or failure rats). Aggressive surgery followed by effective adjuvant therapy in locally far-advanced Stage III lung carcinoma appears to produce acceptable survival results.

Event Number:	ACIR73000-E	**Service:**	Army		
Event Title:	Clinical evaluation of fluorescence scanning of the thyroid with an americium-241 source (external source)				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	73	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier

81167615

Authors

Ashcraft MW. Van Herle AJ.

Title

Management of thyroid nodules. II: Scanning techniques, thyroid suppressive therapy, and fine needle aspiration. [Review]

Source

Head & Neck Surgery. 3(4):297-322, 1981 Mar-Apr.

MeSH Subject Headings

Americium/du [Diagnostic Use]
Antithyroid Agents/tu [Therapeutic Use]
Biopsy, Needle
Cesium Radioisotopes/du [Diagnostic Use]
Gallium Radioisotopes/du [Diagnostic Use]
Human
Iodine Radioisotopes/du [Diagnostic Use]
Radioisotopes
Selenomethionine/du [Diagnostic Use]
Support, U.S. Gov't, P.H.S.
Technetium/du [Diagnostic Use]
Thallium/du [Diagnostic Use]
*Thyroid Neoplasms/di [Diagnosis]
Thyroid Neoplasms/dt [Drug Therapy]
Thyroid Neoplasms/pa [Pathology]

Abstract

For the differentiation of benign from malignant thyroidal disease, ultrasound displays anatomic but not histologic features. Other visualization techniques can be used including isotope scanning (radioiodine, 99m technetium, 241 americium fluorescence, 131 cesium, 67 gallium, 75 selenomethionine, 201 thallium, 32 phosphorus, 99m Tc-bleomycin, 197 mercury, 133 xenon), thermography, x-ray techniques (plain films, computed tomographic scan, xeroradiography, chest x-ray barium swallow, lymphography, angiography), and thyroid hormone suppression. Needle biopsy can be done by core biopsy (Vim-Silverman and drill biopsy), large needle biopsy for histologic processing and fine needle aspiration for cytologic interpretation. The latter is the safest, most reliable, and most cost-effective technique currently available to differentiate between benign and malignant thyroidal disease and has great promise for the future. [References: 275]

Registry Numbers

0 (Antithyroid Agents). 0 (Cesium Radioisotopes). 0 (Gallium Radioisotopes). 0 (Iodine Radioisotopes). 0 (Radioisotopes). 1464-42-2 (Selenomethionine). 7440-26-8 (Technetium). 7440-28-0 (Thallium). 7440-35-9 (Americium).

Event Number:	ACIR73000-F	**Service:**	Army
Event Title:	Gallium-67 citrate in the staging of carcinoma of the cervix		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR73000-G	**Service:**	Army
Event Title:	Scintigraphic evaluation of thyroid disorders - clinical evaluation of oral 123-I sodium iodide		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators | **Subject Type** | **Race/Ethnicity** | **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR73000-H	**Service:**	Army
Event Title:	Clinical evaluation of cisternography utilizing 111-indium DTPA (1973)		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Brooke Army Medical Center	Houston	TX	USA
Letterman Army Medical Center	San Francisco	CA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-H
RECORDS: None available.
CIRS: The investigator was LTC Robert Lull, MC. The study was approved on 4 Dec 73 and terminated on 30 Oct 82.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AB130

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> 1 > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 29Nov93 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AB130

FACILITY===> LAMC                                  WORK UNIT #==>
STUDY TYPE=> 4                                     STUDY STATUS=> T

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF CISTERNOGRAPHY, UTILIZING INDIUM-111 DTPA.
     =>
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                     > ROBERT J              > P   > LTC MC
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AB130

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 > 2 >

        GENERIC NAME                        BRAND NAME
DRUGS=> INDIUM-111 DTPA                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AB130
                                                                    VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...      ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...      ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...      ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...      ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 30 OCT 82      ...      ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...      ...       4
I) HSRRB ACTION.................... 4_ DEC 73      CO       _         4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __       _         2,3,4
M) PROGRESS REPORT RECD AT HURO.... 1_ APR 80      ...      ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...      ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...      ...       ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> A0404

FACILITY===> BAMC                                  WORK UNIT #==>
STUDY TYPE=> 4                                     STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF CISTERNOGRAPHY UTILIZING 111 INDIUM DTPA.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> TELEPAK                 > ROBERT                > P   > MAJ,MC
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. A0404

ONCOLOGY STUDY GROUP--NAME=>           NO.=>          STUDY CLASS=> 5 > 2 >

        GENERIC NAME                        BRAND NAME
DRUGS=> INDIUM-111 DTPA                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   BECK, ROSWELL, MAJ MC

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. A0404
                                                                    VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 2_ NOV 82     ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...       4
I) HSRRB ACTION.................... 4_ DEC 73      AP      _        4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __      _        2,3,4
M) PROGRESS REPORT RECD AT HURO.... 1_ OCT 79     ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...       ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL TYPE, (L)IST

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURC LOG NO. AC-04

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > CLASS=> 1 > > SEX=>

FUNCTIONS MENU (ENTER) ; CHOOSE ONLY ONE)...
FACT=> HNIFAM*=> ACC=> DIF*/HSC=> GIF*/GA=> BRAINS=>

DISEASE CLASS=> =>
  => =>

COMMENTS=>
  =>
  =>
  =>

INITIATOR HSC LAST UPDATED 29Nov93 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR73000-J	**Service:**	Army
Event Title:	Clinical trial of radiotherapy and chemotherapy (cyclophosphamide, vincristine, and actinomycin-D) in managing non-metastatic Ewing's sarcoma, CALGB 7391		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-J
RECORDS: None available.
CIRS: The investigator was LTC Jeffrey L. Berenberg, MC. The study was approved on 7 Nov 73 and terminated on 15 Apr 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AB150

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 3                                  STUDY STATUS=> A

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL TRIAL OF RADIOTHERAPY AND CHEMOTHERAPY (CYCLOPHOSPHAMIDE,
     => VINCRISTINE, AND ACTINOMYCIN-D) IN MANAGING NON-METASTATIC EWING'S
     => SARCOMA.
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> BERENBERG               > JEFFREY L             > P   > LTC MC
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AB150

ONCOLOGY STUDY GROUP--NAME=> CALGB     NO.=> 7391      STUDY CLASS=> 5 > 1 >

          GENERIC NAME                        BRAND NAME
DRUGS=> CYCLOPHOSPHAMIDE (CYTOXAN)       =>
     => VINCRISTINE                      =>
     => ACTINOMYCIN-D                    =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   CYTOXAN, VINCRISTINE, ACTINOMYCIN-D

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AB150

                                    DD MMM YY   ACTION  PROTOCOL  VALID FOR STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...       ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...       ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...       ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...       ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __ ___ __     ...       ...      ALL
F) EXPEDITED REVIEW................ __ ___ __     ...       ...      4
I) HSRRB ACTION.................... 7_ NOV 73      AP        _       4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __        _       2,3,4
M) PROGRESS REPORT RECD AT HURO.... 15 APR 80     ...       ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...       ...      ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...       ...      ALL
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AB150

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=> > > CLASS=> 1 > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 29JUL87 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR73000-K	**Service:**	Army
Event Title:	Use of gallium-67 citrate for tumor scanning (1973)		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Tripler Army Medical Center	Honolulu	HI	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

ACIR73000-K
Suspected duplicate of ACIR73000-S

See references at that Event Number

EVENT NUMBER: ACIR73000-K
RECORDS: None available.
CIRS: The investigator was MAJ Richard Littenberg, MC. The study was approved on 4 Dec 73 and terminated in Jul 77.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR73000-L	**Service:**	Army
Event Title:	Clinical evaluation of 123-I sodium iodide		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Letterman Army Medical Center	San Francisco	CA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-L
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier
74129164

Authors
Nishiyama H. Sodd VJ. Berke RA. Saenger EL.

Title
Evaluation of clinical value of 123I and 131-I in thyroid disease.

Source
Journal of Nuclear Medicine. 15(4):261-5, 1974 Apr.

Local Messages
BAMC

MeSH Subject Headings

Adult
Comparative Study
Female
Human
*Iodine Radioisotopes/du [Diagnostic Use]
Middle Age
*Radionuclide Imaging
*Thyroid Diseases/di [Diagnosis]

Stimson Library - OVID System

<1>
Unique Identifier
76259270
Authors
Mattsson S. Persson RB. Lundqvist H. Malmborg P.
Title
Preparation and quality control of high purity 123I for clinical use.
Source
International Journal of Applied Radiation & Isotopes. 27(5-6):319-23, 1976 May-Jun.
MeSH Subject Headings
*Iodine Radioisotopes/du [Diagnostic Use] Radionuclide Imaging
Quality Control

Event Number:	ACIR73000-M	**Service:**	Army		
Event Title:	Use of fluorine-18 as a bone scanning agent in a variety of bone diseases				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	73	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-M
RECORDS: None available.
CIRS: The investigator was COL John W. White, MC. The study was approved on 7 May 73 and terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC343

FACILITY===> BAMC                                  WORK UNIT #==>
STUDY TYPE=> 4                                     STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> THE USE OF FLOURINE-18 AS A BONE SCANNING AGENT IN A VARIETY OF BONE
     => DISEASES.
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> WHITE                    > JOHN W.               > P   > COL MC
              =>                        >                       >     >
              =>                        >                       >     >
              =>                        >                       >     >
              =>                        >                       >     >
              =>                        >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC343

ONCOLOGY STUDY GROUP--NAME=>           NO.=>          STUDY CLASS=>    >    >

         GENERIC NAME                      BRAND NAME
DRUGS=> FLUORINE-18                    =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC343
                                                                    VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __      ...      ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __      ...      ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __      ...      ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __      ...      ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 75      ...      ...      ALL
F) EXPEDITED REVIEW................ __ ___ __      ...      ...      4
I) HSRRB ACTION.................... 7_ MAY 73       AP       _       4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __       _       2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __      ...      ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __      ...      ...      ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __      ...      ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __      NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC343

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR73000-N	**Service:**	Army		
Event Title:	Use of technetium-99m polyphosphate in the diagnosis of bone disease				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	73	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators	Subject Type	Race/Ethnicity	Documents

Event Abstract:

EVENT NUMBER: ACIR73000-N
RECORDS: None available.
CIRS: The investigator was COL Martin P. Nusynowitz, MC. The study was approved on 4 Dec 73.
MEDLINE: Blumhardt R, Nusynowitz ML: A guide to bone scanning. Am Fam Phys, 9:153-7, 1974 may describe this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

R RETRIEVE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC452

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 25JUN82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  R RETRIEVE     SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC452

FACILITY===> WBAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> USE OF TECHNETIUM 99M POLYPHOSPHATE IN THE DIAGNOSIS OF BONE DISEASE.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> NUSYNOWITZ              > MARTIN                > P   > COL MC
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  R RETRIEVE     SCREEN=> 2      HSC ACCESS NO. 0          HURO LOG NO. AC452

ONCOLOGY STUDY GROUP--NAME=>           NO.=>          STUDY CLASS=>    >    >

        GENERIC NAME                        BRAND NAME
DRUGS=>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  R RETRIEVE     SCREEN=> 3      HSC ACCESS NO. 0          HURO LOG NO. AC452
                                                                    VALID FOR
                                        DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)...     __ ___ __     ...     ...      2,3,4
B) LOCAL HUMAN USE REVIEW.........      __ ___ __     ...     ...      2,3,4
C) APPROVED BY LOCAL COMMANDER.....     __ ___ __     ...     ...      ALL
D) CONTINUING HUMAN USE REVIEW.....     __ ___ __     ...     ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN..     __ ___ __     ...     ...      ALL
F) EXPEDITED REVIEW...............      __ ___ __     ...     ...      4
I) HSRRB ACTION.....................    4_ DEC 73      AP      _       4
J) OTSG ADMINISTRATIVE ACTION......     __ ___ __     __      _        2,3,4
M) PROGRESS REPORT RECD AT HURO....     __ ___ __     ...     ...      ALL
N) PROTOCOL RECEIVED AT HSC........     __ ___ __     ...     ...      ALL
O) PROTOCOL RECEIVED AT HURO.......     __ ___ __     ...     ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED...     __ ___ __     NO. REPORTED TO DATE=> 0__
```

ACIK73000-N NM BEAUMONT

Stimson Library - OVID System

<1>

Unique Identifier
74074506

Authors
Blumhardt R. Nusynowitz ML.

Title
A guide to bone scanning.

Source
American Family Physician. 9(1):153-7, 1974 Jan.

Local Messages
~~STIMSON~~ / BAMC

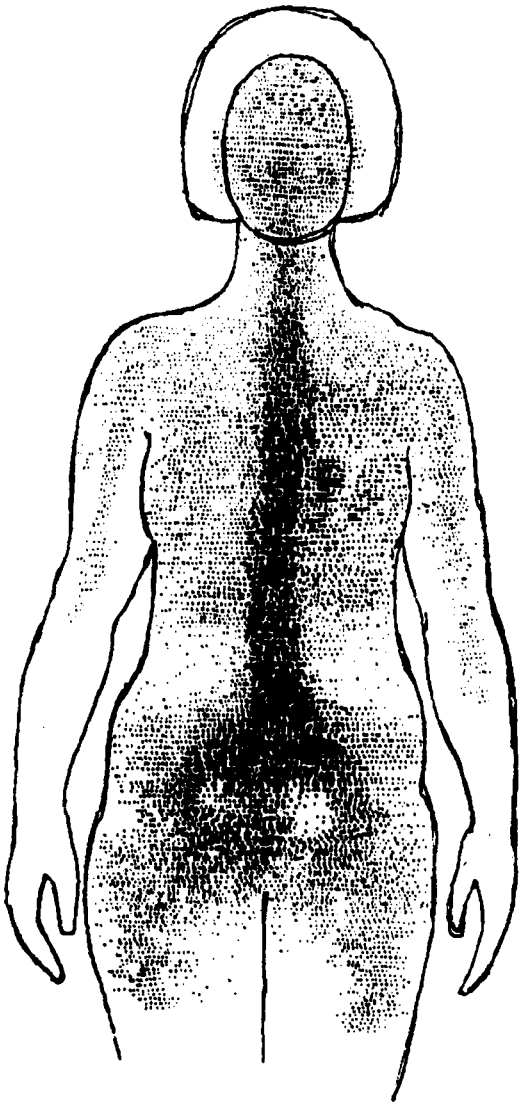
MeSH Subject Headings

Adolescence
Adult
Aged
Biopsy
Bone and Bones/an [Analysis]
*Bone and Bones
*Bone Diseases/di [Diagnosis]
Bone Diseases/ra [Radiography]
Bone Neoplasms/di [Diagnosis]
Calcium/an [Analysis]
Comparative Study
Female
Fluorides/du [Diagnostic Use]
Fractures/di [Diagnosis]
Hodgkin's Disease/di [Diagnosis]
Human
Hydroxyapatites
Ion Exchange
Male
Middle Age
Paraganglioma, Extra-Adrenal/di [Diagnosis]
Radiation Dosage
Radioisotopes/du [Diagnostic Use]
*Radionuclide Imaging
Strontium Radioisotopes
Technetium/du [Diagnostic Use]

Req. from BAMC

NOV-26-96 15:18 Medical Library, BAMC 210-916-6741 P.02

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A Guide to Bone Scanning

RALPH BLUMHARDT, M.D. and MARTIN L. NUSYNOWITZ, M.D.
William Beaumont Army Medical Center, El Paso, Texas

The bone scan is a simple and safe tool in the diagnosis of both benign and malignant osseous involvement. It is usually superior to conventional radiography in sensitivity. Thus, the two procedures are complementary. Bone scanning is useful for the evaluation of osseous involvement in patients with malignant disease, for establishing the location of bone involvement for specific diagnostic or therapeutic techniques, for the evaluation of fractures and for determining the activity of bone lesions.

Bone scanning has added a new dimension to the diagnosis of skeletal disease. While conventional radiographic techniques are highly specific diagnostically, too often bone lesions remain undetected by these methods, since the magnitude of resorption and/or reaction necessary to ensure visualization is great. On the other hand, the great sensitivity of bone scanning in detecting osseous lesions makes it an invaluable tool in the diagnosis, treatment and prognosis of a variety of benign and malignant disorders. Therefore, it is important to have an understanding of bone scanning, including its indications and limitations.

Principles of Bone Scanning

The hydroxyapatite crystal of bone exists in two physiologic compartments. The larger compartment represents a slowly exchangeable pool, whereas the smaller compartment contains ions that are freely exchangeable across the crystal interstitial fluid interface. These ions are readily replaced by radioactive ions in the interstitial fluid (*e.g.*, radiostrontium exchanges with calcium and radiofluoride exchanges with hydroxyl). In addition, radiotechnetium can be linked with phosphate compounds (as polyphosphate or diphosphonate) and adsorb to the hydroxyapatite crystal.

Areas of accelerated bone turnover allow exchange of bone crystal components with interstitial fluid ions at an increased rate. This is true whether the increased bone activity is normal (such as in epiphyseal centers in children) or pathologic (the result of neoplastic disease, fracture or infection). The bone scan really reflects sites of increased exchange and thus is diagnos-

tically nonspecific; on the other hand, this increased exchange occurs early in the course of a bone lesion, accounting for the great sensitivity of the bone scan.

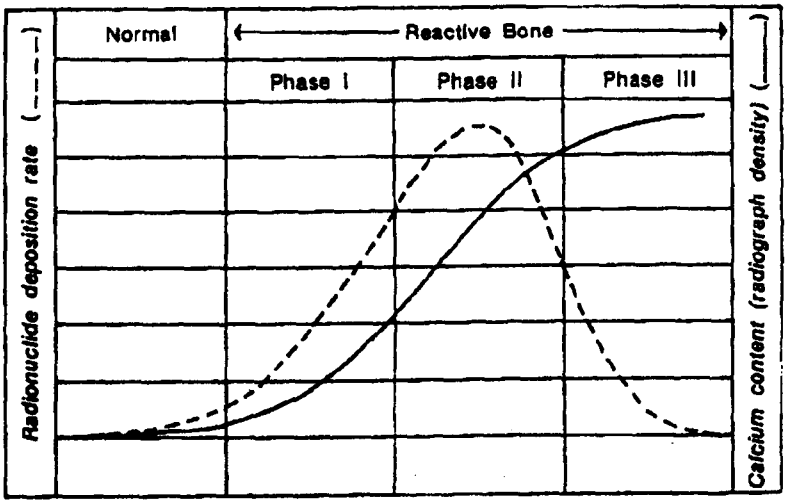


FIGURE 1. Three phases in development of an osseous lesion. The radiograph density is shown by the solid line and the scan density by the broken line. In Phase I, the rate of concentration of radiopharmaceutical is high in the immature reactive bone, while the mineral content is low, accounting for positive scans and negative radiographs. In Phase II, the rate of mineralization is maximal and the mineral content is high. Both the scan and radiograph are positive. In Phase III, the rate of mineral deposition (and hence radiopharmaceutical uptake) is low, while the calcium content is maximal, accounting for positive radiographs and negative scans. The lesion is sclerotic. (Figure adapted from Charkes and his coauthors, in *Radiology*, 107:563-570.)



The Author

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is chief of the Nuclear Medicine Service at Letterman Army Medical Center, San Francisco. A graduate of Hahnemann Medical College, Philadelphia, Dr. Blumhardt took his internship at Tripler Army Medical Center, Honolulu. He served a residency in internal medicine at Madigan Army Medical Center, Fort Lewis, Wash., and a residency in nuclear medicine at William Beaumont Army Medical Center, El Paso, Tex. He is board certified by the National Board of Medical Examiners, the American Board of Internal Medicine and the American Board of Nuclear Medicine.

Bone Imaging Agents

The first practical radiopharmaceutical for bone scanning was strontium-85 (^{85}Sr). However, the high radiation content of this agent limits its use to patients with known or suspected cancer and even then it is used in small doses. Longer scanning times are required with ^{85}Sr than with the newer agents (one to two hours per study, compared to 30 to 45 minutes). Furthermore, since ^{85}Sr is protein bound, one must wait three to four days between administration of the dose and performance of the scan, to allow adequate clearing of the blood background activity. Since the radiopharmaceutical is excreted into the gut, bowel radioactivity may interfere with evaluation of the pelvic area.

Fluorine-18 (^{18}F) as the fluoride offers several advantages over ^{85}Sr. Its short half-life produces lower radiation exposure, allowing larger dose administration (millicuries instead of microcuries). This results in a faster scanning time and permits scanning of patients with benign disease. Its rapid clearance from the blood (^{18}F is not protein bound) allows scanning within two hours of dose administration; thus, only one clinic visit is required to complete the study.

Technetium (^{99m}Tc) polyphosphate and diphosphonate have all the advantages of ^{18}F. In addition they are less expensive than ^{18}F and the lower gamma photon energy of the ^{99m}Tc is better suited for imaging with the gamma scintillation camera. These compounds are also more accurate in detecting lesions than ^{18}F.

The radiation exposure from the newer bone scanning agents compares favorably with routine radiographic studies. Marrow exposure with both ^{18}F and ^{99m}Tc polyphosphate is about 0.16 rad, whereas the marrow exposure from an x-ray of the

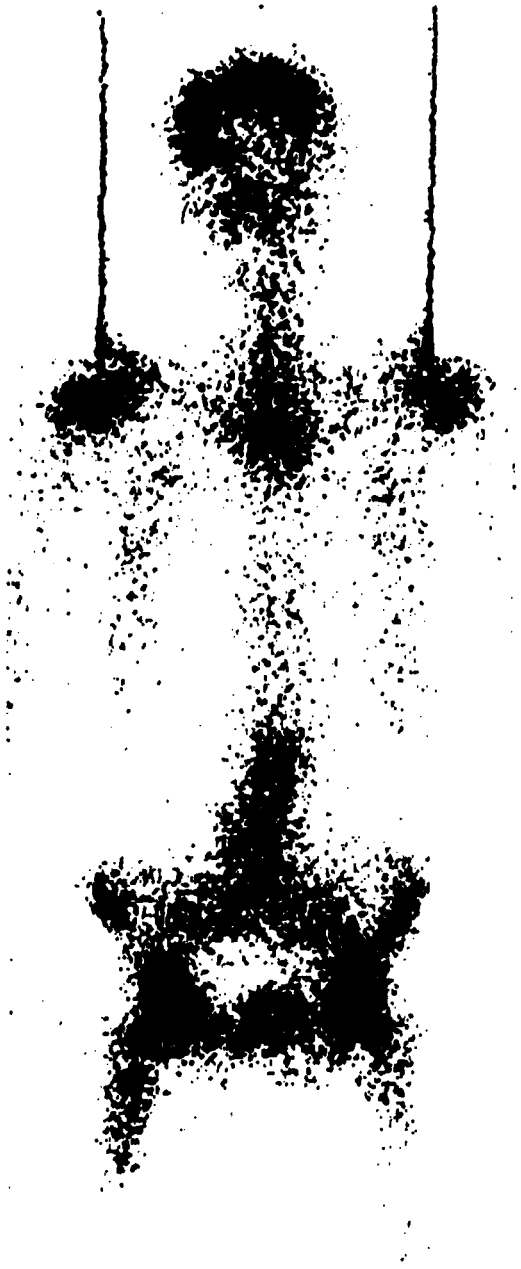


FIGURE 2. This is a 27-year-old male patient with Hodgkin's disease. Note the extension of radioactivity down the femurs bilaterally, indicating bone involvement. This was confirmed by marrow biopsy.



FIGURE 3. This 81-year-old woman had a left radical mastectomy for breast carcinoma five years prior to this scan. A lumbar laminectomy had been performed one and one-half years before and evaluation was requested because of thoracic and lumbar spinal pain. Conventional radiography did not demonstrate any definite evidence of bone metastases. Note the areas of involvement in both the thoracic and lumbar spine. Radiation therapy to both areas resulted in clinical improvement.

lumbosacral spine is approximately 0.30 rad.

Correlation with the Radiograph

Charkes and his colleagues postulated that bone lesions exist in three phases, depending upon the age of the lesion. These three phases are diagramed in *Figure 1*.

Phase I. Early in the course of a lesion, both bone destruction and reactive bone formation are occurring, generally at an increasing rate. The scan will usually be

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positive since the concentration of radiopharmaceutical in an osseous lesion is proportional to the rate of bone destruction and reaction. The radiograph, on the other hand, is usually negative since a large change in calcium content is necessary for a lesion to be detected radiographically. Thus, in early bone disease, bone scanning is more sensitive than the radiograph.

Phase II. Here both bone destruction and reactive formation are occurring and the process is extensive. As a result, both the bone scan and the radiograph will be positive.

Phase III. This phase represents old, highly calcified bone. The radiograph is almost always positive (radiodense), whereas the bone scan may be negative, since the rate of the destructive and reactive process is low.

Interpretation of Bone Scans

Since the skeletal system is basically symmetric, we are provided with a means for comparison between an abnormal area of increased radionuclide concentration and a corresponding normal region. The evaluation of the vertebral spine is based on comparison of neighboring vertebrae. Normal areas of increased radionuclide concentration include: (1) the sacroiliac region; (2) the ends of long bones; (3) the tips of the scapulas; (4) the acetabulum and greater trochanter, and (5) the tarsal and carpal bones.

In interpreting bone scans, symmetric lesions may pose problems since the basis for comparison is lost. Furthermore, the large amount of bladder activity seen with ^{18}F or ^{99m}Tc polyphosphate or diphosphonate may obscure lesions in the pelvic area. This problem can be avoided by rescanning the pelvis immediately after the patient voids. Likewise, bowel activity with ^{85}Sr scans causes interpretative problems and the study must frequently be repeated after cleansing enemas.

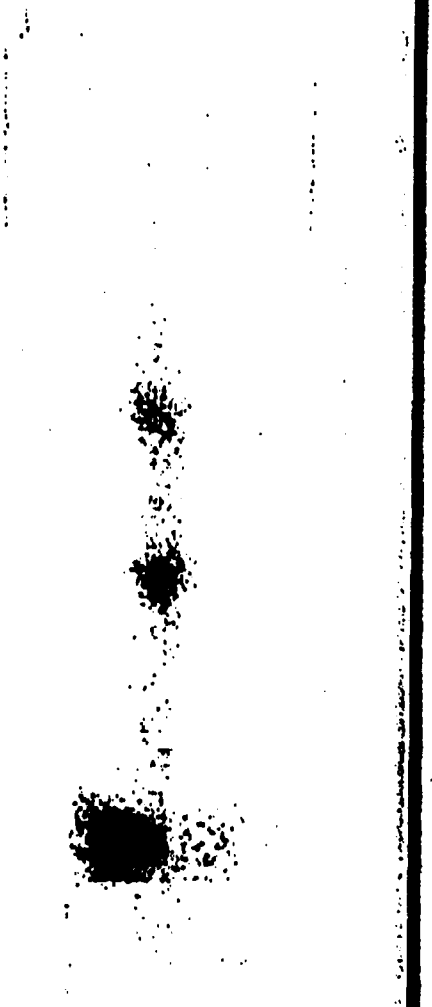


FIGURE 4. This 18-year-old woman presented with pain in the thoracic spine region. Conventional radiographs revealed vertebra plana at T-5 and T-12. This bone scan demonstrates an additional site of involvement in the left sacroiliac region. This area was accessible for biopsy under local anesthesia. Tissue diagnosis was chemodectoma.

Common Clinical Applications of the Bone Scan

EVALUATION OF PATIENTS WITH CANCER

Bone scanning is especially useful in the evaluation of patients with malignant disease prior to the institution of treatment. One common example is the determination of the presence of bone metastases in the preoperative evaluation of a patient with

suspicious breast mass. Obviously, the presence of such lesions would drastically alter the type of operative procedure employed. Similarly, bone scanning is extremely useful in staging Hodgkin's disease. *Figure 2* shows the bone scan obtained in a 27-year-old man with Hodgkin's disease. Bone involvement was confirmed by marrow biopsy.

LOCALIZATION OF OSSEOUS METASTASES

The establishment and localization of bone involvement in cancer patients is an extremely important application of bone scanning. Many such patients have pain and yet conventional radiography often shows no abnormality. Bone scanning demonstrates the presence and location of metastatic sites so that radiotherapy may be employed. *Figure 3* is illustrative of such a case.

LOCALIZATION OF SUITABLE BIOPSY SITES

Bone scan is particularly useful in showing the extent and location of both benign and malignant bone disease. As a result, areas of involvement suitable for bone biopsy are often demonstrable by this technique. For example, a patient with a known thoracic vertebral lesion was also found to have a sacroiliac lesion which was much more accessible for biopsy (*Figure 4*).

EVALUATION OF FRACTURES

The demonstration of multiple sites of increased radionuclide concentration in a patient with a known fracture would suggest that the fracture is pathologic in origin and resulted from generalized disease. An example of this is depicted in *Figure 5*. In another application, patients with extensive trauma and multiple fractures may have lesions which are undetected in the clinical setting. Bone scan often calls attention to them.



FIGURE 5. This 46-year-old woman presented with thoracic spine pain. There was no history of trauma. A radiograph of the region revealed a vertebral fracture of T-6. The bone scan demonstrated additional sites of bone involvement, suggesting that the T-6 fracture was pathologic. A subsequent liver biopsy revealed adenocarcinoma (site of origin unknown).

A coupon for ordering this article's bibliography is adjacent to the "Index to Advertisers."

Event Number:	ACIR73000-O	**Service:**	Army
Event Title:	Investigational new drug indium-111 chloride for intravenous injection		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-O
RECORDS: None available.
CIRS: The investigator was MAJ David Milstein, MC. The study was approved on 4 Dec 73 and terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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     =>
     =>
     =>
     =>

                 LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> MILSTEIN                > DAVID                > P   > MC
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CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...      ...      2,3,4
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J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __       _       2,3,4
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N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...      ...      ALL
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Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
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PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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DISEASE CLASS=> =>
=> =>

COMMENTS=>
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INITIATOR HSC LAST UPDATED 29Nov93 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR73000-P	**Service:**	Army		
Event Title:	Gallium-67 nitrate in diagnosis of soft tissue tumors				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	73	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-P
RECORDS: None available.
CIRS: The investigator was MAJ David Milstein, MC. The study was approved on 15 Nov 73 and terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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DISEASE CLASS=> =>
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COMMENTS=>
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INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

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     =>
     =>
     =>

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INVESTIGATOR=> MILSTEIN             >                     > P    > DAVID
             =>                     >                     >      >
             =>                     >                     >      >
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CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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DEVICES=>
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NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
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F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... 15 NOV 73      AP      _      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __      _       2,3,4
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Event Title:	Technetium-99m stannous polyphosphate in the diagnosis of bone disease in patients		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-Q
RECORDS: None available.
CIRS: The investigator was MAJ David P. Milstein, MC. The study was approved on 1 Nov 73.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
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TITLE=> TECHNETIUM 99M STANOUS POLYPHOSPHATE IN THE DIAGNOSIS OF BONE DISEASE
     => IN PATIENTS
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> MILSTEIN                 > DAVID                 > P   > MAJ MC
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CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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DEVICES=>
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SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   APPROVAL NOT DOCUMENTED IN FILE.

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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J) OTSG ADMINISTRATIVE ACTION.....      __ ___ __     __      _      2,3,4
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Q) ADVERSE EFFECTS LAST REPORTED...     __ ___ __   NO. REPORTED TO DATE=> 0__
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PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Stimson Library - OVID System

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Unique Identifier
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Authors
Milstein DM. Nusynowitz ML.

Title
Cranial cholesteatoma: unusual 99mTc-Sn polyphosphate and 99mTc-pertechnetate scintiphotos.

Source
Clinical Nuclear Medicine. 4(6):240-1, 1979 Jun.

Local Messages
BAMC

MeSH Subject Headings

Brain Diseases/me [Metabolism]
Brain Diseases/ra [Radiography]
*Brain Diseases/ri [Radionuclide Imaging]
Case Report
Cerebral Angiography
Cholesteatoma/me [Metabolism]
Cholesteatoma/ra [Radiography]
*Cholesteatoma/ri [Radionuclide Imaging]
Comparative Study
Diagnosis, Differential
Human
Male
Methods
Middle Age
Pneumoencephalography
Skull/ra [Radiography]
Skull/ri [Radionuclide Imaging]
*Technetium/du [Diagnostic Use]
Technetium/me [Metabolism]

Abstract
Results of the brain and bone scintigraphy in a case of cranial cholesteatoma are described and the differential diagnosis is discussed. With both techniques, the lesion is characterized by diminished central and increased peripheral activity.

Event Number:	ACIR73000-R	**Service:**	Army		
Event Title:	Gallium-67 citrate in diagnosis of soft tissue tumors				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	73	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR73000-R
RECORDS: None available.
CIRS: The investigator was MAJ David P. Milstein, MC. The study was approved on 1 Nov 73.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> MILSTEIN                > DAVID                > P   > MAJ MC
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DEVICES=>
       =>

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NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
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MRDC=>   APPROVAL NOT DOCUMENTED IN FILE.

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J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __       _         2,3,4
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PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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DISEASE CLASS=>                              =>
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Event Title:	Use of gallium-67 citrate for tumor scanning		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	73	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Tripler Army Medical Center	Honolulu	HI	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

ACIR73000-S

Suspected duplicate of ACIR73000-K

EVENT NUMBER: ACIR73000-S
RECORDS: None available.
CIRS: The investigator was MAJ Richard P. Littenberg, MC. The study was approved in 15 Dec 73.
MEDLINE: Littenberg RL, et al: A clinical evaluation of gallium-67 citrate scanning. Surg, Gynecol, Obstet 137:424-30, 1973 may describe this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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TITLE=> THE USE OF GALLIUM-67 CITRATE FOR TUMOR SCANNING.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE     RANK/TITLE
INVESTIGATOR=> LITTENBERG              > RICHARD MD            > P    > MAJ
            =>                         >                       >      >
            =>                         >                       >      >
            =>                         >                       >      >
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     =>                                   =>

DEVICES=>
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I) HSRRB ACTION.................... 4_ DEC 73       AP      _      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __       __      _      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __      ...     ...     ALL
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PROTOCOL:(T)YPE, (L)IKE

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DISEASE CLASS=> =>
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TITLE=> USE OF GALLIUM-67 CITRATE FOR TUMOR SCANNING
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     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LITTENBERG             > RICHARD               > P   > MAJ MC
            =>                        >                       >     >
            =>                        >                       >     >
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DEVICES=>
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PROTOCOL:(T)YPE, (L)IKE

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Authors

Littenberg RL. Alazraki NP. Taketa RM. Reit R. Halpern SE. Ashburn WL.

Title

A clinical evaluation of gallium-67 citrate scanning.

Source

Surgery, Gynecology & Obstetrics. 137(3):424-30, 1973 Sep.

Local Messages

CHECK HOLDINGS LISTS

MeSH Subject Headings

Adenocarcinoma/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Brain Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Carcinoma, Bronchogenic/di [Diagnosis]
Child
Female
*Gallium
Human
Liver Neoplasms/di [Diagnosis]
Lung Neoplasms/di [Diagnosis]
Lymphoma, Large-Cell/di [Diagnosis]
Male
Middle Age
Neoplasm Metastasis
*Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Reticuloendothelial System

A CLINICAL EVALUATION OF GALLIUM-67 CITRATE SCANNING

RICHARD L. LITTENBERG, M.D., NAOMI P. ALAZRAKI, M.D., RICHARD M. TAKETA, M.D., RUSSELL REIT, M.D., SAMUEL E. HALPERN, M.D., and WILLIAM L. ASHBURN, M.D., San Diego, California

NUCLEAR MEDICINE has developed many useful procedures including brain, bone, and liver scanning to aid in the identification and localization of cancer. ^{67}Ga citrate was introduced in 1969 and has received considerable attention as a tumor scanning agent. Gallium is a metal with chemical properties similar to aluminum and indium. The radioactive isotope of stable ^{71}Ga most suitable as a clinical tracer appears to be cyclotron-produced ^{67}Ga. It is supplied sterile and pyrogen-free as a citrate by several commercial suppliers. It decays by electron capture with a half-life of 78 hours producing four gamma rays with energies suitable for scanning. There is no beta emission, and the radiation dose to the patient is well within the acceptable range. This article was undertaken to describe our critical evaluation of this radiopharmaceutical based on studies in patients with a variety of benign and malignant conditions and to attempt to define its clinical usefulness and limitations. Our approach to the appropriate use of ^{67}Ga is based on our experience with the first 100 consecutive patients reported here in detail and subsequent experience with more than 200 additional patients.

METHODS

Routine scanning was performed between 48 and 120 hours after the intravenous administration of 5 millicuries of ^{67}Ga citrate. Both the Anger-type scintillation camera and rectilinear scanners were used. Scintillation camera studies were performed with the use of the 184 kilo electron volt photo peak with a 20 per cent window and a medium energy diverging collimator. The limited field of view imposed by the standard Anger camera necessitated approximately 10 scintiphotos per patient, each requiring 600 seconds, to image the head, neck, chest, abdomen, pelvis, proximal portions of the extremities, and spine.

From the Division of Nuclear Medicine, University of California, San Diego, and Nuclear Medicine Service, Veterans Administration Hospital, San Diego.

Rectilinear scans were performed on either a 5 inch magnascanner or a dual probe 5 inch scanner. With the magnascanner, the integral mode was used with a base setting of 80 kilo electron volts and a count range differential of 70 per cent. When scanning with the dual probe scanner, a 100 kilo electron volt window (90 to 190 kilo electron volts) with 5:1 minification and no enhancement was used. Scan speed with both instruments was adjusted to obtain an information density of 800 counts per square centimeter with the probe over the sternum. All diagnoses were confirmed by culture, cytology, biopsy, or autopsy.

To determine whether or not the information obtained by ^{67}Ga whole body scanning contributed significantly to the diagnostic evaluation, the scan findings of the first 100 consecutive patients were reviewed in conjunction with the over-all data base available to the attending physicians at the time the scan was performed. The following groups were defined to help evaluate the clinical significance of the scan. Group 1, the scan located neoplasms when other methods failed. Group 2, the scan changed the clinical staging, that is, it demonstrated metastases of the solid tumors or advanced the staging in malignant lesions of the reticuloendothelium. Group 3, the scan confirmed the clinical impression of localized disease. It did not disclose metastases in the case of solid tumors, and it did not alter the staging in the malignant lesions of the reticuloendothelium. Group 4, the scan disclosed previously unsuspected areas of involvement in patients with known metastases. Group 5, the scan reflected the effects of therapy. Group 6, the scan did not add further information to the data base but corroborated known areas of metastatic spread. Group 7, the scan was considered to be a false-negative when it failed to disclose confirmed neoplastic disease.

RESULTS

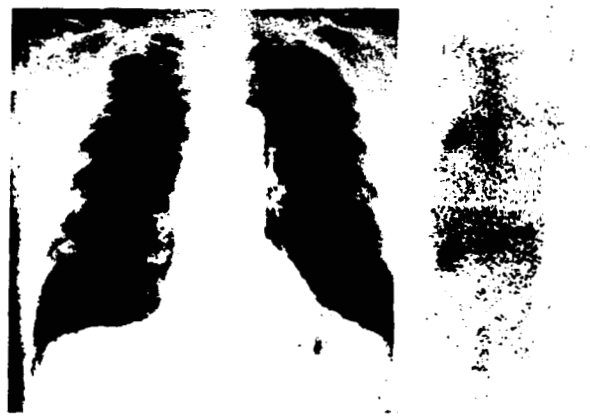
The results in 100 patients with neoplastic disease are shown in Table I. Scans in groups 1

through 5 were considered to add useful information to the data base. Seventy-two per cent of the total group had positive scans. More important is the finding that false-negative findings, group 7, constituted only 14 per cent of the series. Clinically useful information which helped to dictate further diagnostic or therapeutic modalities was achieved in 67 per cent of the scans, the sum of groups 1 through 5.

In general, most of the individual classes of neoplasms were too small to allow statistically meaningful statements to be made. An exception was the 47 patients with bronchogenic carcinoma. The ^{67}Ga scan was decisive in locating the occult malignant lesion in two patients in group 1. Both patients had the myasthenic syndrome of Eaton and Lambert documented by electromyography. Prior to the scan, extensive evaluation had failed to determine the site of the carcinoma, and definitive therapy could not be undertaken. In both patients, an oat cell carcinoma was found at operation at the site of gallium scan positivity.

Eight patients in group 2 were referred for scanning with the clinical impression of operable carcinoma of the lung. All scans were interpreted as demonstrating metastatic involvement of the hilar nodes or distal sites, or both. Subsequent biopsy or thoracotomy substantiated the gallium scan results in all patients. In principle, the risk and expense of thoracotomy could have been circumvented in these patients, and was done so in several, by using the scan to guide the mediastinoscopist in selecting the site for biopsy (Fig. 1).

In eight patients in group 3, ^{67}Ga scanning suggested localized disease. Subsequent evaluation including thoracotomy failed to disclose metastases. It is appreciated that some, if not the majority, of these patients will eventually exhibit disseminated carcinoma that was unresolvable by the current methods of detection, including gallium scanning.



a b

FIG. 1. a, A 60 year old man was found to have an abnormal roentgenogram of the chest at routine annual examination. The results of sputum cytologies, fiberoptic bronchoscopy with bronchial washings, and skin tests were all negative. b, The ^{67}Ga scan disclosed marked uptake in the right upper lobe which corresponded to the infiltrate noted on the roentgenogram of the chest. In addition, extensive mediastinal uptake is evident. Mediastinoscopy was performed, and nodal biopsy revealed epidermoid carcinoma. The patient was referred for radiation therapy, thereby avoiding a thoracotomy.

Eleven patients in group 4 had known metastatic carcinoma of the lung at the time of scanning. However, the scans demonstrated metastatic involvement in unsuspected areas.

One patient in group 5 underwent scanning one month after 5,500 rads of supervoltage irradiation

TABLE I.—^{67}GA CITRATE SCAN RESULTS IN PATIENTS WITH NEOPLASTIC DISEASE

Neoplasm	No.	Per cent positive	Group, per cent						
			1	2	3	4	5	6	7
Bronchogenic carcinoma	47	96	4	19	17	23	2	30	4
Alveolar cell	1	0	—	—	—	—	—	—	100
Mesothelioma	1	100	—	100	—	—	—	—	—
Breast adenocarcinoma									
Clinically active	7	86	14	—	—	56	14	—	14
Clinically inactive	4	0	—	—	—	—	—	100	—
Reticuloendothelial system									
Hodgkins	8	62	—	25	25	13	—	—	37
Reticulum cell sarcoma	6	33	—	17	17	17	50	—	—
Lymphosarcoma	2	100	—	—	50	50	50	—	—
Lymphocytic lymphoma	5	40	—	—	—	40	20	—	40
Giant follicular lymphoma	1	0	—	—	—	—	—	—	100
Pancreatic carcinoma	3	0	—	—	—	—	—	—	100
Prostatic carcinoma	4	75	—	25	—	25	25	—	25
Seminoma	1	0	—	—	—	—	—	100	—
Wilms'	3	66	—	—	—	33	33	33	—
Neuroblastoma	2	50	—	—	—	50	50	—	—
Squamous cell, head and neck	2	100	—	—	—	50	100	—	—
Metastatic carcinoma—?, primary	2	100	—	—	—	100	—	—	—
Multiple plasmacytomas	1	0	—	—	—	—	—	—	100
Total	100	72	3	12	12	27	11	21	14



FIG. 2. This ^{67}Ga citrate scan was performed one month after the completion of a course of radiation therapy. A roentgenogram of the chest was within normal limits at the time of the study. The abnormal scan findings presaged the clinical recurrence of tumor in this location several months later.

were delivered to the bronchogenic carcinoma. Striking activity was found within the field of irradiation, and the patient subsequently died of this tumor. In this patient, the failure of irradiation to destroy the tumor was suggested by gallium positivity at a time when there were clinical grounds for optimism (Fig. 2). Further experience has tended to support this contention.

In 14 patients with bronchogenic carcinoma, the known areas of metastases were correctly identified on scan. The scans in these patients did not add clinically useful information, and these patients constitute group 6.

Two patients with documented bronchogenic carcinoma constitute the group of false-negative gallium scans. One patient in this group had a necrotic tumor of the lung without metastases at postmortem examination, which may account for the negative scan results. The second patient had disseminated bronchogenic carcinoma. He also suffered from a chronic organic brain syndrome which made scanning technically difficult, resulting in poor quality images.

TABLE II.—RESULTS OF CONVENTIONAL AND ^{67}GA SCANNING

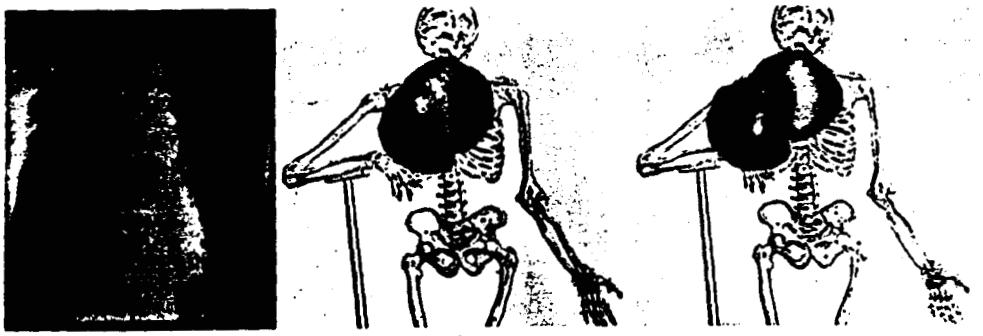
	Brain	
	^{67}Ga−	^{67}Ga+
^{99m}Tc−	25	2
^{99m}Tc+	5	6
	Liver	
Tc SC−	32	0
Tc SC+	15	7
	Bone	
^{18}F−	16	4
^{18}F+	11	14

Patients with carcinoma of the breast represented 11 per cent of the entire series. One-third were asymptomatic months to years after attempts at curative therapy and had no clinical or laboratory evidence to suggest metastases. In this small subgroup, no occult metastases were located with ^{67}Ga. These patients were included in group 6 since only a long prospective study could determine their true status. Of the seven patients with active carcinoma of the breast, ^{67}Ga scanning added clinically pertinent data in six. In one patient in particular, the scan disclosed bilateral small primary lesions in the breasts that were otherwise clinically undetectable in a woman who presented with axillary and supraclavicular metastases.

The results of ^{67}Ga scanning in 22 patients with malignant lesions of the reticuloendothelial system are included in Table I. In three patients, the staging was changed because of the scan. In an additional five patients, new areas of involvement were disclosed by the scan, although the clinical staging was not altered. It is to be noted that 17 of the patients had received prior radiotherapy or chemotherapy, and five of these 17 patients exhibited no clinical activity of their disease at the time of scanning. Thus, in some patients with lymphoma, ^{67}Ga scanning did demonstrate disease in areas undetectable by other methods. However, the ^{67}Ga detection of intra-abdominal, nodal, and splenic involvement failed in two patients in whom the findings at staging laparotomy and splenectomy were positive. Thus, ^{67}Ga scanning complemented but did not replace the more conventional methods of staging lymphomas.

The three patients with ^{67}Ga scan-positive prostatic carcinoma had increased activity in bony metastases. Local soft tissue involvement, while present in all patients, was not detected by scan. Standard bone scanning with ^{18}F proved superior in all patients in identifying the extent of bony involvement.

The results of the conventional ^{99m}Tc pertechnetate brain scan, the ^{99m}Tc sulfur colloid liver scan, and the ^{18}F bone scan compared with the ^{67}Ga scan of the brain, liver, and bones are summarized in Table II. Although the number of patients involved



a b c

FIG. 3. A 47 year old man presented with pain on the right side of his chest, infiltrate, in the right upper lobe, and a pathologic rib fracture. a, Roentgenogram of the chest. b, The ^{67}Ga citrate scan disclosed abnormal uptake in the right upper lobe which subsequently proved to be an adenocarcinoma of the lungs. No uptake is noted in the area of the fracture although an ^{18}F bone scan, c, performed the same week disclosed marked uptake. Note the failure to visualize the soft tissue tumor with the ^{18}F.

is small, considerable inconsistencies are seen in the results of conventional scans as compared with the gallium scan of the appropriate region.

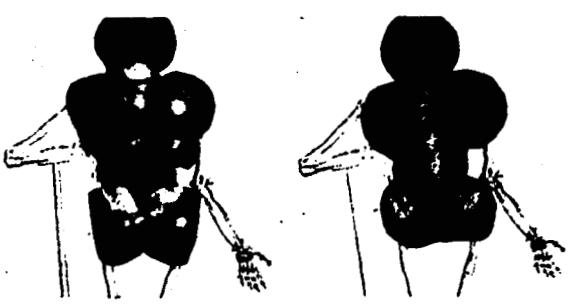
The results of ^{67}Ga scanning in patients with proved inflammatory benign lesions are presented in Table III. All patients with active inflammatory lesions manifested positive gallium scans.

DISCUSSION

The results reported herein indicate a particularly high degree of sensitivity of the ^{67}Ga scan for bronchogenic carcinoma, tumors of the breast, and active inflammatory lesions. Sensitivity for detecting malignant lesions of the reticuloendothelial system was variable but nonetheless with defined clinical applicability. The contribution of the ^{67}Ga scan in our series to the evaluation of a given tumor varied considerably but was often substantial. One objective of this study was to define the relationship between ^{67}Ga citrate scanning and other scanning techniques commonly used to stage cancer. It was postulated that the ^{67}Ga scans might serve in lieu of conventional brain, bone, and liver scanning. The results of this study do not support this. However, it became obvious that while not a substitute for other types of scans, ^{67}Ga imaging appeared to have a definite role in the evaluation of cancer in conjunction with other scan methods.

Relationship to bone scans. Several of the patients included in Table I demonstrated the hazards of substituting ^{67}Ga for the more conventional bone scanning agents. A false-negative ^{67}Ga scan is shown in Figure 3 with the positive ^{18}F scan performed the same week. Roentgenograms disclosed a pathologic fracture at the site of ^{18}F positivity. In another patient, the ^{67}Ga scan (Fig. 4) was interpreted initially as demonstrating probable pathologic uptake in bone as well as in the left lower lobe of the lung. An ^{18}F scan was negative. Repeat physical examination eight weeks later disclosed rock-hard lymph nodes several centimeters in diameter in both the left inguinal and the left axillary regions. It was undoubtedly this metastatic disease to lymph nodes that accounted for the initial gallium findings. This experience, therefore, indicates that ^{67}Ga does not replace the standard bone scan, but that the two complement each other.

Relationship to brain scans. In a recent report by Jones and his associates (3), brain scanning with ^{67}Ga appears to compare favorably with ^{99m}Tc sodium pertechnetate. Among our patients are two examples of ^{99m}Tc pertechnetate failure to reveal abnormalities when imaging was performed two



a b

FIG. 4. a, ^{67}Ga scan of a 47 year old woman with metastatic epidermoid carcinomas originating in the left lower lobe of the lung demonstrates intense focal activity in the left axilla and left inguinal region, as well as in the primary pulmonary lesion. b, An ^{18}F bone scan, performed the same week, is within normal limits. The subsequent development of metastatic disease to lymph nodes in both the axillary and inguinal regions proved the initial scan interpretation of bony metastases to be erroneous and demonstrated the complementary nature of scans with ^{67}Ga and the standard bone-seeking agents.

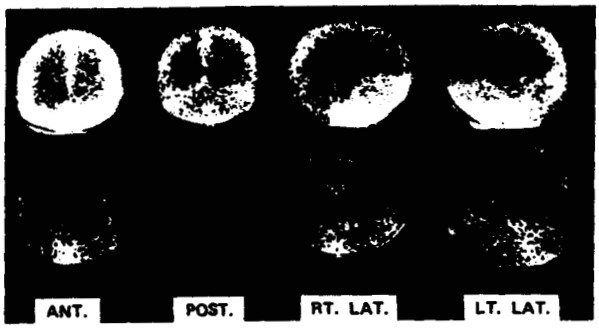


FIG. 5. A 47 year old man with known bronchogenic carcinoma presented with the clinical symptoms and signs of an intracranial mass. A ^{99m}Tc pertechnetate scan, above, failed to reveal areas of abnormal uptake. ^{67}Ga citrate scanning, below, performed 72 hours after the injection showed a large area of abnormal uptake on the right lateral view. A large metastatic lesion was found at this location at autopsy.

hours after injection in patients with intracranial symptoms and known bronchogenic carcinomas. ^{67}Ga scanning performed 72 hours after injection disclosed large areas of abnormal uptake that proved to be metastases at autopsy (Fig. 5). A possible explanation may be found in the difference in delay between injection and scanning. Gates and his coworkers (1) have shown that delayed ^{99m}Tc sodium pertechnetate brain scanning enhances tumor-to-background ratios and increases scan sensitivity. Thus, long effective half-life of ^{67}Ga coupled with long intervals between injection and scan may be an exaggeration of this phenomenon observed with ^{99m}Tc. Table II demonstrates the complementary nature of ^{67}Ga and ^{99m}Tc for defining brain lesions.

Relationship to liver scans. Normal livers accumulate ^{67}Ga to a variable extent, differing from patient to patient. Depending on the relative affinity for ^{67}Ga between the intrahepatic lesion and normal liver, any one of three situations can pertain: the lesion can appear "hotter," "colder," or indistinguishable from liver background activity. All three situations were encountered in our patients. Lesions with approximately the same radioisotope concentration as normal liver parenchyma could readily be misinterpreted as normal. The contrast between tumor and normal liver was usually greater with a ^{99m}Tc sulfur colloid scan and was associated with increased diagnostic accuracy. The use of ^{67}Ga to increase the specificity of ^{99m}Tc sulfur colloid scans has recently been reported by Lomas and his colleagues (5).

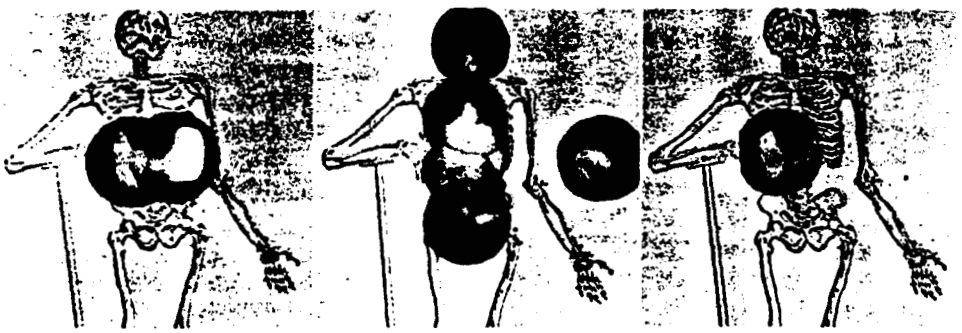
Pulmonary lesions. Our experience confirms previously published reports which indicate that carcinoma of the lung represents the most clinically useful application of ^{67}Ga citrate scanning. A significant proportion of patients with roentgenographic evidence of pulmonary lesions of unknown cause undergo thoracotomy for a diagnosis to be established. The percentage of such patients who prove at operation to have benign conditions varies widely with the patient population under study. Our experience has shown that ^{67}Ga can often provide the information for establishing a tissue diagnosis without thoracotomy.

The 4 per cent false-negative scans (Table I) might temper one's enthusiasm to a modest degree. A negative scan was not synonymous with a benign condition, and in the absence of contraindications, it would appear that operation should not be withheld on this basis alone. However, in the presence of relative contraindications to operation, such as advanced age or concurrent cardiovascular disease, the decision to observe the lesion for a period of time has been more acceptable with the 96 per cent statistical probability that a suspicious lesion seen on a roentgenogram of the chest associated with a negative scan favors benignity.

^{67}Ga scanning has been useful preoperatively in patients with lesions of the lung known to be neoplastic by other techniques, such as sputum cytology. A finding of disseminated disease on scan negates the possibility of a surgical cure and should lead the clinicians to use other methods of therapy. A note of caution must be added regarding the interpretation of mediastinal activity with ^{67}Ga. In our experience, bilateral hilar uptake of ^{67}Ga is occasionally seen in the absence of pathologic changes. The explanation for the observed bihilar uptake is not clear. Since inflammatory sites accumulate ^{67}Ga, bronchitic conditions were initially considered a possible explanation. In reviewing the histories of the patients, however, no apparent relationship existed between uptake and chronic purulent sputum production. Several patients with histories meeting the criteria for chronic bronchitis were subsequently studied with ^{67}Ga and, indeed, failed to demonstrate the bihilar uptake (Table III). In all patients to date, this benign mediastinal accumulation has assumed a smudgy, symmetrical appearance and has been less intense than that associated with metastatic carcinoma or acute inflammation.

TABLE III.—BENIGN CONDITIONS

	No.	*Per cent positive*
Granulomatous disease (tuberculosis, coccidiomycosis)		
Active	8	100
Inactive	5	0
Abscess	4	100
Acute bacterial pneumonia	3	100
Chronic bronchitis	3	0
Active rheumatoid arthritis	3	100



a b c

FIG. 6. a, A ^{99m}Tc sulfur colloid liver scan of an 8 year old girl with widely disseminated reticulum cell sarcoma. A large area devoid of activity is noted between the right and markedly enlarged left lobes of the liver. b, The ^{67}Ga scan performed before therapy disclosed gallium activity in the previously described hepatic lesion as well as mediastinal and left loin activity. After intensive chemotherapy with Cytoxan®, vincristine, and prednisone, a repeat ^{67}Ga scan, c, disclosed no areas of abnormal activity. The patient died from diffuse gastrointestinal ulcerations associated with thrombocytopenia, and at postmortem examination, no areas of viable tumor remained. In this patient, the conversion of the gallium scan from positive to negative indicated the effects of the chemotherapy.

Gastrointestinal lesions. A serious difficulty with interpreting ^{67}Ga scans in patients with primary malignant lesions of the gastrointestinal tract was the normal intestinal activity found in most patients. The necessity for giving laxatives and enemas prior to scanning in the attempt to remove this confusing uptake has been frequently recommended. Our routine procedure has been to place the patient on nightly mild laxatives. If suspicious uptake was noted, castor oil and frequently enemas were prescribed. When necessary, sequential scanning was performed for a seven day interval to determine if the uptake pattern was shifting, thus suggesting normal intestinal uptake. Several patients have now been observed in whom, despite these various maneuvers, misleading scans were obtained.

Lesions of the breast. We have observed the uptake of ^{67}Ga in breast tissue in patients without primary disease of the breast. The most striking example of this was in a 25 year old woman who was admitted with choriocarcinoma and high human chorionic gonadotropin levels. The human chorionic gonadotropin levels probably provoked significant mammary stimulation. Other young women being scanned for diagnostic purposes have also had bilateral breast uptake. This most likely represents a normal pattern and reflects the state of hormonal stimulation at the time the ^{67}Ga is in the circulation. The degree of uptake may depend in part on the time of the menstrual cycle that the ^{67}Ga scan is performed. As reported in the section on results (Table I), 86 per cent of the primary adenocarcinomas of the breast were found by ^{67}Ga scanning.

Mechanism of ^{67}Ga localization. The label "tumor specific" has been widely applied to ^{67}Ga despite the common observation that inflammatory lesions of diverse causes are likely to accumulate the radionuclide. Little is known about the mechanisms underlying the accumulation of ^{67}Ga in various lesions. Hayes and his colleagues (2) have demonstrated with autoradiography and electron microscopy that the accumulation within cancer cells appears to be in electron-dense organelles resembling lysosomes. Increased lysosomal activity is a characteristic of inflammatory cells and if ^{67}Ga is to be called specific, it may be in fact lysosomal specific.

This might account for its observed uptake in both neoplastic and inflammatory sites. Therefore, the concept of false-positive gallium scans has only limited applicability. If the label "tumor specific" is believed and gallium uptake is equated with cancer, then the percentage of false-positive findings will depend on the screening procedures used to identify those patients with inflammatory conditions. Careful clinical evaluation, culture techniques, and skin testing will tend to reduce the number of false-positive findings. Conversely, indiscriminate scanning will increase this percentage, as more patients with inflammatory diseases are included.

If the broader concept of a lysosomal tag is applied to ^{67}Ga, then the clinical range of application can be extended to encompass inflammatory conditions. Intrahepatic, perinephritic, subdiaphragmatic, and splenic abscesses often pose difficult diagnostic problems. The clinical setting of the

patient with sepsis is usually sufficiently different from patients suspected of harboring neoplasms that the two are not ordinarily included in the same differential diagnosis. Thus, ^{67}Ga scanning in patients with sepsis might be expected to lead to the rapid identification and localization of abscesses and other focal inflammatory processes. In these patients, scanning can be performed within two hours of injection. Our experience with ^{67}Ga scanning in patients with sepsis has been quite encouraging and is to be presented as a separate report (4).

^{67}Ga scans Postcancer therapy. Serial ^{67}Ga scanning, before and after therapy, was performed on some of our patients with cancer. In two patients with reticulum cell sarcoma, the gallium scans changed from positive to negative after chemotherapy (Fig. 6). Both died, and at postmortem examination, no evidence of residual tumor was found. Despite these two patients, experience is insufficient to determine the meaning of conversion from positive to negative. As yet, there is no assurance that such conversion signifies eradication of the malignant lesion.

Conceivably, therapy may affect gallium uptake without influencing other properties of the neoplasm, such as doubling time. It is also obvious that widespread microscopic disease, after therapy has destroyed the large bulk of the tumor, is compatible with a negative scan. However, it is encouraging that in the two patients who demonstrated this conversion that microscopic as well as macroscopic disease was not evident at autopsy. Conversely, the failure to convert a positive ^{67}Ga scan to a negative one after therapy, in our experience, has uniformly indicated the persistence of active neoplasia.

SUMMARY

Based on our experience with more than 300 patients who had ^{67}Ga scans as part of their diagnostic evaluation, we have presented a critical evaluation of the role of ^{67}Ga scanning in various tumors and inflammatory lesions. Sixty-seven of the first 100 consecutive patients with cancer who underwent scanning with ^{67}Ga yielded clinically useful information which helped to dictate further diagnostic or therapeutic modalities. There was a particularly high degree of usefulness of ^{67}Ga scanning in patients with bronchogenic carcinoma, tumors of the breast, and active inflammatory lesions. We found in several patients that ^{67}Ga scanning reliably reflected the response to therapy by conversion from a positive scan to a negative one.

^{67}Ga scanning is a noninvasive diagnostic modality which should be used with other diagnostic procedures. The diagnostic contribution of gallium scanning is highest in patients with bronchogenic carcinoma, and the scan results may be helpful in determining the best approach to definitive diagnosis and therapy.

REFERENCES

1. Gates, G. F., Dore, E. K., and Taplin, G. V. Interval brain scanning with sodium pertechnetate Tc 99m for tumor detectability. J. A. M. A., 1971, 215: 85.
2. Hayes, R. L., Nelson, B., Swartzendruber, D. C., and others. Studies of the intracellular deposition of ^{67}Ga. J. Nucl. Med., 1971, 12: 364.
3. Jones, A. E., Roslow, M., Johnston, G. S., and Ommaya, A. K. ^{67}Ga citrate scintigraphy of brain tumors. Radiology, 1972, 105: 693.
4. Littenberg, R. L., Taketa, R. M., Alazraki, N. P., and others. The use of gallium-67 citrate in the septic patient. Ann. Int. Med., in press.
5. Lomas, F., Dibos, P. E., and Wagner, H. N. Increased specificity of liver scanning with the use of ^{67}Gallium citrate. N. Engl. J. Med., 1972, 286: 1323.

Event Number:	ACIR74000-A	**Service:**	Army		
Event Title:	Comparison of endoscopic and radiologic evaluation of the upper gastrointestinal tract				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier

78169853

Authors

Nelson RS. Lanza F.

Title

Malignant melanoma metastatic to the upper gastrointestinal tract: endoscopic and radiologic correlations, form and evolution of lesions, and value of directed biopsy in diagnosis.

Source

Gastrointestinal Endoscopy. 24(4):156-8, 1978 May.

Local Messages

BAMC

MeSH Subject Headings

Adult
Aged
Biopsy
Endoscopy
Female
*Gastrointestinal Neoplasms/di [Diagnosis]
Gastrointestinal Neoplasms/pa [Pathology]
Human
Male
*Melanoma/di [Diagnosis]
Melanoma/pa [Pathology]
Middle Age

Stimson Library - OVID System

<1>

Unique Identifier
76275077

Authors
Wolgemuth RL. Hanson KM. Zassenhaus PH.

Title
A new substrate for the rapid evaluation of enteric microbial overgrowth.

Source
American Journal of Digestive Diseases. 21(9):821-6, 1976 Sep.

Local Messages
CHECK HOLDINGS LISTS

MeSH Subject Headings

*Aminobenzoic Acids/du [Diagnostic Use]
Aminobenzoic Acids/ur [Urine]
Animal
Bacteria/en [Enzymology]
*Bacterial Infections/di [Diagnosis]
Bile Acids and Salts/me [Metabolism]
*Cholic Acids/du [Diagnostic Use]
*Gastrointestinal Diseases/di [Diagnosis]
Intestines/mi [Microbiology]
Male
Rats
Time Factors

Abstract
The possibility of a new approach to diagnosis of intestinal bacterial overgrowth has been evaluated in laboratory animals. The diagnostic test involves oral administration of an enzyme-labile substrate consisting of para-aminobenzoic acid (PABA) conjugated to a bile acid. In the presence of enteric bacteria, PABA is split from the bile acid and is rapidly absorbed and excreted in the urine. The amount of PABA recovered during the 6 hr following the administered dose of the conjugate may be used as an index of bacterial overgrowth in the upper-gastrointestinal tract. The procedure has been shown to be a reliable index of this condition in laboratory animal models.

Stimson Library - OVID System

<1>

Unique Identifier
80192320

Authors
Bloss RS. Miller TA. Copeland EM 3d.

Title
Carcinoma of the stomach in the young adult.

Source
Surgery, Gynecology & Obstetrics. 150(6):883-6, 1980 Jun.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

*Adenocarcinoma/di [Diagnosis]
Adenocarcinoma/su [Surgery]
Adult
Female
Human
Male
*Stomach Neoplasms/di [Diagnosis]
Stomach Neoplasms/mo [Mortality]
Stomach Neoplasms/su [Surgery]

Abstract
Of 1,383 patients with carcinoma of the stomach seen at this institution during a 30 year interval, 37 were 35 years of age or younger. Fourteen of the patients were less than 30 years of age and the females predominated. While all young adults underwent roentgenologic examination of the upper gastrointestinal tract, only 12 had findings considered diagnostic for a malignant lesion of the stomach at the time of the initial study. Endoscopy with biopsy was done in 16 patients and confirmed the diagnosis of carcinoma in 13 patients. Carcinoma of the stomach was first diagnosed at laparotomy in 13 patients. Only 30 of 37 patients were considered operative candidates. Of the gastric resections done, 19 were curative and two, palliative. Seventy-six per cent of the lesions were either linitis plastica or poorly differentiated adenocarcinomas, and lymph node metastases were present in 31 patients. Prognosis was dismal. Thirty-one patients were dead within two years of diagnosis and only two patients have survived five years. In this series, carcinoma of the stomach in young people was particularly lethal. A high index of suggestive symptoms should prompt an early, aggressive roentgenologic and endoscopic evaluation of the upper gastrointestinal tract if any chance for an increase in cure rates is to be realized.

Event Number:	ACIR74000-AB	**Service:**	Army
Event Title:	Clinical evaluation of cisternography utilizing 111-indium DTPA		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Letterman Army Medical Center	San Francisco	CA	USA
Walter Reed Army Hospital	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-AB
RECORDS: None available.
CIRS: The investigator was MAJ David Milstein, MC. The study was terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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STUDY TYPE=> 4                                 STUDY STATUS=> T

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF CISTERNOGRAPHY, UTILIZING INDIUM-111 DTPA.
     =>
     =>
     =>
     =>
     =>

                 LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                     > ROBERT J              > P   > LTC MC
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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     =>                                 =>

DEVICES=>
      =>

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NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __      ...     ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __      ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __      ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __      ...     ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 30 OCT 82      ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __      ...     ...       4
I) HSRRB ACTION.................... 4_ DEC 73      CO      _         4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __      _         2,3,4
M) PROGRESS REPORT RECD AT HURO.... 1_ APR 80      ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __      ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __      ...     ...       ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __      NO. REPORTED TO DATE=> 0__
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PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 29Nov93 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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FACILITY===> WRAMC                                  WORK UNIT #==>
STUDY TYPE=> 4                                      STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF CISTERNOGRAPHY UTILIZING INDIUM-111 DTPA.
     =>
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> MILSTEIN                 > DAVID                 > P   > MAJ MC
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC572

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>    >    >

         GENERIC NAME                          BRAND NAME
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     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

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NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 75     ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...       4
I) HSRRB ACTION.................... __ ___ __      __      _        4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __      _        2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...       ALL
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ACTION: (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
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INITIATOR HSC LAST UPDATED 29Nov93 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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STUDY TYPE=> 4                                  STUDY STATUS=> C

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PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF CISTERNOGRAPHY UTILIZING INDIUM-111 DTPA.
     =>
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE     RANK/TITLE
INVESTIGATOR=> BLUMHARDT                > RALPH                > P    >
             =>                         >                      >      >
             =>                         >                      >      >
             =>                         >                      >      >
             =>                         >                      >      >
             =>                         >                      >      >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC613

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>    >    >

         GENERIC NAME                      BRAND NAME
DRUGS=> INDIUM-111 DTPA                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>

DEVICES=>
       =>

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NON DA--IND#=> 0         IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC613
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A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 1_ SEP 74     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... __ ___ __      --      -      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      --      -      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
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ACTION: (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC613

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

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DISEASE CLASS=> =>
=> =>

COMMENTS=>
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INITIATOR HSC LAST UPDATED 08Nov96 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-AC	**Service:**	Army
Event Title:	Blood pool imaging with indium-111 chloride		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-AC
RECORDS: None available.
CIRS: The investigator was MAJ David P. Milstein, MC. The study was approved on 15 Nov 73 and terminated on 1 Dec 77.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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FACILITY===> WBAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> BLOOD POOL IMAGING WITH INDIUM-111 CHLORIDE
     =>
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> MILSTEIN                 > DAVID                 > P   > MAJ, MC
             =>                         >                       >     >
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             =>                         >                       >     >
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             =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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DRUGS=> INDIUM-111 CHLORIDE             =>
     =>                                 =>
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     =>                                 =>
     =>                                 =>

DEVICES=>
       =>

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NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC270
                                                                    VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...       ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...       ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...       ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...       ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 01 DEC 77     ...       ...      ALL
F) EXPEDITED REVIEW................ __ ___ __     ...       ...      4
I) HSRRB ACTION.................... 15 NOV 73      AP         _      4
J) CTSG ADMINISTRATIVE ACTION...... __ ___ __     __         _      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...       ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...       ...      ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...       ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC270

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 28JUN83 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC692

FACILITY===> USAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> BLOOD POOL IMAGING WITH INDIUM-111 CHLORIDE
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> MILSTEIN                > DAVID               > F   > MAJ MC
            =>                         >                     >     >
            =>                         >                     >     >
            =>                         >                     >     >
            =>                         >                     >     >
            =>                         >                     >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC692

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 > 2 >

        GENERIC NAME                      BRAND NAME
DRUGS=> INDIUM-111 CHLORIDE            =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MEDC=>

CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC692
                                                                  VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __ ___ __     ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...       4
I) HSRRB ACTION.................... 4_ DEC 79      AP      _        4
J) DTBG ADMINISTRATIVE ACTION...... __ ___ __     ...     ...       2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...       ALL
P) ADVERSE EFFECTS (LAST REPORTED)... __ ___ __     NO. REPORTED TO DATE=> 0_
```

PROTOCOL TYPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC692

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> 1 > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACS=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FE382 PROTOCOL ADDED CO ? CO

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-B	**Service:**	Army		
Event Title:	Combination chemotherapy in induction for standard risk and combination chemotherapy + cranial irradiation + daunorubicin for increased risk followed by maintenance w/continuous vs intermittent 6-MP + MTX + subsequent immunotherapy, CALGB 7411				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Hospital	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: Hunig R, et al: Quality control of radiotherapy in acute lymphocytic leukemia protocol treatment: experience with 610 cases. European J Cancer Clin Oncol 19:1585-91, 1983 describes this study (CALGB 7411).
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier

84057921

Authors

Hunig R. Landmann C. Roth J. Reinstein LE. Glicksman AS.

Title

Quality control of radiotherapy in acute lymphocytic leukemia protocol treatment: experience with 610 cases.

Source

European Journal of Cancer & Clinical Oncology. 19(11):1585-91, 1983 Nov.

MeSH Subject Headings

Child
Child, Preschool
Clinical Trials
Comparative Study
Evaluation Studies
Human
*Leukemia, Lymphocytic/rt [Radiotherapy]
Quality Assurance, Health Care
Quality Control
Research Design
Support, U.S. Gov't, P.H.S.

Abstract

Quality assurance programs are necessary in multi-institutional cooperative group clinical trials to ensure that possible inter-institutional differences in selection, treatment and evaluation of patients will not erode the statistical assessment of these clinical trials. The Radiotherapy Committee of the Cancer and Leukemia Group B examined the evaluability and appropriateness of treatment of patients entered into two protocols for childhood acute lymphocytic leukemia, 7411 prior to and 7611 after the development of a quality assurance review program. Of the 348 patients entered into 7411, 37% were evaluable and 26% were appropriately treated in 1974 when the protocol opened. This rose to 53 and 35% in the last year of the study. On the other hand, in 7611 with an ongoing quality assurance program, the evaluability rate initially was 63% and rose to 73% and the appropriateness rate rose from 37 to 61%. This change in performance which was statistically significant at the P = 0.001 level is attributed to the impact of the Quality Assurance Review Center correspondence. Improvement in performance occurred almost entirely in the principal centers and not in satellite institutions. This difference in performance was statistically significant at the P = 0.05 level, indicating that adherence to protocol requirements increases with increased participation in studies.

Event Number:	ACIR74000-C	**Service:**	Army		
Event Title:	Radiologic identification of common cardiac prosthetic valves and their associated complications, FAMC 74/105				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

Stimson Library - OVID System

<1>

Unique Identifier
77210380

Authors
Chun PK. Nelson WP.

Title
Common cardiac prosthetic valves. Radiologic identification and associated complications.

Source
JAMA. 238(5):401-3, 1977 Aug 1.

Local Messages
STIMSON / BAMC

Abstract
The development of prosthetic heart valves has been an important advance in the treatment of patients with serious valvular cardiac disease. Because there are many types of prosthetic valves, we have prepared a diagram of the valves currently or previously used and list their potential complications. Prosthetic valves were identified according to photographic and radiologic features, valve replacement location, and reported associated complications. Data have been compiled in tabular form for quick reference; valves have been identified according to valve base, cage, and poppet. They may be categorized as caged-ball or low-profile valves. Such information helps to provide recognition of the valve that has been inserted and permits the clinician or radiologist to be alert to possible complications with the various prosthetic devices.

Event Number:	ACIR74000-D	**Service:**	Army
Event Title:	Evaluation of combined radiotherapy and chemotherapy for stages IIb , IIIa and IIIb Hodgkin's disease, SWOG 160		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Event Number:	ACIR74000-E	**Service:**	Army		
Event Title:	Radiotherapy, CCNU, and procarbazine in malignant gliomas of the brain, SWOG 7404				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: Eyre HJ, et al: Randomized comparisons of radiotherapy and CCNU versus radiotherapy, CCNU plus procarbazine for the treatment of malignant gliomas following surgery. A Southwest Oncology Group Report. J Neuro-Onc 1:171-7, 1983 probably reports this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier

84291537

Authors

Eyre HJ. Quagliana JM. Eltringham JR. Frank J. O'Bryan RM. McDonald B. Rivkin SE.

Title

Randomized comparisons of radiotherapy and CCNU versus radiotherapy, CCNU plus procarbazine for the treatment of malignant gliomas following surgery. A Southwest Oncology Group Report.

Source

Journal of Neuro-Oncology. 1(3):171-7, 1983.

Abstract

One hundred and fifteen eligible patients with histologically verified malignant gliomas (astrocytoma grade III-IV) were randomized to receive either radiotherapy 6 000 rads/7 week plus CCNU 130 mg/M2 every 6 weeks (treatment 1) or radiotherapy 6 000 rads/7 weeks plus CCNU 75 mg/M2 day 1 plus procarbazine 100 Mg/m2 days 1-14 every 6 weeks (treatment 2) within 4 weeks following surgical resection. The response rates showed no statistically significant differences between treatment 1 CR/PR - 24/17% and treatment 2 CR/PR - 14/14% (P-value = 0.31). The median survival was also not significantly different: 55 and 50 weeks for treatments 1 and 2, respectively. The most important prognostic parameter identified was age with younger patients showing higher response rates and longer survival. Patients' performance status was also a useful prognostic parameter for response and survival. Neither the extent of surgical resection nor the tumor grade correlated significantly with the outcome. Further studies are needed to identify active chemotherapeutic agents for the treatment of brain tumors.

Registry Numbers

13010-47-4 (Lomustine). 671-16-9 (Procarbazine).

Stimson Library - OVID System

<1>

Unique Identifier

85263832

Authors

Levin VA. Wara WM. Davis RL. Vestnys P. Resser KJ. Yatsko K. Nutik S. Gutin PH. Wilson CB.

Title

Phase III comparison of BCNU and the combination of procarbazine, CCNU, and vincristine administered after radiotherapy with hydroxyurea for malignant gliomas.

Source

Journal of Neurosurgery. 63(2):218-23, 1985 Aug.

Local Messages

BAMC

Abstract

The authors report the results of a randomized study conducted to evaluate the relative benefit of treatment with 1,3-bis(2-chloroethyl)-1-nitrosourea (BCNU) or the combination of procarbazine, 1-(2-chloroethyl)-3-cyclohexyl-1-nitrosourea, and vincristine (PCV) administered after radiation therapy with hydroxyurea to 76 evaluable patients with glioblastoma multiforme and 72 patients with other anaplastic gliomas. The primary end-point of the study was time to tumor progression. For better-risk patients with Karnofsky performance scores of 70 to 100, results suggest that PCV was of greater benefit than BCNU ($p = 0.15$ for glioblastoma multiforme; $p = 0.13$ for other anaplastic gliomas). Median times to tumor progression were 31 and 32 weeks for patients with glioblastoma multiforme; 25th percentile times to progression were 70 and 40 weeks for patients treated with PCV and BCNU, respectively. For patients with other anaplastic gliomas treated with PCV and BCNU, median times to progression were 123 and 77 weeks, respectively. Multivariate analysis showed that the prognostic variables of age and Karnofsky scores were important for patients with glioblastoma multiforme and other anaplastic gliomas, and that the extent of surgical resection was important for those with other anaplastic gliomas.

Registry Numbers

0 (Antineoplastic Agents, Combined). 127-07-1 (Hydroxyurea). 13010-47-4 (Lomustine). 154-93-8 (Carmustine). 57-22-7 (Vincristine). 671-16-9 (Procarbazine).

Event Number:	ACIR74000-F	**Service:**	Army
Event Title:	Protocol for adjuvant therapy of stage II testicular carcinoma with chemotherapy (actinomycin D + chlorambucil, radiation, or chemotherapy + radiation therapy after retroperitoneal lymph node dissection), WRAMC 7402		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		

Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Stimson Library - OVID System

<1>

Unique Identifier
80044833

Authors
DeWys WD.

Title
Basis for adjuvant chemotherapy for stage II testicular cancer. The Intergroup Testicular Protocol Writing Committee.

Source
Cancer Treatment Reports. 63(9-10):1693-5, 1979 Sep-Oct.

MeSH Subject Headings

*Antineoplastic Agents/tu [Therapeutic Use]
Clinical Trials
Human
Male
Research Design
*Testicular Neoplasms/dt [Drug Therapy]

Event Number:	ACIR74000-G	**Service:**	Army
Event Title:	Effect of iodine and lithium on the release of thyroxine from the thyroid gland of patients with thyrotoxicosis		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-G
RECORDS: None available.
CIRS: The investigator was MAJ Timothy M. Boehm, MC. The study was approved on 26 Nov 74 and terminated on 15 Apr 80.
MEDLINE: Boehm TM, et al: Lithium and iodine combination therapy for thyrotoxicosis. Acta Endocrinologica 94:174-83, 1980 describes this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> A0069

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> EFFECT OF IODINE AND LITHIUM ON THE RELEASE OF THYROXINE FROM THE
     => THYROIDGLAND OF PATIENTS WITH THYROTOXICOSIS.
     =>
     =>
     =>
     =>

                 LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> BOEHM                   > TIMOTHY M             > P   > MAJ
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. A0069

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 > 2 >

        GENERIC NAME                        BRAND NAME
DRUGS=> LITHIUM                        =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   LITHIUM, IODINE

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. A0069
                                                                  VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 15 APR 80     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... 26 NOV 74      CO      _      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __      _       2,3,4
M) PROGRESS REPORT RECD AT HURO.... 1_ OCT 79     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
P) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. A0069

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=> > > CLASS=> 1 > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACD=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 08Nov96 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Stimson Library - OVID System

<1>

Unique Identifier

77051535

Authors

Boehm TM. Dimond RC. Wartofsky L.

Title

Isolated thyrotropin deficiency with thyrotropin-releasing-hormone induced TSH secretion and thyroidal release.

Source

Journal of Clinical Endocrinology & Metabolism. 43(5):1041-6, 1976 Nov.

Local Messages

CHECK HOLDINGS LISTS

MeSH Subject Headings

Adult
Case Report
Human
Iodine/bl [Blood]
Male
Prolactin/bl [Blood]
Protirelin/ad [Administration & Dosage]
*Protirelin/pd [Pharmacology]
Protirelin/tu [Therapeutic Use]
*Thyroid Gland/me [Metabolism]
Thyrotropin/bl [Blood]
*Thyrotropin/df [Deficiency]
Thyroxine/bl [Blood]
Thyroxine/tu [Therapeutic Use]
Triiodothyronine/bl [Blood]

Abstract

A patient with isolated thyrotropin (TSH) deficiency was studied. Prior to treatment with thyroid hormone, administration of thyrotropin releasing hormone (TRH) produced no increment in serum TSH and a normal increase in plasma prolactin (PRL). In order to explore whether physiologic increases in serum TSH might be occurring below the limits of detectability of TSH by radioimmunoassay, a double isotope technique of assessing thyroidal secretion secondary to release of TSH was employed. The patient was restudied seven months later, after discontinuing thyroid hormone replacement therapy for two months, and on this occasion repeat TRH administration produced small increments in serum TSH. After administration of 125I and 131I-T4 to assess thyroid hormone secretion, TRH was infused continuously for 6 h. Small increases in serum TSH were again observed, along with significant increases in PG125I/PB131I and urinary 125I/131I, reflecting increased thyroidal iodine secretion, although serum T3 and T4 did not change. These studies indicate that: 1) isolated TSH deficiency need not be complete and may be associated with detectable levels of immunoassayable TSH; 2) the TSH released possesses in vivo biological activity; and 3) therapy with thyroid hormone may have facilitated TSH release.

Stimson Library - OVID System

<1>

Unique Identifier

81018248

Authors

Boehm TM. Burman KD. Barnes S. Wartofsky L.

Title

Lithium and iodine combination therapy for thyrotoxicosis.

Source

Acta Endocrinologica. 94(2):174-83, 1980 Jun.

Local Messages

CHECK HOLDINGS LISTS

MeSH Subject Headings

Adult
Drug Therapy, Combination
Human
*Hyperthyroidism/dt [Drug Therapy]
*Iodine/tu [Therapeutic Use]
*Lithium/tu [Therapeutic Use]
Methimazole/tu [Therapeutic Use]
Middle Age
Secretory Rate/de [Drug Effects]
Thyroid Hormones/se [Secretion]

<2>

Unique Identifier

81143308

Authors

Boehm TM. McLain J. Burman KD. deShazo R. Wartofsky L.

Title

Iodine treatment of iodine-induced thyrotoxicosis.

Source

Journal of Endocrinological Investigation. 3(4):419-24, 1980 Oct-Dec.

MeSH Subject Headings

Asthma/dt [Drug Therapy]
Female
Human
*Hyperthyroidism/ci [Chemically Induced]
Hyperthyroidism/dt [Drug Therapy]
*Iodine/tu [Therapeutic Use]
Methimazole/tu [Therapeutic Use]
Middle Age
*Potassium Iodide/ae [Adverse Effects]
Thyroxine/bl [Blood]
Triiodothyronine/bl [Blood]

Abstract

A 62-year-old female who had received prolonged iodine therapy for asthma presented with severe thyrotoxicosis and severe asthma. Her history, elevated serum thyroxine and triiodothyronine, low 131I uptake, and elevated intrathyroidal iodine content by fluorescent scan were most consistent wiht a diagnosis of iodine-induced thyrotoxicosis (IITT). The clinical course of her thyrotoxicosis was protracted, and in spite of its etiologic role in the precipitaton of thyrotoxicosos, iodine was therapeutically efficacious, although combined treatment with methimazole was required to ultimately restore euthyroidism. Therapy with lithium was also employed but appeared to be only transiently effective and combined no additional decrement in serum T4 than that seen with iodine alone. The case exemplifies the heterogeneity of what is considered "iodine-induced" thyrotoxicosis, the complexities inherent in establishing a diagnosis of IITT, and the use of other rapid acting pharmacologic agents in IITT when beta blockade is contraindicated by asthma.

Event Number:	ACIR74000-H	**Service:**	Army
Event Title:	Combination radiotherapy and chemotherapy of stage III Hodgkin's disease (phase III), CALGB 7451		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-H
RECORDS: None available.
CIRS: The investigator was LTC Jeffrey L. Berenberg, MC. The study was approved on 28 Jan 75 and terminated on 15 Apr 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> A0079

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 3                                  STUDY STATUS=> A

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> COMBINATION RADIOTHERAPY AND CHEMOTHERAPY OF STAGE III HODGKIN'S
     => DISEASE (PHASE III).
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> BERENBERG               > JEFFREY L             > P   > LTC MC
              =>                       >                       >     >
              =>                       >                       >     >
              =>                       >                       >     >
              =>                       >                       >     >
              =>                       >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. A0079

CNCOLOGY STUDY GROUP--NAME=> CALGB     NO.=> 7451      STUDY CLASS=> 5 > 1 >

         GENERIC NAME                        BRAND NAME
DRUGS=> BCNU                            =>
     => VINCRISTINE                     =>
     => PROCARBAZINE                    =>
     => PREDNISONE                      =>
     =>                                 =>
     =>                                 =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   BCNU, VINCRISTINE, PROCARBAZINE, PREDNISONE

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. A0079
                                                                    VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __ ___ __     ...     ...      ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...      4
I) HSRRB ACTION.................... 28 JAN 75     AP      _        4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __      _        2,3,4
M) PROGRESS REPORT RECD AT HURO.... 15 APR 80     ...     ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...      ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PF7 (BACK) PF8 (NEXT PAGE)

CANCEL - PF3/15 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. A0079

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
ADULT(S)=> ; CLASS=> 1 2 3 SEX=>

FUNDING PCMT (ENTER 'X'; CHOOSE ONLY ONE)...
NIMH=> NIMH(PHN)=> NDA=> GIFT/MISC=> SIFT/DA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 29JUL87 PROTOCOL ADDED OC ? CC

CANCEL - PF3/15 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Stimson Library - OVID System

<1>

Unique Identifier

74042796

Authors

Ward PA. Berenberg JL.

Title

Defective regulation of inflammatory mediators in Hodgkin's disease. Supernormal levels of chemotactic-factor inactivator.

Source

New England Journal of Medicine. 290(2):76-80, 1974 Jan 10.

Local Messages

BAMC / STIMSON

MeSH Subject Headings

Adult
Animal
Centrifugation, Density Gradient
*Chemotaxis
Complement
Hodgkin's Disease/bl [Blood]
*Hodgkin's Disease/im [Immunology]
Human
Hypersensitivity, Delayed
*Inflammation/im [Immunology]
Male
Monocytes
Neutrophils
Rabbits
Serum Albumin, Bovine
Zymosan/pd [Pharmacology]

Event Number:	ACIR74000-I	**Service:**	Army		
Event Title:	Investigational use of indium-111 DTPA				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-I (Probably duplicates ACIR74000-U)
RECORDS: None available..
CIRS: No references found.
MEDLINE: Lamoy RE, et al: Indium-111 chloride scanning for identification of experimental abscesses. J Surg Res, 21:85-90, 1976 may describe this study.
MEDICAL ASSESSMENT: This study may not involve humans.

Stimson Library - OVID System

<1>
Unique Identifier
77010397
Authors
Lamoy RE. Hobson RW 2nd.
Title
Indium-111 chloride scanning for identification of experimental abscesses.
Source
Journal of Surgical Research. 21(2):85-90, 1976 Aug.
Local Messages
BAMC
MeSH Subject Headings
*Abscess/di [Diagnosis]
Animal
*Indium/du [Diagnostic Use]
Rabbits
Radiation Dosage
Radioisotopes
*Radionuclide Imaging/mt [Methods]
Time Factors

Event Number:	ACIR74000-J
Service:	Army
Event Title:	Use of indium-111 DTPA for the study of cerebrospinal fluid pathways
Reporting Organization Name:	Army Clinical Investigation Regulatory Office
Begining Date:	74
Ending Date:	Unknown
Note Field:	
Informed Consent Forms Available:	
Informed Consent Request:	
Subject Names Identified:	
Number Subjects:	
Informed Consent Docs Exist:	
Gender:	

Locations:

Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

[redacted]

EVENT NUMBER: ACIR74000-J
RECORDS: None available.
CIRS: The investigator was LTC Robert Telepak, MC. The study was approved on 4 Dec 73 and terminated in 30 Sep 82.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AB132

FACILITY===> FAMC                                  WORK UNIT #==>
STUDY TYPE=> 4                                     STUDY STATUS=> T

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> THE USE OF INDIUM-111 DTPA FOR THE STUDY OF CEREBROSPINAL FLUID
     => PATHWAYS.
     =>
     =>
     =>
     =>

                 LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> TELEPAK                 > ROBERT J.             > P   > LTC MC
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
               =>                      >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AB132

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 > 2 >

         GENERIC NAME                          BRAND NAME
DRUGS=> INDIUM-111 DTPA                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   GHAED, LTC NASSER

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AB132
                                                                  VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 30 SEP 82     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... 4_ DEC 73      AP      _      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __      _      2,3,4
M) PROGRESS REPORT RECD AT HURO.... 1_ OCT 78     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
P) ADVERSE EFFECTS LAST REPORTED... __ __. __     NO. REPORTED TO DATE=> 0__
```

ACTION: (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL: (T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. A3132

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> 1 > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/GA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 29Nov93 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-K	**Service:**	Army		
Event Title:	Clinical evaluation of renal cortical imaging utilizing 99m-Tc-kidney scintigraphin - (2, 3-dimercaptosuccinic acid)				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Letterman Army Medical Center	San Francisco	CA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-K
RECORDS: None available.
CIRS: The investigator was LTC Robert J. Lull, MC. The study was approved on 10 Sep 74 and terminated on 30 Oct 82.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AB138

FACILITY===> LAMC                                WORK UNIT #==>
STUDY TYPE=> 4                                   STUDY STATUS=> T

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF RENAL CORTICAL IMAGING UTILIZING 99MTC-KIDNEY
     => SCINTIGRAPHIN - (2, 3-DIMERCAPTO SUCCINIC ACID).
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                   > ROBERT J              > P   > LTC MC
             =>                       >                       >     >
             =>                       >                       >     >
             =>                       >                       >     >
             =>                       >                       >     >
             =>                       >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AB138

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 > 2.>

        GENERIC NAME                        BRAND NAME
DRUGS=> TC-99M-DMSA                  =>
     =>                              =>
     =>                              =>
     =>                              =>
     =>                              =>
     =>                              =>

DEVICES=>
      =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AB138
                                                                  VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...      ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...      ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...      ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...      ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 30 OCT 82     ...      ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...      ...       4
I) HSRRB ACTION.................... 10 SEP 74      CO       _        4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __       _        2,3,4
M) PROGRESS REPORT RECD AT HURO.... 1_ OCT 78     ...      ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...      ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...      ...       ALL
P) SCIENTIFIC REPORTS LAST REQUESTED                NO. REQUESTS TO DATE= 0
```

ACTION: (A)PPROVED, (C)ONTINGENT APPROVAL, (D)EFERRED, (U)NAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AB133

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> 1 > 2 > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 11MAY83 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-L	**Service:**	Army
Event Title:	Gallium-67 citrate in the diagnosis of soft tissue tumors		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

William Beaumont Army Medical Center	El Paso	TX	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-L
RECORDS: None available.
CIRS: The investigator was COL Martin Nusynowitz, MC. The study was approved on 4 Dec 73 and terminated on 1 Dec 77.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1    HSC ACCESS NO.=> 0          HURO LOG NO.=> AC260

FACILITY===> WBAMC                          WORK UNIT #==>
STUDY TYPE=> 4                              STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>     DOG=>     CAT=>     RODENT=>     SWINE=>     MISC=>

TITLE=> GALLIUM-67 CITRATE IN THE DIAGNOSIS OF SOFT TISSUE TUMORS.
     =>
     =>
     =>
     =>
     =>

                LAST NAME              FIRST NAME, MI       TYPE    RANK/TITLE
INVESTIGATOR=> NUSYNOWITZ           > MARTIN               > P   > COL,MC
             =>                     >                      >     >
             =>                     >                      >     >
             =>                     >                      >     >
             =>                     >                      >     >
             =>                     >                      >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 2    HSC ACCESS NO. 0          HURO LOG NO. AC260

ONCOLOGY STUDY GROUP--NAME=>          NC.=>          STUDY CLASS=>   >  <

        GENERIC NAME                      BRAND NAME
DRUGS=> GALLIUM-67 CITRATE             =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
      =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 3    HSC ACCESS NO. 0          HURO LOG NO. AC260
                                                                 VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 01 DEC 77     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... 4_ DEC 73      AP      _      4
J) CTSG ADMINISTRATIVE ACTION...... __ ___ __      __      _      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
```

```
ACTION:  (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER



  C CHANGE      SCREEN=> 4      HSC ACCESS NO. 0          HURO LOG NO. AC260

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=>    >    >      CLASS=>    >    >      SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=>      HMOFAMM=>      ACQ=>      GIFT/HSC=>      GIFT/SA=>      GRANTS=>

DISEASE CLASS=>                                =>
               =>                              =>

COMMENTS=>
         =>
         =>
         =>

INITIATOR HSC       LAST UPDATED 29Nov93              PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER
```

Event Number:	ACIR74000-M	**Service:**	Army		
Event Title:	Cobalt-57 bleomycin in tumor imaging				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-M
RECORDS: None available.
CIRS: The investigator was COL Merrill C. Johnson, MC. The study was approved on 29 Jan 74 and terminated in Apr 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC380

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> COBALT-57 BLEOMYCIN IN TUMOR IMAGING.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE     RANK/TITLE
INVESTIGATOR=> JOHNSON                 > MERRILL C.          > P    > COL MC
            =>                         >                     >      >
            =>                         >                     >      >
            =>                         >                     >      >
            =>                         >                     >      >
            =>                         >                     >      >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC380

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>   >   >

        GENERIC NAME                      BRAND NAME
DRUGS=> COBALT-57 BLEOMYCIN          =>
     =>                              =>
     =>                              =>
     =>                              =>
     =>                              =>
     =>                              =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC380
                                                                 VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ APR 75     ...     ...      ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...      4
I) HSRRB ACTION.................... 29 JAN 74      AP      _       4
J) DTSB ADMINISTRATIVE ACTION...... __ ___ __     __      _       2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...      ALL
O) PROTOCOL RECEIVED AT MLRC....... __ ___ __     ...     ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURD LOG NO. AC380

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC442

FACILITY===> BAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                 STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>     DOG=>     CAT=>     RODENT=>     SWINE=>     MISC=>

TITLE=> CLINICAL EVALUATION OF THE THYROID BY IN VIVO RADIONUCLIDIC STUDIES
     => UTILIZING IODIDE-123.
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                     > ROBERT                > P   > MAJ MC
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC442

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>   >  , >

        GENERIC NAME                        BRAND NAME
DRUGS=> IODIDE-123                    =>
     =>                               =>
     =>                               =>
     =>                               =>
     =>                               =>
     =>                               =>

DEVICES=>
     =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC442
                                                                  VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __    ...     ...        2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __    ...     ...        2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __    ...     ...        ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __    ...     ...        2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 14 OCT 76     ...     ...        ALL
F) EXPEDITED REVIEW................ __ ___ __    ...     ...        4
I) HSRRB ACTION.................... 19 MAR 74     AP      -         4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __    ...     -         2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __    ...     ...        ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __    ...     ...        ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __    ...     ...        ALL
P) AVERAGE PATIENTS (AS REPORTED)... __ ___ __    NO. REPORTED TO DATE=> 0
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC442

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
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INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-N	**Service:**	Army		
Event Title:	Clinical evaluation of the thyroid by in vivo radionuclidic studies utilizing iodide-123				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-N
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was approved on 19 Mar 74 and terminated on 14 Oct 76.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

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TITLE=> CLINICAL EVALUATION OF THE THYROID BY IN VIVO RADIONUCLIDIC STUDIES
     => UTILIZING IODIDE-123.
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                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                    > ROBERT                > P   > MAJ MC
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CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


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NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


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                                  DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...       ...  2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...       ...  2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...       ...  ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...       ...  2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 14 OCT 76     ...       ...  ALL
F) EXPEDITED REVIEW................ __ ___ __     ...       ...  4
I) HSRRB ACTION.................... 19 MAR 74      AP         _  4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __         _  2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...       ...  ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...       ...  ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...       ...  ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
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PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

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NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
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FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
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DISEASE CLASS=> =>
=> =>

COMMENTS=>
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INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-P	**Service:**	Army
Event Title:	Technetium-99 macroaggregate		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-P
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier
74286653

Authors
Olsen GN. Block AJ. Tobias JA.

Title
Prediction of postpneumonectomy pulmonary function using quantitative macroaggregate lung scanning.

Source
Chest. 66(1):13-6, 1974 Jul.

Local Messages
STIMSON / BAMC

MeSH Subject Headings

Aged
Airway Obstruction/co [Complications]
Bronchospirometry
Carcinoma, Bronchogenic/pp [Physiopathology]
*Carcinoma, Bronchogenic/su [Surgery]
Human
Iron/du [Diagnostic Use]
Lung Neoplasms/pp [Physiopathology]
*Lung Neoplasms/su [Surgery]
Middle Age
*Pneumonectomy
*Radionuclide Imaging
*Respiration
*Respiratory Function Tests
Spirometry
Technetium/du [Diagnostic Use]
Vital Capacity

Stimson Library - OVID System

<1>

Unique Identifier
83042017

Authors
Sovijarvi AR. Poyhonen L. Kellomaki L. Muittari A.

Title
Effects of acute and long-term bronchodilator treatment on regional lung function in asthma assessed with krypton-81m and technetium-99m-labelled macroaggregates.

Source
Thorax. 37(7):516-20, 1982 Jul.

Local Messages
BAMC

MeSH Subject Headings
Adult
Aged
Asthma/dt [Drug Therapy]
*Asthma/pp [Physiopathology]
Asthma/ri [Radionuclide Imaging]
*Bronchodilator Agents/tu [Therapeutic Use]
Female
Human
*Isoproterenol/pd [Pharmacology]
Krypton/du [Diagnostic Use]
*Lung/pp [Physiopathology]
Lung/ri [Radionuclide Imaging]
Male
Middle Age
Peak Expiratory Flow Rate
Radioisotopes/du [Diagnostic Use]
Serum Albumin/du [Diagnostic Use]
Support, Non-U.S. Gov't
Technetium/du [Diagnostic Use]

Abstract
We have investigated the effect of acute and long-term bronchodilator treatment on the distribution of ventilation and perfusion in 15 asthmatics using a gamma camera, krypton-81m (for ventilation) and technetium-99m macroaggregate (for perfusion). Individual peak expiratory flow (PEF) values before bronchodilation were slightly or moderately below the predicted values. The simultaneous ventilation images (analysed visually) showed areas of delayed ventilation in all patients (mean distribution score on 3-point scale 2.1). After isoprenaline inhalation (240 micrograms) the mean PEF increased by 24%, but the distribution of ventilation remained virtually unchanged in all patients (mean score 2.0). Simultaneously defects in perfusion could be seen in all patients (mean score 1.5). After intensive treatment, when the mean PEF increased by a further 29%, the distribution scores of ventilation and perfusion fell to 0.8 and 0.9, respectively. The results indicate that, without intensive and long-term treatment, appreciable inequality of ventilation and perfusion are usual consequences of asthma; and suggest that although larger airways are dilated by isoprenaline inhalations residual bronchial obstruction may still remain in some smaller airways, maintaining uneven distribution. Perfusion disturbances seem to be secondary to changes in regional ventilation.

Registry Numbers
0 (Bronchodilator Agents). 0 (Radioisotopes). 0 (Serum Albumin). 0 (Technetium Tc 99m Aggregated Albumin). 7439-90-9 (Krypton). 7440-26-8 (Technetium). 7683-59-2 (Isoproterenol).

Prediction of Postpneumonectomy Pulmonary Function Using Quantitative Macroaggregate Lung Scanning*

Gerald N. Olsen, M.D., A. Jay Block, M.D., and Joel A. Tobias, M.D.

A simple, practical method is described for estimating unilateral lung function. Overall lung function is multiplied by right-left fractional perfusion estimated from a quantitative technetium ferric hydroxide macroaggregate lung scan. The calculated function attributed to the lung to be resected is then subtracted from the overall pulmonary function. The data from 13 patients indicate that the following postpneumonectomy functions can be predicted: forced vital capacity, forced expiratory one second volume, maximum voluntary ventilation, functional residual capacity, total lung capacity and diffusing capacity. The procedures described are available in most hospitals and represent a practical alternative to classic bronchospirometry, xenon radiospirometry and unilateral pulmonary artery balloon occlusion in the estimation of split lung function.

With the increasing prevalence of carcinoma of lung and chronic obstructive lung disease, it is logical that they would appear together in a significant proportion of cases. This is especially true if they have a common etiologic agent. Boushy, et al[1] found that 70 percent of patients presenting with carcinoma of the lung express symptoms of chronic obstructive airway disease with approximately 20 percent of these patients having significant pulmonary function abnormalities as well.

Surgery is generally accepted as the most effective mode of therapy for carcinoma of the lung producing survival rates as high as 30-40 percent in well selected patients. In the preoperative evaluation of patients considered as candidates for lung resection, an evaluation of overall pulmonary function has been shown to elucidate those with severe underlying lung disease.[2-4] With techniques such as bronchospirometry, radiospirometry, and temporary unilateral pulmonary artery occlusion, an assessment of the right-left distribution of pulmonary function is possible. This assessment of "split" function allows the surgeon to preoperatively estimate the effect of the proposed resection on overall pulmonary function.

In 1968, Neuhaus and Cherniack[5] reported their experience in predicting postpneumonectomy vital capacity (VC) and maximum breathing capacity (MBC) using the bronchospirometrically determined unilateral vital capacity. More recently Kristersson, et al[6] have reported a similar prediction method based on the ^{133}xenon radiospirometric determination of unilateral vital capacity. Since most general hospitals have neither the equipment nor expertise in bronchospirometry or ^{133}xenon radiospirometry, an easier method of assessing split function is needed. We have studied the prediction of postpneumonectomy function using quantification of a routine macroaggregate lung scan by a standard gamma camera with split crystal capability.

*From the Veterans Administration Hospital and the Departments of Medicine and Surgery, University of Florida College of Medicine, Gainesville.

Fellowship and faculty support provided by the Florida Tuberculosis and Respiratory Disease Association.

Manuscript received December 5; revision accepted February 18.

Reprint requests: Dr. Olsen, VA Hospital, Gainesville, Florida 32602

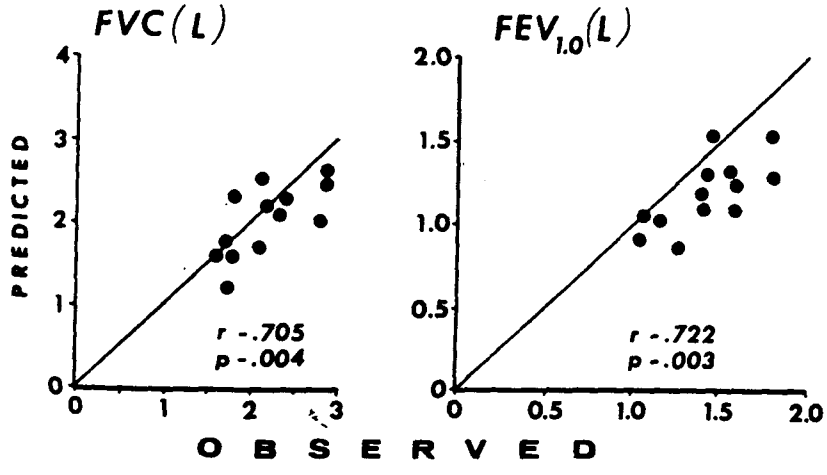


FIGURE 1. Predicted FVC plotted aginst observed FVC (L) and predicted $FEV_{1.0}$ plotted against observed $FEV_{1.0}$ (R). Straight line is that of identity.

Table 1—*Pulmonary Function Studies*

Patient	Age, Yrs	Surgery Amount	Contralat. Perf. %	FVC L	FEV $L^{1.0}$	MVV L/min	FRC L	TLC L	D_{LCO} ml/min/mm Hg
1	60	Pre L	87	2.70	1.79	58	3.69	4.89	13
		Pred		2.35	1.56	50	3.21	4.25	11
		Post L		1.78	1.48	51	2.78	3.28	23
2	63	Pre L	55	2.65	1.70	53	3.51	5.16	12
		Pred		1.21	.93	29	1.90	2.79	7
		Post L		1.70	1.03	42	2.09	3.04	7
3	56	Pre L	65	3.88	2.41	86	6.17	8.33	15
		Pred		2.52	1.57	56	4.01	5.41	10
		Post L		2.10	1.77	68	3.60	4.86	20
4	69	Pred L	56	3.09	1.57	50	5.23	7.44	8
		Pred		1.73	.88				
		Post L		2.05	1.24				
5	71	Pre L	56	4.10	2.37	104	5.74	7.39	8
		Pred		2.19	1.33	58	3.21	4.14	5
		Post L		2.15	1.52	46	4.06	4.86	6
6	77	Pre L	55	3.99	2.31	52	4.65	6.25	11*
		Pred		2.19	1.27	29	2.56	3.44	6
		Post L		2.24	1.53	32	3.37	4.46	9*
7	54	Pre L	60	4.40	1.89	61	5.63	8.33	20
		Pred		2.64	1.13	—	3.38	5.00	12
		Post L		2.86	1.40	—	3.60	5.88	14
8	71	Pre L	77	3.32	1.65	57	4.72	7.18	18
		Pred		2.56	1.27	—	3.63	5.53	14
		Post L		2.80	1.78	—	3.87	5.22	16
9	51	Pre L	72	2.19	1.45	30	4.77	6.42	13
		Pred		1.58	1.04	22	3.43	4.62	10
		Post L		1.59	1.08	36	2.63	3.45	8
10	61	Pre R	53	2.99	1.98	103	3.36	5.09	23
		Pred		1.58	1.05	55	1.78	2.70	12
		Post R		1.74	1.13	54	1.29	2.21	16
11	49	Pre R	58	2.82	2.06	72	4.28	5.41	9*
		Pred		1.63	1.19	42	2.48	3.14	5
		Post R		1.69	1.37	40	2.95	3.76	9*
12	58	Pre L	63	3.57	2.09	—	4.29	6.36	23
		Pred		2.25	1.32	—	2.70	4.01	15
		Post L		2.28	1.39	—	2.80	4.48	14
13	59	Pre L	78	2.69	1.41	—	3.99	6.18	11
		Pred		2.07	1.10	—	3.11	4.82	9
		Post L		2.81	1.57	—	2.70	4.54	15
Mean Preop	62		64	3.26	1.90	66	4.62	6.49	14

*Steady Rate

Materials and Methods

Thirteen patients presenting with bronchogenic carcinoma complicated by signs and symptoms of chronic obstructive airway disease were studied with routine pulmonary function studies. Spirometry before and after administration of isoproterenol was performed and yielded a forced vital capacity (FVC), forced expiratory volume in one second ($FEV_{1.0}$), and maximum voluntary ventilation (MVV). Open-circuit nitrogen washout was performed to determine the functional residual capacity (FRC). With the spirometric determination of the inspiratory capacity (IC), calculation of the total lung capacity (TLC) was possible. Diffusing capacity (D_{LCO}) was measured using the steady state (SS)[7] or breath-holding methods (BHT).[8]

To determine the right-left distribution of pulmonary function, a lung scan was performed with the patient in the supine position over a Pho/Gamma HP scintillation camera.[9] The camera was placed into a split crystal mode with the split occurring in the center of the mediastinum thus quantifying the radioactivity emanating from each hemithorax separately. Two mCi of ^{99m}technetium ferric hydroxide macroaggregate was injected intravenously and 500,000 counts were obtained by the scintillation counter and the right-left distribution of these was determined. By division of each hemithoracic count by the total count, a decimal fraction of total perfusion contributed by each lung was determined. To estimate postoperative function, the fraction contributed by the lung contralateral to that containing the tumor was used.

Estimation of the postoperative pulmonary function was obtained using a modification of equations reported previous-

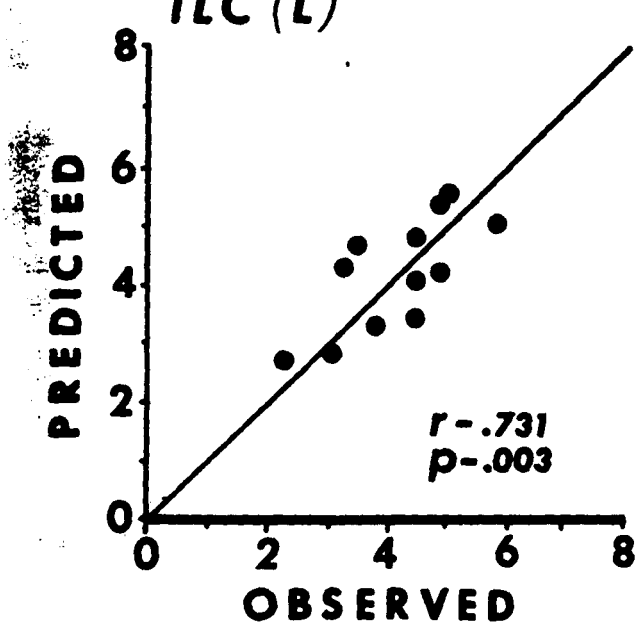


FIGURE 2. Predicted TLC plotted against observed TLC.

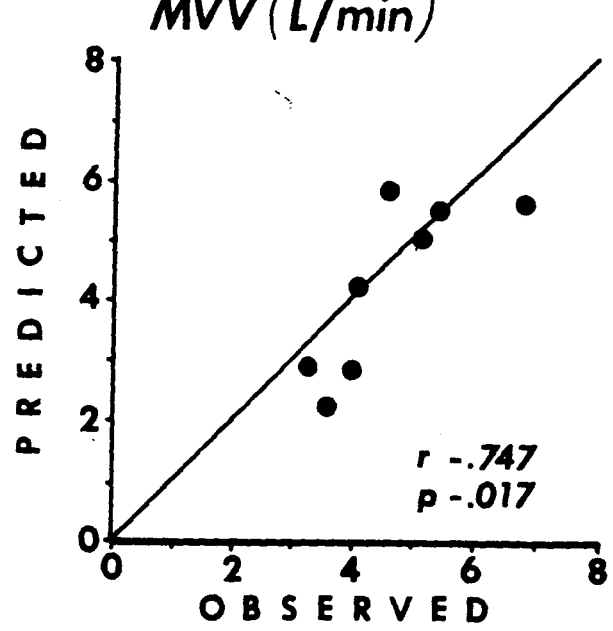


FIGURE 4. Predicted MVV plotted against observed MVV.

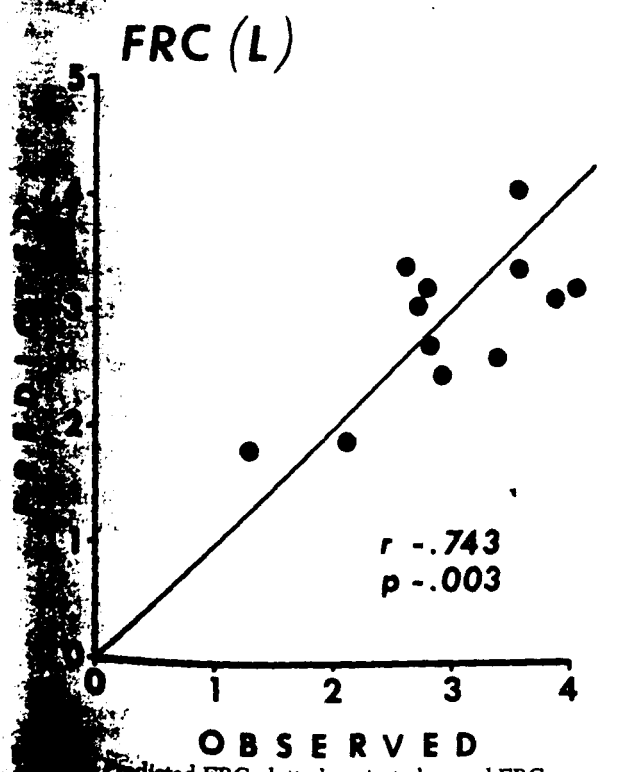
ly. Predicted postoperative function = preoperative value X fraction of contralateral perfusion. The postpneumonectomy functions predicted in this manner were the FVC in liters, $FEV_{1.0}$ in liters, MVV in liters/minute, FRC in liters, TLC in liters, and $D_{L_{CO}}$ in ml/min/mm Hg.

The patients in this study were asked to return three months following pneumonectomy and repeat studies using the same equipment and techniques were performed. The postoperative values obtained were statistically compared to those predicted using the Pearson correlation coefficient.

RESULTS

The prepneumonectomy, predicted postpneumonectomy and observed postpneumonectomy pulmonary function findings are listed in Table 1. The majority of these patients demonstrate moderate to severe chronic obstructive airway disease. The correlation coefficients between the predicted and observed postoperative pulmonary function values are graphically represented in Figures 1-5. The correlations are seen to be uniformly positive ($r = .617$ to .747) and statistically significant ($P = .017$ to .003).

The errors noted in the predictions are listed in Table 2. The mean error is expressed as an absolute value and the range of error is also listed. When in error the FVC, $FEV_{1.0}$, and $D_{L_{CO}}$ predictions were lower than the observed values. The MVV, FRC, and TLC were predicted high as frequently as they were predicted low.



dicted FRC plotted against observed FRC.

DISCUSSION

Screening pulmonary functions can indicate those

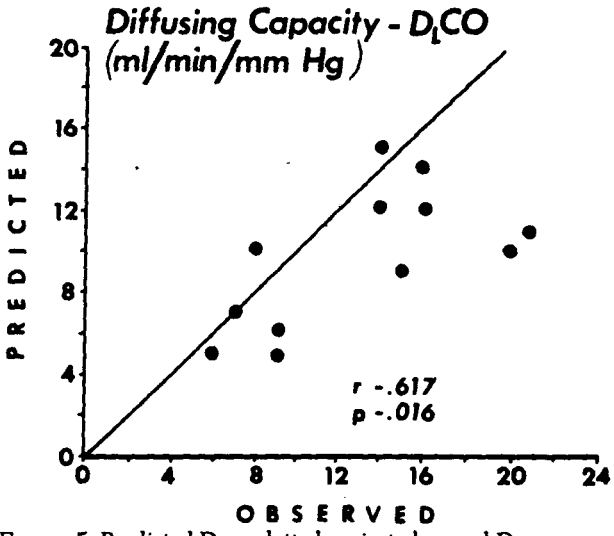


FIGURE 5. Predicted $D_{L_{CO}}$ plotted against observed $D_{L_{CO}}$.

Table 2—*Pulmonary Function Prediction Error*

	Mean Error	Range of Error	Number Predicted High	Number Predicted Low
FVC	.27L	−.74 to +.57L	3	10
$FEV_{1.0}$	.21L	−.51 to +.08L	1	12
MVV	8L/min	−13 to +12L/min	3	5
FRC	.45L	−.85 to +.80L	5	7
TLC	.62L	−1.02 to 1.17L	6	6
D_LCO	4ml/min/mm Hg	−12 to +2 ml/min/mm Hg	2	9

patients at increased risk of postoperative cardiorespiratory insufficiency. The tests have been used by many to exclude those patients with poor function from surgery. If the lung to be removed is contributing little to overall cardiopulmonary function the risks of surgery are less. Considering the overall prognosis of carcinoma of the lung untreated,[10] an attempt to offer surgery to more patients seems warranted. The techniques available to assess unilateral function such as bronchospirometry, xenon radiospirometry, and temporary unilateral pulmonary artery occlusion are beyond the capability of many hospitals where lung resection is performed. Routine pulmonary function studies and macroaggregate lung scanning are relatively easily obtained in most hospitals.

We have demonstrated that using the distribution of perfusion one may predict postoperative pulmonary function. Our findings are in agreement with those using the distribution of ventilation or volume.[5] The greatest accuracy we obtained was in the prediction of the FVC, $FEV_{1.0}$, FRC, and TLC. In our experience the prediction of the postoperative $FEV_{1.0}$ has been useful in combination with other criteria of operability. Kristersson et al,[6] feel that a predicted postoperative $FEV_{1.0}$ of less than one liter precludes resection. We have used an $FEV_{1.0}$ of less than 0.8 liter as indicative of significant risk. We have chosen this level from personal experience and studies suggesting a rising incidence of hypercapnia in patients with an $FEV_{1.0}$ of under 800 ml.[11,12]

While gross ventilation/perfusion mismatching is theoretically possible and would invalidate our calculations, large deviations of unilateral ventilation from perfusion have not been seen in our clinical experience, in the currently reported studies, or in a larger group of intensively studied patients.[12] We, therefore, are currently using the quantitative macroaggregate albumin lung scan as a routine preoperative split pulmonary function study.

ACKNOWLEDGMENTS: The authors wish to acknowledge the indispensible technical assistance of Ms. Joyce Fencl, Mr. Fred Carey and Mr. Ode E. Cox as well as the secretarial skills of Mrs. Shawn Tomlinson and Mrs. Mary Ann Cobb. We are also extremely grateful to the Department of Radiology, University of Florida, for the use of the radiologic equipment necessary to perform this study.

References

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11 Segal JJ, Butterworth BA: Ventilatory capacity in chronic bronchitis in relation to carbon dioxide retention. Scan J Resp Dis 47:215-224, 1966

12 Olsen GN, Swenson EW, Block AJ, et al: Pulmonary function in evaluation of the lung resection candidate: A prospective study. (submitted for publication)

Event Number:	ACIR74000-N	**Service:**	Army		
Event Title:	Clinical evaluation of the thyroid by in vivo radionuclidic studies utilizing iodide-123				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Brooke Army Medical Center	Houston	TX	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-N
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was approved on 19 Mar 74 and terminated on 14 Oct 76.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Event Number:	ACIR74000-Q	**Service:**	Army		
Event Title:	Phase I study of ICRF-159 (NSC 129943) given orally plus radiation therapy for the treatment of bronchogenic carcinoma				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Letterman Army Medical Center	San Francisco	CA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-Q
RECORDS: None available.
CIRS: The investigator was LTC Michael Corder, MC. The study was approved on 16 Aug 74 and terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

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CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


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DEVICES=>
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NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC463
                                                                    VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __    ...      ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __    ...      ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __    ...      ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __    ...      ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 75    ...      ...      ALL
F) EXPEDITED REVIEW................ __ ___ __    ...      ...      4
I) HSRRB ACTION.................... 16 AUG 74     AP       _       4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __       _       2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __    ...      ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __    ...      ...      ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __    ...      ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __    NO. REPORTED TO DATE=> 0__
```

ACTION: (A)PPROVED, (C)ONTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC463

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-R	**Service:**	Army		
Event Title:	Use of gallium-67 citrate for tumor scanning (1974)				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-R
RECORDS: None available.
CIRS: The investigator was MAJ Richard Littenberg, MC. The study was terminated in 1974.
MEDLINE: Littenberg RL, el al: A clinical evaluation of gallium-67 citrate scanning. Surg, Obstet, and Gynecol, 137:424-30, 1973 may describe this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC536

FACILITY===> WRAMC                              WORK UNIT #===>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> THE USE OF GALLIUM-67 CITRATE FOR TUMOR SCANNING.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LITTENBERG              > RICHARD               > P   > MAJ MC
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
             =>                        >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC536

ONCOLOGY STUDY GROUP--NAME=>            NO.=>          STUDY CLASS=>    >   >

        GENERIC NAME                        BRAND NAME
DRUGS=> CALLIUM-67 CITRATE               =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA-------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC536
                                                                    VALID FOR
                                        DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)...     __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.........      __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER.....     __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW.....     __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN..     0_ ___ 74     ...     ...     ALL
F) EXPEDITED REVIEW...............      __ ___ __     ...     ...     4
I) HSRRB ACTION...................      __ ___ __      __      _      4
J) OTSG ADMINISTRATIVE ACTION.....      __ ___ __      __      _      2,3,4
M) PROGRESS REPORT RECD AT HURO....     __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC.......      __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO......      __ ___ __      ..     ...     ALL
P) FOLLOW-UP REPORT (IF REQUIRED)       __ ___ __                NO. REPORTED TO DATE=> 0
```

PROTOCOL: (TYPE, (LIKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURC LOG NO. AC536

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFANM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Stimson Library - OVID System

<1>

Unique Identifier
73226885

Authors
Littenberg RL. Alazraki NP. Taketa RM. Reit R. Halpern SE. Ashburn WL.

Title
A clinical evaluation of gallium-67 citrate scanning.

Source
Surgery, Gynecology & Obstetrics. 137(3):424-30, 1973 Sep.

Local Messages
STIMSON-CHECK HOLDINGS LIST / BAMC

MeSH Subject Headings

Adenocarcinoma/di [Diagnosis]
Bone Neoplasms/di [Diagnosis]
Brain Neoplasms/di [Diagnosis]
Breast Neoplasms/di [Diagnosis]
Carcinoma, Bronchogenic/di [Diagnosis]
Child
Female
*Gallium.
Human
Liver Neoplasms/di [Diagnosis]
Lung Neoplasms/di [Diagnosis]
Lymphoma, Large-Cell/di [Diagnosis]
Male
Middle Age
Neoplasm Metastasis
*Neoplasms/di [Diagnosis]
*Radionuclide Imaging
Reticuloendothelial System

Event Number:	ACIR74000-S	**Service:**	Army
Event Title:	Clinical evaluation of 111-indium bleomycin (MPI Tumor Scintigraphin TM) which is presently in the third phase of investigation		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		

Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-S
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC537

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>     DOG=>     CAT=>     RODENT=>     SWINE=>     MISC=>

TITLE=> CLINICAL EVALUATION OF 111 INDIUM BLEOMYCIN (MPI TUMOR SCINTIGRAPHIN
     => MT) WHICH IS PRESENTLY IN THE THIRD PHASE OF INVESTIGATION.
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                    > ROBERT                > P   > MAJ,MC
            =>                         >                       >     >
            =>                         >                       >     >
            =>                         >                       >     >
            =>                         >                       >     >
            =>                         >                       >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC537

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>   >   >

        GENERIC NAME                      BRAND NAME
DRUGS=> 111 INDIUM BLEOMYCIN           =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC537
                                                                  VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 74     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... __ ___ __      __      _      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __      _      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HUFO LOG NO. AC537

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 23JUN82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-T	**Service:**	Army
Event Title:	Clinical evaluation of thyroid by in vivo radionuclidic studies utilizing I-123		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-T
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC538

FACILITY===> WRAMC                              WORK UNIT #===>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> CLINICAL EVALUATION OF THYROID BY IN VIVO RADIONUCLIDIC STUDIES
     => UTILIZING I-123.
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> LULL                    > ROBERT                > P   > MAJ,MC
            =>                         >                       >     >
            =>                         >                       >     >
            =>                         >                       >     >
            =>                         >                       >     >
            =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC538

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>   >   >

        GENERIC NAME                        BRAND NAME
DRUGS=> I-123                          =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
     =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC538
                                                                  VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...       2,3.4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 74     ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...       4
I) HSRRB ACTION.................... __ ___ __      --      -        4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      --      -        2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...       ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC538

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 23JUN82 PROTOCOL ADDED OO ? OO

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-U	**Service:**	Army		
Event Title:	Investigational use of indium-111 chloride				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-U (Probably duplicates ACIR740000-I)
RECORDS: None available.
CIRS: No references found.
MEDLINE: Lamoy RE, et al: Indium-111 chloride scanning for identification of experimental abscesses. J Surg Res, 21:85-90, 1976 may describe this study.
MEDICAL ASSESSMENT: This study may not involve humans.

Stimson Library - OVID System

<1>

Unique Identifier
77010397

Authors
Lamoy RE. Hobson RW 2nd.

Title
Indium-111 chloride scanning for identification of experimental abscesses.

Source
Journal of Surgical Research. 21(2):85-90, 1976 Aug.

Local Messages
BAMC

MeSH Subject Headings
*Abscess/di [Diagnosis]
Animal
*Indium/du [Diagnostic Use]
Rabbits
Radiation Dosage
Radioisotopes
*Radionuclide Imaging/mt [Methods]
Time Factors

Event Number:	ACIR74000-V	**Service:**	Army
Event Title:	Use of gallium-67 citrate in evaluation of patients with known or suspected tumors and pyogenic abscesses		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA
Fitzsimons Army Medical Center	Aurora	CO	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-V
RECORDS: None available.
CIRS: The investigator was LTC Thomas A. Verdnon, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC578

FACILITY==>=> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                   STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> USE OF GALLIUM-67 CITRATE IN EVALUATION OF PATIENTS WITH KNOWN OR
     => SUSPECTED TUMORS AND PYOGENIC ABSCESSES.
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> VERDNON                  > THOMAS A., JR.        > P   > LTC MC
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
             =>                         >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED -- PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC578

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>   >   >

        GENERIC NAME                      BRAND NAME
DRUGS=> GALLIUM-67 CITRATE             =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC578
                                                                  VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...       2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...       2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...       ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...       2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 74     ...     ...       ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...       4
I) HSRRB ACTION.................... __ ___ __      --      -        4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      --      -        2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...       ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...       ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...       ALL
P) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL: (T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC578

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 27JUN83 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC696

FACILITY===> FAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                 STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> USE OF GALLIUM-67 CITRATE IN EVALUATION OF PATIENTS WITH KNOWN OR
     => SUSPECTED TUMORS AND PYOGENIC ABSCESSES
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> VERDON                   > THOMAS A.             > P   > LTC JR.
               =>                       >                       >     >
               =>                       >                       >     >
               =>                       >                       >     >
               =>                       >                       >     >
               =>                       >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC696

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>    >   >

         GENERIC NAME                        BRAND NAME
DRUGS=> GALLIUM-67 CITRATE              =>
     =>                                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>
     =>                                 =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   MEDI-PHYSICS IND #8371.  APPROVAL NOT DOCUMENTED IN FILE

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC696
                                                                    VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL    STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...        2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...        2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...        ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...        2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __ ___ __     ...     ...        ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...        4
I) HSRRB ACTION.................... 0_ NOV 73     AP      _          4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __     __      _          2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...        ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...        ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...        ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC696

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACC=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 19OCT88 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-W	**Service:**	Army		
Event Title:	Use of indium-111 DTPA for study of cerebrospinal fluid pathways				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-W
RECORDS: None available.
CIRS: The investigator was LTC Thomas P. Verdnon, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1    HSC ACCESS NO.=> 0          HURO LOG NO.=> AC579

FACILITY===> WRAMC                          WORK UNIT #==>
STUDY TYPE=> 4                              STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>     DOG=>     CAT=>     RODENT=>     SWINE=>     MISC=>

TITLE=> THE USE OF INDIUM-111 DTPA FOR STUDY OF CEREBROSPINAL FLUID PATHWAYS.
     =>
     =>
     =>
     =>
     =>

                LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> VERDNON                 > THOMAS JR.          > P   > MC
             =>                        >                     >     >
             =>                        >                     >     >
             =>                        >                     >     >
             =>                        >                     >     >
             =>                        >                     >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 2    HSC ACCESS NO. 0          HURO LOG NO. AC579

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=>   >   >

        GENERIC NAME                      BRAND NAME
DRUGS=> INDIUM-111 DTPA                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
      =>

DA-------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3    HSC ACCESS NO. 0          HURO LOG NO. AC579
                                                                  VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 74     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... __ ___ __      --      -      4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      --      -      2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC579

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 27JUN83 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-X	**Service:**	Army
Event Title:	Bone marrow scintigraphy and scintigraphic localization of soft tissue tumors by use of indium-111 chloride		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-X
RECORDS: None available.
CIRS: The investigator was LTC Thomas P. Verdnon, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC580

FACILITY====> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                   STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> BONE MARROW SCINTIGRAPHY AND SC INTIGRAPHIC LOCALIZATION OF SOFT
     => TISSUE TUMORS BY USE OF INDIUM-111 CHLORIDE.
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> VERDON                   > THOMAS                > P   > LTC MC
              =>                        >                       >     >
              =>                        >                       >     >
              =>                        >                       >     >
              =>                        >                       >     >
              =>                        >                       >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2      HSC ACCESS NO. 0          HURO LOG NO. AC580

ONCOLOGY STUDY GROUP--NAME=>           NO.=>           STUDY CLASS=>    >    >

         GENERIC NAME                        BRAND NAME
DRUGS=> INDIUM-111 CHLORIDE              =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
     =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3      HSC ACCESS NO. 0          HURO LOG NO. AC580
                                                                      VALID FOR
                                    DD MMM YY   ACTION   PROTOCOL   STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...       ...        2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...       ...        2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...       ...        ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...       ...        2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 0_ ___ 74     ...       ...        ALL
F) EXPEDITED REVIEW................ __ ___ __     ...       ...        4
I) HSRRB ACTION.................... __ ___ __      __        _         4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      __        _         2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...       ...        ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...       ...        ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...       ...        ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL: (T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC590

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 19OCT88 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74000-Y	**Service:**	Army		
Event Title:	Adjuvant therapy of stage II testicular carcinoma with chemotherapy, radiation therapy or chemotherapy plus radiation therapy				
Reporting Organization Name:	*Army Clinical Investigation Regulatory Office*				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-Y
RECORDS: None available.
CIRS: The investigator was Anthony P. Borski. The study was terminated on 30 Dec 74.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

```
  C CHANGE       SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC614

FACILITY===> WRAMC                                  WORK UNIT #==> 7402
STUDY TYPE=> 4                                      STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>      DOG=>      CAT=>      RODENT=>      SWINE=>      MISC=>

TITLE=> ADJUVANT THERAPY OF STAGE II TESTICULAR CARCINOMA WITH CHEMOTHERAPY
     => RADIATION THERAPY OR CHEMOTHERAPY PLUS RADIATION THERAPY.
     =>
     =>
     =>
     =>

                  LAST NAME                FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> BORSKI                   > XX                  > P   > ANTHON
             =>                         >                     >     >
             =>                         >                     >     >
             =>                         >                     >     >
             =>                         >                     >     >
             =>                         >                     >     >
CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC614

ONCOLOGY STUDY GROUP--NAME=>           NO.=>          STUDY CLASS=>    >   >

        GENERIC NAME                        BRAND NAME
DRUGS=>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>
     =>                                  =>

DEVICES=>
       =>

DA------IND#=> 0        IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0        IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE       SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC614
                                                                    VALID FOR
                                  DD MMM YY   ACTION  PROTOCOL   STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...      ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...      ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...      ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...      ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. 30 DEC 74     ...      ...      ALL
F) EXPEDITED REVIEW................ __ ___ __     ...      ...      4
I) HSRRB ACTION.................... __ ___ __      --       -       4
J) OTSG ADMINISTRATIVE ACTION...... __ ___ __      --       -       2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...      ...      ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...      ...      ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...      ...      ALL
Q) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

ACTION: (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL: (T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURO LOG NO. AC614

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 23JUN82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC680

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 3                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>     DOG=>     CAT=>     RODENT=>     SWINE=>.     MISC=>

TITLE=> ADJUVANT THERAPY OF STAGE II TESTICULAR CARCINOMA WITH CHEMOTHERAPY,
     => RADIATION THERAPY, OR CHEMOTHERAPY PLUS RADIATION THERAPY
     =>
     =>
     =>
     =>

                LAST NAME              FIRST NAME, MI        TYPE    RANK/TITLE
INVESTIGATOR=> BORSKI                > M.D                 > P   > ANTHON
             =>                      >                     >     >
             =>                      >                     >     >
             =>                      >                     >     >
             =>                      >                     >     >
             =>                      >                     >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC680

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 > 1 > 2

       GENERIC NAME                      BRAND NAME
DRUGS=> ACTINOMYCIN-D                 =>
     => CHLORAMBUCIL                  =>
     =>                               =>
     =>                               =>
     =>                               =>
     =>                               =>

DEVICES=>
       =>

DA-------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   ACTINOMYCIN-D, CHLORAMBUCIL

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC680

                                                                    VALID FOR
                                DD  MMM  YY    ACTION  PROTOCOL   STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __  ___  __     ...     ...      2,3,4
B) LOCAL HUMAN USE REVIEW.......... __  ___  __     ...     ...      2,3,4
C) APPROVED BY LOCAL COMMANDER..... __  ___  __     ...     ...      ALL
D) CONTINUING HUMAN USE REVIEW..... __  ___  __     ...     ...      2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __  ___  __     ...     ...      ALL
F) EXPEDITED REVIEW................ __  ___  __     ...     ...      4
I) HSRRB ACTION.................... 30  APR  74      AP      _       4
J) OTSG ADMINISTRATIVE ACTION...... __  ___  __      __      _       2,3,4
```

```
7) PROTOCOL RECEIVED AT HURO..... __ ___ __      ...      ...      ___
8) ADVERSE EFFECTS LAST REPORTED... __ ___ __      NO. REPORTED TO DATE=> 0__

ACTION:  (AP)PROVED, (CO)NTINUING APPROVAL, (DE)FERRED, (DI)SAPPROVED
PROTOCOL:(T)YPE, (L)IKE

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER



  C CHANGE      SCREEN=> 4      HSC ACCESS NO. 0          HURO LOG NO. AC680

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY----
SOURCE=>   >   >      CLASS=>   >   >      SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=>      HMJFAMM=>      ACQ=>      GIFT/HSC=>      GIFT/SA=>      GRANTS=>

DISEASE CLASS=>                              =>
              =>                             =>

COMMENTS=>
         =>
         =>
         =>

INITIATOR HSC      LAST UPDATED 23JUN82                PROTOCOL ADDED 00/? 00

CANCEL - PF2/14      TRANSACTION COMPLETED - PF4/16      CONTINUE - ENTER
```

Event Number:	ACIR74000-Z	**Service:**	Army		
Event Title:	Investigational use of gallium-67 citrate				
Reporting Organization Name:	Army Clinical Investigation Regulatory Office				
Begining Date:	74	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Walter Reed Army Medical Center	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74000-Z
RECORDS: None available.
CIRS: The investigator was COL Merrill P. Johnson, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

```
  C CHANGE      SCREEN=> 1     HSC ACCESS NO.=> 0          HURO LOG NO.=> AC667

FACILITY===> WRAMC                              WORK UNIT #==>
STUDY TYPE=> 4                                  STUDY STATUS=> C

ANIMAL SPECIES (ENTER 'X'; MARK ALL THAT APPLY)...
PRIMATE=>     DOG=>     CAT=>     RODENT=>     SWINE=>     MISC=>

TITLE=> INVESTIGATIONAL USE OF GALLIUM-67 CITRATE
     =>
     =>
     =>
     =>
     =>

                LAST NAME              FIRST NAME, MI       TYPE    RANK/TITLE
INVESTIGATOR=> JOHNSON              > MERRILL              > P   > COL
            =>                      >                      >     >
            =>                      >                      >     >
            =>                      >                      >     >
            =>                      >                      >     >
            =>                      >                      >     >
CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 2     HSC ACCESS NO. 0          HURO LOG NO. AC667

ONCOLOGY STUDY GROUP--NAME=>          NO.=>          STUDY CLASS=> 5 >    >

        GENERIC NAME                      BRAND NAME
DRUGS=> GALLIUM-67 CITRATE             =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>
     =>                                =>

DEVICES=>
       =>

DA------IND#=> 0       IDE#=>          SCHEDULE 1 CONTROLLED SUBSTANCE?=>
NON DA--IND#=> 0       IDE#=>          SPONSOR=>

SUSPENSE ACTION/COMMENT---
HSC =>
MRDC=>   DRUGS SUPPLIED BY NEW ENDLAND NUCLEAR IND 8377

CANCEL - PF2/14     TRANSACTION COMPLETED - PF4/16     CONTINUE - ENTER


  C CHANGE      SCREEN=> 3     HSC ACCESS NO. 0          HURO LOG NO. AC667
                                                                  VALID FOR
                                    DD MMM YY   ACTION  PROTOCOL  STUDY TYPES
A) LOCAL SCIENTIFIC REVIEW (CIC)... __ ___ __     ...     ...     2,3,4
B) LOCAL HUMAN USE REVIEW.......... __ ___ __     ...     ...     2,3,4
C) APPROVED BY LOCAL COMMANDER..... __ ___ __     ...     ...     ALL
D) CONTINUING HUMAN USE REVIEW..... __ ___ __     ...     ...     2,3,4
E) COMPLETED/TERMINATED/WITHDRAWN.. __ ___ __     ...     ...     ALL
F) EXPEDITED REVIEW................ __ ___ __     ...     ...     4
I) HSRRB ACTION.................... 0_ APR 74     AP      _       4
J) CTSG ADMINISTRATIVE ACTION...... __ ___ __     __      _       2,3,4
M) PROGRESS REPORT RECD AT HURO.... __ ___ __     ...     ...     ALL
N) PROTOCOL RECEIVED AT HSC........ __ ___ __     ...     ...     ALL
O) PROTOCOL RECEIVED AT HURO....... __ ___ __     ...     ...     ALL
P) ADVERSE EFFECTS LAST REPORTED... __ ___ __     NO. REPORTED TO DATE=> 0__
```

PROTOCOL: (T)YPE, (L)IKE

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

C CHANGE SCREEN=> 4 HSC ACCESS NO. 0 HURC LOG NO AC667

NO. OF HUMAN SUBJECTS EXPECTED FOR STUDY=> 0

HUMAN SUBJECTS ACTUALLY USED IN STUDY---
SOURCE=> > > CLASS=> 1 > > SEX=>

FUNDING RQMT (ENTER 'X'; CHOOSE ONLY ONE)...
FACT=> HMJFAMM=> ACQ=> GIFT/HSC=> GIFT/SA=> GRANTS=>

DISEASE CLASS=> =>
=> =>

COMMENTS=>
=>
=>
=>

INITIATOR HSC LAST UPDATED 02FEB82 PROTOCOL ADDED 00 ? 00

CANCEL - PF2/14 TRANSACTION COMPLETED - PF4/16 CONTINUE - ENTER

Event Number:	ACIR74999-A	**Service:**	Army
Event Title:	*Chromosome changes after diagnostic radioactive iodine tests*		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

Event Number:	ACIR74999-B	**Service:**	Army
Event Title:	Determination of normal range for 6-hour radioactive iodine uptake using I-123 iodine in order to eliminate need for 24-hour RAIU		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

Event Number:	ACIR74999-C	**Service:**	Army
Event Title:	Development of radionuclide angiocardiography as a clinical diagnostic tool for the quantification of left to right cardiopulmonary shunts		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Note Field:			
Informed Consent Forms Available:		**Informed Consent Request:**	
Subject Names Identified:			
Number Subjects:		**Informed Consent Docs Exist:**	
Gender:			

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

Stimson Library - OVID System

<1>

Unique Identifier

75166982

Authors

Alderson PO. Jost RG. Strauss AW. Boonvisut S. Markham J.

Title

Radionuclide angiocardiography. Improved diagnosis and quantitation of left-to-right shunts using area ratio techniques in children.

Source

Circulation. 51(6):1136-43, 1975 Jun.

Local Messages

CHECK HOLDINGS LISTS

Abstract

A comparison of several reported methods for detection and quantitation of left-to-right shunts by radionuclides was performed in 50 children. Count ratio (C2/C1) techniques were compared with the exponential extrapolation and gamma function area ratio techniques. C2/C1 ratios accurately detected shunts and could reliably separate shunts from normals, but there was a high rate of false positives in children with valvular heart disease. The area ratio methods provided more accurate shunt quantitation and a better separation of patietns with valvular heart disease than did the C2/C1 ratio. The gamma function method showed a higher correlation with oximetry than the exponential method, but the difference was not statistically significant. For accurate shunt quantitation and a reliable separation of patients with valvular heart disease from those with shunts, area ratio calculations are preferable to the C2/C1 ratio.

Stimson Library - OVID System

<1>

Unique Identifier

75208330

Authors

Greenfield LD. Vincent WR. Graham LS. Bennett LR.

Title

Evaluation of intracardiac shunts. [Review]

Source

CRC Critical Reviews in Clinical Radiology & Nuclear Medicine. 6(2):217-51, 1975 Apr.

Abstract

This article will review the qualitative and quantitative methods of radionuclide evaluation of intracardiac shunts. Radionuclide angiocardiography of the cardiopulmonary system has proven adequate, with few exceptions, for qualitative detection of left-to-right and right-to-left intracardiac shunts. Numerous authors have reported on the detection of intracardiac shunts using qualitative methods such as rapid sequential visualization of nuclide angiocardiography using the scintillation camera with Polaroid, 35mm or 70mm film. Recent development of videotape storage systems and computers offers a quantitative technique of permanently recording the nuclide angiocardiogram and thus the capability for replay and analysis of the study. Quantitative analysis of the nuclide angiogram in the form of heart chamber dilution curves or pulmonary dilution curves permits 1) determination of the presence or absence of left-to-right, right-to-left, or bi-directional intracardiac shunts, including shunts which might go undetected using the qualitative techniques, 2) shunt location at the atrial or ventricular level, 3) determination of the functional status of a corrective left-to-right shunt, and 4) shunt quantitation. By quantitative analysis of the isotope dilution curves, it is possible to calculate the size of left-to-right or right-to-left intracardiac shunts (Qp/Qs ratio) to within 10% of the values obtained at cardiac catheterization. [References: 77]

Event Number:	ACIR74999-D	**Service:**	Army
Event Title:	Tc-m-AA for lung scanning		
Reporting *Organization Name*:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

Stimson Library - OVID System

<1>
Unique Identifier
75076848
Authors
Yeates DB. Warbick A. Aspin N.
Title
Production of 99Tcm labelled albumin microspheres for lung clearance studies and inhalation scanning.
Source
International Journal of Applied Radiation & Isotopes. 25(11-12):578-80, 1974 Dec.

Event Number:	ACIR74999-E	**Service:**	Army
Event Title:	Use of emergency RISA studies on third trimester bleeding		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

Event Number:	ACIR74999-F	**Service:**	Army
Event Title:	Western oncology group: Hydroxyurea + radiation + 2nd look craniotomy in brain tumors		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Event Number:	ACIR74999-G	**Service:**	Army
Event Title:	Western oncology group: Preoperative hydroxyurea + radiation in osteosarcoma		
Reporting Organization Name:	Army Clinical Investigation Regulatory Office		
Begining Date:	74	**Ending Date:**	Unknown
Informed Consent Forms Available:		**Informed Consent Request:**	
Number Subjects:		**Informed Consent Docs Exist:**	

Note Field:

Subject Names Identified:

Gender:

Locations:

Madigan Army Medical Center	Tacoma	WA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators **Subject Type** **Race/Ethnicity** **Documents**

Event Abstract:

EVENT NUMBER: ACIR74999-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

Event Number:	CBDCOM001	**Service:**	Army		
Event Title:	Attenuation of 1.2 MeV gamma radiation by Soviet and U.S. military vehicles and rail equipment				
Reporting Organization Name:	Army Chemical & Biological Defense Command				
Begining Date:	Unknown	**Ending Date:**	53	**Note Field:**	
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Unknown	**Subject Names Identified:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown	**Gender:**	Unknown

Locations:

Aberdeen Proving Grounds	Aberdeen Provin	MD	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents
Robert P. Beckelheimer	Active Duty Military	Unknown	Profile Only
Ralph E. Rexroad	Adults		

Event Abstract:

From a presently undetermined date until 1953 researchers in the Ordance Corps at Aberdeen Proving Ground and the Army Chemical & Biological Defense Command studied the sheilding capability of certain Soviet and U.S. military vehicles, and U.S. rail equipment against gamma radiation as will as decontamination procedures. Active duty military personnel participated in the study.

The contamination was produced by placing 800 cobalt 60 pellets (gamma ray energies of 1.17 and 1.33 Mev) 11/8ths of an inch in diameter and 1/8th of an inch long contained in steel capsules two feet apart over an area 160 feet in length and 20 feet wide. Dosage rates at selected sitting positions were measured with live troops riding over contamination in certain vehicles. Results of the research are undetermined to date.

EVENT NUMBER: CBDCOM001
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USACBDC and not by CIRO. Contact USAMRMC for additional information.

Event Number:	MRDC002	**Service:**	Army
Event Title:	Blood volume expansion and hypohydration		
Reporting Organization Name:	Army Medical Research & Development Command		

Begining Date:	Unknown	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Yes	**Subject Names Identified:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown	**Gender:**	Unknown

Locations:

Army Research Institute of Environmental Medicine (USRIEM)	Natick	MA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents
Michael N. Sawka	Unknown	Unknown	Profile Only

Event Abstract:

The inclusive dates for this study conducted at the Army Research Institute of Environmental Medicine at Brooke Army Medical Center in Houston, TX are presently undetermined. This study involved the use of radioactive iodine and/or chromium to estimate plasma volume and/or erythrocyte mass. To date no information is available on the number of study participants or results.

EVENT NUMBER: MRDC002
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USARIEM and not by CIRO. Contact USARIEM for additional information.

Stimson Library - OVID System

<1>

Unique Identifier

86059121

Authors

Sawka MN. Young AJ. Francesconi RP. Muza SR. Pandolf KB.

Title

Thermoregulatory and blood responses during exercise at graded hypohydration levels.

Source

Journal of Applied Physiology. 59(5):1394-401, 1985 Nov.

Local Messages

BAMC

Abstract

We studied the effects of graded hypohydration levels on thermoregulatory and blood responses during exercise in the heat. Eight heat-acclimated male subjects attempted four heat-stress tests (HSTs). One HST was attempted during euhydration, and three HSTs were attempted while the subjects were hypohydrated by 3, 5, and 7% of their body weight. Hypohydration was achieved by an exercise-heat regimen on the day prior to each HST. After 30 min of rest in a 20 degrees C antechamber the HST consisted of a 140-min exposure (4 repeats of 10 min rest and 25 min treadmill walking) in a hot-dry (49 degrees C, 20% relative humidity) environment. The following observations were made: 1) a low-to-moderate hypohydration level primarily reduced plasma volume with little effect on plasma osmolality, whereas a more severe hypohydration level resulted in no further plasma volume reduction but a large increment in plasma osmolality; 2) core temperature and heart rate responses increased with severity of hypohydration; 3) sweating rate responses for a given rectal temperature were systematically decreased with severity of hypohydration; and 4) the reduction in sweating rate was more strongly associated with plasma hyperosmolality than hypovolemia. In conclusion, an individual's thermal strain increases linearly with the severity of hypohydration during exercise in the heat, and plasma hyperosmolality influences the reduction in sweating more profoundly than hypovolemia.

Registry Numbers

0 (Blood Proteins).

Stimson Library - OVID System

<1>
Unique Identifier
86085569
Authors
Francesconi RP. Sawka MN. Pandolf KB. Hubbard RW. Young AJ. Muza S.
Title
Plasma hormonal responses at graded hypohydration levels during exercise-heat stress.
Source
Journal of Applied Physiology. 59(6):1855-60, 1985 Dec.
Local Messages
BAMC
Abstract
The effects of graded levels of hypohydration (3, 5, and 7% of body weight) on hormonal responses to exercise in the heat were examined in six heat-acclimated male volunteers. On the day following dehydration, subjects performed light (approximately 25% maximal O2 consumption, 1.03 1 X min-1) exercise in a hot (49 degrees C, 20% relative humidity) environment for four consecutive 25-min intervals interspaced by 10-min rests; blood was obtained before exercise and at approximately 10 min before completion of each exercise period. During euhydration, plasma cortisol (PC) levels manifested significant decrements over time (e.g., time 0, 14.2 micrograms X 100 ml-1 vs. time 2, 8.9 micrograms X 100 ml-1), probably related to its diurnal periodicity. However, during hypohydration, levels of PC were increased and correlated with hypohydration intensity (e.g., time 0, 0, 3, 5, and 7% hypohydration, 14.2, 16.5, 19.8, and 36.2 micrograms X 100 ml-1, respectively). Plasma renin activity (PRA) was increased significantly by hypohydration (e.g., time 0, euhydrated vs. 3%, 3.7 vs. 6.2 units) but was unaffected by exercise in the heat. Plasma aldosterone (ALD) levels were generally increased by exercise in the heat (e.g., time 0 vs. time 4, 3% hypohydration, 12.1 vs. 18.7 ng X 100 ml-1). Regression analysis illustrated that graded intensities of hypohydration were correlated with incremented PRA and ALD through 5% hypohydration. Conversely, PC was incrementally elevated through 7% hypohydration.(ABSTRACT TRUNCATED AT 250 WORDS)
Registry Numbers
EC 3-4-23-15 (Renin). 0 (Hormones). 50-23-7 (Hydrocortisone). 52-39-1 (Aldosterone). 9041-90-1 (Angiotensin I).

<2>
Unique Identifier
86085580
Authors
Young AJ. Sawka MN. Levine L. Cadarette BS. Pandolf KB.
Title
Skeletal muscle metabolism during exercise is influenced by heat acclimation.
Source
Journal of Applied Physiology. 59(6):1929-35, 1985 Dec.
Local Messages
BAMC
Abstract
The influence of heat acclimation on skeletal muscle metabolism during submaximal exercise was studied in 13 healthy men. The subjects performed 30 min of cycle exercise (70% of individual maximal O2 uptake) in a cool [21 degrees C, 30% relative humidity (rh)] and a hot (49 degrees C, 20% rh) environment before and again after they were heat acclimated. Aerobic metabolic rate was lower (0.1 l X min-1; P less than 0.01) during exercise in the heat compared with the cool both before and after heat acclimation. Muscle and plasma lactate accumulation with exercise was greater (P less than 0.01) in the hot relative to the cool environment both before and after acclimation. Acclimation lowered (P less than 0.01) aerobic metabolic rate as well as muscle and plasma lactate accumulation in both environments. The amount of muscle glycogen utilized during exercise in the hot environment did not differ from that in the cool either before or after acclimation. These findings indicate that accumulation of muscle lactate is increased and aerobic metabolic rate

is decreased during exercise in the heat before and after heat acclimation; increased muscle glycogen utilization does not account for the increased muscle lactate accumulation during exercise under extreme heat stress; and heat acclimation lowers the aerobic metabolic rate and muscle and blood lactate accumulation during exercise in a cool as well as a hot environment.

<3>
Unique Identifier
86059121
Authors
Sawka MN. Young AJ. Francesconi RP. Muza SR. Pandolf KB.
Title
Thermoregulatory and blood responses during exercise at graded hypohydration levels.
Source
Journal of Applied Physiology. 59(5):1394-401, 1985 Nov.
Local Messages
BAMC
Abstract
We studied the effects of graded hypohydration levels on thermoregulatory and blood responses during exercise in the heat. Eight heat-acclimated male subjects attempted four heat-stress tests (HSTs). One HST was attempted during euhydration, and three HSTs were attempted while the subjects were hypohydrated by 3, 5, and 7% of their body weight. Hypohydration was achieved by an exercise-heat regimen on the day prior to each HST. After 30 min of rest in a 20 degrees C antechamber the HST consisted of a 140-min exposure (4 repeats of 10 min rest and 25 min treadmill walking) in a hot-dry (49 degrees C, 20% relative humidity) environment. The following observations were made: 1) a low-to-moderate hypohydration level primarily reduced plasma volume with little effect on plasma osmolality, whereas a more severe hypohydration level resulted in no further plasma volume reduction but a large increment in plasma osmolality; 2) core temperature and heart rate responses increased with severity of hypohydration; 3) sweating rate responses for a given rectal temperature were systematically decreased with severity of hypohydration; and 4) the reduction in sweating rate was more strongly associated with plasma hyperosmolality than hypovolemia. In conclusion, an individual's thermal strain increases linearly with the severity of hypohydration during exercise in the heat, and plasma hyperosmolality influences the reduction in sweating more profoundly than hypovolemia.
Registry Numbers
0 (Blood Proteins).

<4>
Unique Identifier
85179432
Authors
Sawka MN. Young AJ. Cadarette BS. Levine L. Pandolf KB.
Title
Influence of heat stress and acclimation on maximal aerobic power.
Source
European Journal of Applied Physiology & Occupational Physiology. 53(4):294-8, 1985.
Abstract
Thirteen male volunteers performed cycle ergometer maximal oxygen uptake (VO2max tests) in moderate (21 degrees C, 30% rh) and hot (49 degrees C, 20% rh) environments, before and after a 9-day heat acclimation program. This program resulted in significantly decreased (P less than 0.01) final heart rate (24 bt X min-1) and rectal temperature (0.4 degrees C) from the first to last day of acclimation. The VO2max was lower (P less than 0.01) in the hot environment relative to the moderate environment both before (8%) and after (7%) acclimation with no significant difference (P greater than 0.05) shown for maximal power output (PO max, watts) between environments either before or after acclimation. The VO2max was higher (P less than 0.01) by 4% after acclimation in both environments. Also, PO max was higher (P less than 0.05) after acclimation in both the

moderate (4%) and hot (2%) environments. The reduction in VO2max in the hot compared to moderate environment was not related to the difference in core temperature at VO2max between moderate and hot trials, nor was it strongly related with aerobic fitness level. These findings indicate that heat stress, per se, reduced the VO2max. Further, the reduction in VO2max due to heat was not affect be state of heat acclimation, the degree of elevation in core temperature, or level of aerobic fitness.

<5>
Unique Identifier
84292727
Authors
Sawka MN. Francesconi RP. Young AJ. Pandolf KB.
Title
Influence of hydration level and body fluids on exercise performance in the heat.
Source
JAMA. 252(9):1165-9, 1984 Sep 7.
Local Messages
STIMSON / BAMC
Abstract
During exercise in the heat, sweat output often exceeds water intake, resulting in hypohydration, which is defined as a body fluid deficit. This fluid deficit is comprised of water loss from both the intracellular and extracellular fluid compartments. Hypohydration during exercise causes a greater heat storage and reduces endurance in comparison with euhydration levels. The greater heat storage is attributed to a decreased sweating rate (evaporative heat loss) as well as a decreased cutaneous blood flow (dry heat loss). These response decrements have been attributed to both plasma hyperosmolality and a plasma hypovolemia. Subject gender, acclimation state, and aerobic fitness do not alter the increased heat storage when hypohydrated. Hyperhydration, or body fluid excess, does not seem to provide a clear advantage during exercise-heat stress, but will delay the development of hypohydration.
Registry Numbers
0 (Vasopressins). 52-39-1 (Aldosterone).

Event Number:	MRDC003	**Service:**	Army
Event Title:	*Interaction of aerobic fitness and the hypohydration response during exercise-heat stress*		
Reporting Organization Name:	Army Medical Research & Development Command		
Begining Date:	Unknown	**Ending Date:**	Unknown
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown

Note Field:

Subject Names Identified: Unknown

Gender: Unknown

Locations:

Army Research Institute of Environmental Medicine (USRIEM)	Natick	MA	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators	Subject Type	Race/Ethnicity	Documents
Michael N. Sawka	Unknown	Unknown	Profile Only

Event Abstract:

The inclusive dates for this study conducted at the Army Research Institute of Environmental Medicine at Brooke Army Medical Center in Houston, TX are presently undetermined. This study involved the use of radioactive iodine and/or chromium to estimate plasma volume and/or erythrocyte mass. To date no information is available on the number of study participants or results.

EVENT NUMBER: MRDC003
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USARIEM and not by CIRO. Contact USARIEM for additional information.

Stimson Library - OVID System

<1>
Unique Identifier
85179432
Authors
Sawka MN. Young AJ. Cadarette BS. Levine L. Pandolf KB.
Title
Influence of heat stress and acclimation on maximal aerobic power.
Source
European Journal of Applied Physiology & Occupational Physiology. 53(4):294-8, 1985.
Abstract
Thirteen male volunteers performed cycle ergometer maximal oxygen uptake (VO2max tests) in moderate (21 degrees C, 30% rh) and hot (49 degrees C, 20% rh) environments, before and after a 9-day heat acclimation program. This program resulted in significantly decreased (P less than 0.01) final heart rate (24 bt X min-1) and rectal temperature (0.4 degrees C) from the first to last day of acclimation. The VO2max was lower (P less than 0.01) in the hot environment relative to the moderate environment both before (8%) and after (7%) acclimation with no significant difference (P greater than 0.05) shown for maximal power output (PO max, watts) between environments either before or after acclimation. The VO2max was higher (P less than 0.01) by 4% after acclimation in both environments. Also, PO max was higher (P less than 0.05) after acclimation in both the moderate (4%) and hot (2%) environments. The reduction in VO2max in the hot compared to moderate environment was not related to the difference in core temperature at VO2max between moderate and hot trials, nor was it strongly related with aerobic fitness level. These findings indicate that heat stress, per se, reduced the VO2max. Further, the reduction in VO2max due to heat was not affect be state of heat acclimation, the degree of elevation in core temperature, or level of aerobic fitness.

<2>
Unique Identifier
84292727
Authors
Sawka MN. Francesconi RP. Young AJ. Pandolf KB.
Title
Influence of hydration level and body fluids on exercise performance in the heat.
Source
JAMA. 252(9):1165-9, 1984 Sep 7.
Local Messages
STIMSON / BAMC
Abstract
During exercise in the heat, sweat output often exceeds water intake, resulting in hypohydration, which is defined as a body fluid deficit. This fluid deficit is comprised of water loss from both the intracellular and extracellular fluid compartments. Hypohydration during exercise causes a greater heat storage and reduces endurance in comparison with euhydration levels. The greater heat storage is attributed to a decreased sweating rate (evaporative heat loss) as well as a decreased cutaneous blood flow (dry heat loss). These response decrements have been attributed to both plasma hyperosmolality and a plasma hypovolemia. Subject gender, acclimation state, and aerobic fitness do not alter the increased heat storage when hypohydrated. Hyperhydration, or body fluid excess, does not seem to provide a clear advantage during exercise-heat stress, but will delay the development of hypohydration.
Registry Numbers
0 (Vasopressins). 52-39-1 (Aldosterone).

★<3>
Unique Identifier
84279886
Authors

Cadarette BS. Sawka MN. Toner MM. Pandolf KB.

Title

Aerobic fitness and the hypohydration response to exercise-heat stress.

Source

Aviation Space & Environmental Medicine. 55(6):507-12, 1984 Jun.

Local Messages

BAMC

Abstract

This study examined the influence that aerobic fitness (VO2 max) had on final heart rate (HR), final rectal temperature (Tre), and total body sweat rate (Msw) when subjects exercised while euhydrated and hypohydrated (-5.0% from baseline body weight). Eight male and six female subjects completed four exercise tests both before and after a 10-d heat acclimation program. The tests were a euhydration and a hypohydration exposure conducted in a comfortable (20 degrees C, 40% rh) and in a hot-dry (49 degrees C, 20% rh) environment. Significant differences were not generally found between the genders for HR, Tre and Msw during the tests. In the comfortable environment, HR, Tre and Msw were not generally significantly correlated (p greater than 0.05) with VO2max. In the hot-dry environment, Tre and VO2max were significantly correlated (r = -0.58) when euhydrated before acclimation. HR was significantly related to VO2max before acclimation when eu- (r = -0.61) and hypohydrated (r = -0.60) as well as after acclimation when eu- (r = -0.57) and hypohydrated (r = -0.67). These data indicate that, when euhydrated in the heat, aerobic fitness provides cardiovascular and thermoregulatory benefits before acclimation, but only cardiovascular benefits after acclimation. However, when hypohydrated in the heat, cardiovascular benefits are present for fit subjects both before and after acclimation, but thermoregulatory benefits are not associated with fitness.

<4>

Unique Identifier

84031890

Authors

Sawka MN. Toner MM. Francesconi RP. Pandolf KB.

Title

Hypohydration and exercise: effects of heat acclimation, gender, and environment.

Source

Journal of Applied Physiology: Respiratory, Environmental & Exercise Physiology. 55(4):1147-53, 1983 Oct.

Abstract

This study examined the effects of heat acclimation and subject gender on treadmill exercise in comfortable (20 degrees C, 40% rh), hot-dry (49 degrees C, 20% rh), and hot-wet (35 degrees C, 79% rh) environments while subjects were hypo- or euhydrated. Six male and six female subjects, matched for maximal aerobic power and percent body fat, completed two exercise tests in each environment both before and after a 10-day heat acclimation program. One exercise test was completed during euhydration and one during hypohydration (-5.0% from baseline body weight). In general, no significant (P greater than 0.05) differences were noted between men and women at the completion of exercise for rectal temperature (Tre), mean skin temperature (Tsk), or heat rate (HR) during any of the experimental conditions. Hypohydration generally increased Tre and HR values and decreased sweat rate values while not altering Tsk values. In the hypohydration experiments, heat acclimation significantly reduced Tre (0.19 degrees C) and HR (13 beats X min-1) values in the comfortable environment, but only HR values were reduced in hot-dry (21 beats X min-1) and hot-wet (21 beats X min-1) environments. The present findings indicated that men and women respond in a physiologically similar manner to hypohydration during exercise. They also indicated that for hypohydrated subjects heat acclimation decreased thermoregulatory and cardiovascular strain in a comfortable environment, but only cardiovascular strain decreased in hot environments.

Influence of Hydration Level and Body Fluids on Exercise Performance in the Heat

Michael N. Sawka, PhD; Ralph P. Francesconi, PhD; Andrew J. Young, PhD; Kent B. Pandolf, PhD

ring exercise in the heat, sweat output often exceeds water intake, g in hypohydration, which is defined as a body fluid deficit. This fluid comprised of water loss from both the intracellular and extracellular partments. Hypohydration during exercise causes a greater heat d reduces endurance in comparison with euhydration levels. The at storage is attributed to a decreased sweating rate (evaporative as well as a decreased cutaneous blood flow (dry heat loss). These decrements have been attributed to both plasma hyperosmolality ma hypovolemia. Subject gender, acclimation state, and aerobic not alter the increased heat storage when hypohydrated. ation, or body fluid excess, does not seem to provide a clear during exercise-heat stress, but will delay the development of ation.

1984;252:1165-1169)

muscular exercise in the moregulatory responses shown to be influenced aerobic fitness,[1] acclima- and hydration level.[2] Aero- persons who are heat accli- fully hydrated will have at storage and optimal during exercise-heat ation level is particularly uring exercise in the heat, body fluid deficit will the thermoregulatory ad- nferred by aerobic fitness' acclimation.[3,4] Greenleaf body fluid levels: euhy- ohydration, and hyperhy- hydration refers to "nor- fluid content; whereas, on and hyperhydration fluid deficit and excess, The more common term "dehydration" is used to denote the dynamic loss of body fluids or the transition from euhydration to hypohydration.

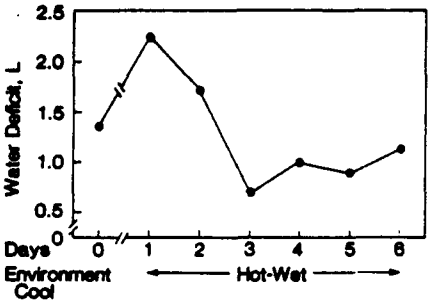
Body Fluid Loss

In hot environments, body fluid is lost primarily through eccrine sweat-gland secretion, which results in evaporative cooling of the body.[5,9] Urinary fluid loss is decreased during heat stress relative to moderate environmental conditions.[10,11] In addition, both exercise and hypohydration have been reported to decrease urine output below control levels.[12] For a given person, the sweating rate is dependent on environmental conditions (ambient temperature, dew point, radiant load, and air velocity), clothing (insulation, and moisture permeability), and physical activity level.[10,13] Body fluid loss by sweat can vary greatly, and sweating rates as high as 1,000 g/m^2 per hour are frequently reported.[10,13,14]

Thirst may not provide a good index of body water requirements. Several investigators[10,11,15,16] have reported that ad libitum water intake results in incomplete fluid replacement or "voluntary" dehydration during exercise in the heat. A person's state of heat acclimation may also influence the level of "voluntary" dehydration incurred during exercise in the heat.[15,17] The Figure presents data redrawn from Eichna et al[15] on the "voluntary" dehydration (water deficit) incurred during exercise in a cool environment and during six consecutive days in a hot-dry (49 °C, 25% relative humidity) environment. It can be noted that the water deficit was much greater during the initial exercise-heat exposures. In agreement with these findings, Greenleaf et al[17] reported that water deficit during exercise-heat stress was reduced by approximately 30% after the initial four days of heat acclimation. Therefore, heat acclimation may improve the relationship between thirst and body water needs.[15,17]

Sweat loss will result in a reduction of total body water if an adequate amount of fluid is not replaced. Total body water constitutes approximately 60% of an average adult's body weight, so a 70-kg person would have a total body water of about 42 L. Therefore, a fluid loss equal to 5% of body weight would constitute 8% of total body water for this person. Total body water is divided into an intracellular and extracellular fluid compartment. Extracellular fluid is distributed between the interstitium and plasma. The fluid compartments are separated by water-permeable cell

my Research Institute of Environ- Natick, Mass.
s to US Army Research Institute of olena, Kansas Street, Natick, MA



Difference between ad libitum water intake and water loss during work in humid heat. Redrawn from the data of Eichna et al,[14] 1945 (n=15 men).

membranes that allow fluid exchange between compartments. Such exchange between compartments depends on the gradients of colloid, tissue, and hydrostatic pressures. As a consequence of this free fluid exchange, hypohydration should cause some water loss from each compartment.

The question arises as to how fluid loss is partitioned between these compartments during hypohydration. Costill et al[18] have calculated the contribution of intracellular, interstitial, and plasma fluid to the total body water loss in resting subjects at three hypohydration levels. Subjects were dehydrated by 2%, 4%, and 6% of total body weight using a combination of exercise and heat. Intracellular fluid accounted for 30% of the water loss at the 2% hypohydration level, and for 50% of the water loss at both the 4% and 6% hypohydration levels. Interstitial fluid accounted for 60% of water loss at the 2% hypohydration level, and for 40% of water loss at both the 4% and 6% hypohydration levels. Plasma fluid represented 10% of fluid loss at all three hypohydration levels. Therefore, at rest during low levels of hypohydration, water loss primarily occurred from the extracelluar fluid compartment; however, at increasing hypohydration levels water loss was equally distributed between intracellular and extracellular compartments.

Muscular exercise alters the colloid, tissue, and hydrostatic pressure gradients between compartments, resulting in additional fluid shifts. In particular, plasma-volume shifts during exercise in the heat have been well studied. Hypohydration has been reported to either have no effect on,[19-21] or to alter,[21-23] the magnitude of vascular-fluid shifts during exercise in the heat. Some of this inconsistency may be caused by the varied protocols used to achieve fluid deficits[19,23] or the use of a minimal hypohydration level.[20,21] For example, several investigators elicited hypohydration with diuretics that caused isosmotic hypovolemia[19,23] as opposed to the hyperosmotic hypovolemia characteristic of hypohydration from sweating. Thus, vascular-fluid shifts produced by diuretic-induced hypohydration may not be indicative of that which occurs during exercise in the heat. Recently, we[22] examined the effects of sweating-induced hypohydration (5%) on plasma-volume shifts during exercise in the heat. For heat-acclimated subjects, we observed a hemoconcentration when hypohydrated, and a hemodilution when euhydrated during light-intensity exercise. This study also demonstrates that when males and females were matched for maximal aerobic power, they experienced similar vascular-fluid shifts when euhydrated or hypohydrated.[22]

Eccrine sweat is ordinarily hypotonic relative to the plasma.[24] Therefore, the plasma will become hyperosmotic when hypohydration is primarily mediated by sweat output.[4,25] Plasma osmolality has been reported to increase from about 283 mOsm/kg when euhydrated to levels approaching 300 mOsm/kg when hypohydrated by exercise-heat stress.[22,25] Sodium, potassium, and their anions (chloride) are primarily responsible for the elevated plasma osmolality during hypohydration.[25] Several investigators have suggested that plasma hyperosmolality[26,27] as well as decreased plasma volume[21,28] contribute to the less efficient thermoregulatory responses when hypohydration occurs during exercise in the heat. However, such fluctuations in osmolality and plasma volume are the triggering mechanism for adaptive responses to conserve body fluids.

Hormonal Responses

Ordinarily, a decreased plasma volume and a simultaneous elevation in plasma osmolality stimulate hypothalamic osmoreceptors, initiating neural responses that increase vasopressin secretion and stimulate the thirst sensation.[29] Consequently, vasopressin increases water reabsorption by the renal distal tubule[s] serving vascular fluid an[d] ing the dehydration proce[ss] from animal studies indicat[e] renin-angiotensin system al[so] lates the release of vasopre[ssin] aldosterone, and increases th[e] tion of thirst.[30,31]

Numerous investigators [have] that circulating concentration[s] fluid-electrolyte regulatory h[or]are elevated in man durin[g] term heat exposure or ev[en] exercise in a cool environm[ent] example, elevations in renin[,] circulating levels of aldoste[rone] tisol, and vasopressin durin[g] tary exposure to several diffe[r]mal stresses have been ob[s]Likewise, in exercising hum[ans] out heat stress, several inv[es] have documented increment[s] same group of hormones.[32-35]

Recently, we examined th[e] of hypohydration and heat[-a]tion on circulating aldoste[rone] renin activity during exerci[se] eral environments.[36] When a[n] moderate environment, hy[po]tion elevated circulating al[do] and plasma-renin activity, [we] observed that plasma-ren[in] was significantly elevated [by] ercise-heat stress and th[ese] increments were notably ac[ted] by hypohydration, but atte[nu] heat acclimation. Further[,] increased aldosterone levels [and] during exercise in the heat [were] greater during hypohydrati[on] acclimation did not influe[nce] aldosterone hormonal respo[nse] Conversely, in experiments in [which] plasma volume was expand[ed] hyperoncotic albumin adminis[tra] we observed reduced respon[ses] aldosterone and angiotensin [II] during exercise in the heat.[36]

Physiological Responses

Adolph and associates[10] [described] the symptoms associated wit[h] hydration in the desert. Th[ey] reported to occur after a 2[%] deficit, but does not increase [in] sity with greater hypohydra[tion] els. A 4% to 6% water [de]associated with anorexia, im[pa] and headache; whereas, a 6% [to] water deficit is associated w[ith] tigo, dyspnea, cyanosis, and [in] ty. A person who incurs mo[re]

les, thus con-
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n; an estimate of the lethal
tion range is 15% to

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These investigations were
represent a continuum
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of fluid deficit reported for
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when comparing the results
at investigations (within
and 2) because of differences
populations (age, fitness,
n state, and gender), envi-
conditions (ambient tem-
nd dew point), and dura-
deficit. The equal signs
denote no significant
hile the arrows repre-
ction of the significant
tween euhydration and
n. A marginal water
2%) does not appear to
values for heart rate,
ature, sweating rate, or
lood flow. However, hy-
levels of 3% to 6%
reater elevations in heart
temperature, and great-
s in sweating rate and
lood flows than during
conditions. In addition, a
ater increments in core
seemed to occur for the
n the 3% water deficit.
climation state,[6] and
do not alter the ele-
moregulatory responses
dration occurs during
heat. Table 2 presents
investigations examin-
moregulatory effects of
n for subjects perform-
ensity exercise in the
Unlike rest, a 2% water
exercise reduced the
a by 3% and elevated
ate by 10 beats per min-
temperature by 0.5 °C in
with euhydration levels.
noted that considerable
ation variability exists
nitude of elevated heart
ohydration occurs. For
water deficit elevated
range of 8 to 40 beats
variability is proba-

Table 1.—Effects of Hypohydration During Rest in the Heat*

Swamy et al[40]	1981	−1%	=	=	=	...
Hertzman and Ferguson[41]	1960	−3%	↑ 8 beats/min	↑0.6 °C	=	...
Swamy et al[40]	1981	−3%	↑17 beats/min	↑0.4 °C	↓22%	...
Hertzman and Ferguson[41]	1960	−6%	↑17 beats/min	↑1.2 °C	=	...

*% Δ WT indicates percent decrease in body weight from water loss; T_c, core temperature; $\dot{M}_{max}$, sweating rate; and PBF, peripheral blood flow. Equal signs indicate no significant difference; arrows, the direction of the difference between euhydration and hypohydration.

Table 2.—Effects of Hypohydration During Exercise in the Heat*

Study	Year	% Δ WT	Heart Rate	T_c	$\dot{M}_{max}$	PBF
Moroff and Bass[44]	1965	−2%	↑10 beats/min	↑0.5 °C	↓ 3%	...
Claremont et al[45]	1976	−3%	↑20 beats/min	↑0.6 °C	=	↓
Nadel et al[20]	1980	−3%	↑ 8 beats/min	↑0.4 °C	...	↓
Swamy et al[40]	1981	−3%	↑40 beats/min	=	=	...
Strydom and Holdsworth[3]	1968	−4%	↑19 beats/min	↑0.3 °C	↓33%	...
Swamy et al[40]	1981	−6%	↑60 beats/min	↑0.8 °C	=	...

*% Δ WT indicates percent decrease in body weight from water loss; T_c, core temperatre; $\dot{M}_{max}$, sweating rate; and PBF, peripheral blood flow. Equal signs indicate no significant difference; arrows, the direction of the difference between euhydration and hypohydration.

Table 3.—Effects of Hypohydration on Maximal Exercise Performance*

Craig and Cummings[46]	1966	Hot	−2%	↓10%	↓22%
	...	...	−4%	↓27%	↓48%
Saltin[66]	1964	Neutral	−7%	=	↓20%

*% Δ WT indicates percent decrease in body weight from water loss; $\dot{V}_{O_2}max$, $\dot{V}_{O_2}$ maximum oxygen uptake; and PWC, physical work capacity. Equal signs indicate no significant difference; arrows, the direction of the difference between euhydration and hypohydration.

bly accounted for, in part, by differences in subject populations, exercise intensity and duration, and environmental conditions. In contrast, little variability was found for the increment in core temperature when hypohydrated; a 2% and 7% water deficit elevated core temperatures by 0.5 °C and 0.7 °C above euhydration levels, respectively. These data do not clearly indicate greater core-temperature increments at the higher hypohydration levels.

It is generally assumed that with an increasing hypohydration level there is a gradation of elevated core-temperature response to exercise. It is possible, however, that the elevated core-temperature response could represent a "threshold" or the "all or none" effect. We are not familiar with research that thoroughly examines the effects of different hypohydration levels on the magnitude of elevated core-temperature responses during exercise in the heat. Strydom and Holdsworth[3] examined core-temperature elevations in two subjects for two hypohydration levels (low and high) employing independent observations for each exercise-heat test. They found higher core temperatures during the high compared with the low hypohydration tests. Other investigators reporting a gradation of elevated core temperatures with increasing water deficits have interpolated from one hypohydration level[7] and/

or employed prolonged exercise-heat exposure to elicit a progressive dehydration.[10,48]

The relative contribution of skin sweat evaporation and radiative and convective heat exchange during exercise depends on the specific environmental conditions. When the ambient temperature approaches the body tempertaure, the skin sweat evaporation provides the primary mechanism to dissipate metabolic heat during exercise. Data in Table 3 indicate that hypohydration is associated with reduced[3,4,44,45] or unchanged[19,40,46] sweating rates during exercise-heat stress. It is important to note that some investigators reported no change in sweating rate, despite an elevated core temperature.[19,40] Therefore, during hypohydration, the sweating rate would be lower for a given core temperature, and the potential for heat dissipation through skin sweat evaporation would be reduced.[8] These findings are consistent with recent data that indicate that hypovolemia caused a reduced slope (Δ sweating rate–Δ core temperature [$\Delta\dot{M}_{sw}/\Delta T_c$]) of sweating-rate responses during exercise.[23] Therefore, a reduced slope for the sweating-rate response would result in an elevated core temperature during exercise-heat stress.

The exact physiological mechanisms mediating the reduced sweating-rate response when hypohydrated are not clearly defined. However, the singular and combined effects of plasma hyperosmolality[45,49,50] and hypovolemia[23,41] have been suggested. Senay[45] has reported an inverse relationship between plasma osmolality and the sweating rate when hypohydration occurs. Harrison et al[51] have reported that plasma hyperosmolality will elevate core-temperature responses during exercise-heat stress, despite the maintenance of euhydration. Hyperosmolality may have a direct CNS effect at the hypothalamic thermoregulatory centers,[27] or a peripheral effect at the eccrine sweat gland.[49] Fortney et al[23] have provided strong evidence that an isosmotic hypovolemia caused a reduced sweating rate and elevated core-temperature response during exercise in the heat. These investigators theorized that hypovolemia may have altered the activity of atrial baroreceptors that have afferent input to the hypothalamus. Therefore, a reduced atrial filling pressure might modify neural information to the hypothalamic thermoregulatory centers controlling sweating rate.[23]

The influence of hypohydration on cardiovascular responses to exercise has been investigated.[28,52,53] During submaximal exercise in a neutral environment, hypohydration (5%) elicited an increased heart rate and reduced stroke volume, with no change in cardiac output relative to euhydration levels.[52] Apparently, during hypohydration, a decreased blood volume reduces the end-diastolic ventricular volume and stroke volume, requiring a compensatory increase of heart rate to maintain cardiac output. During submaximal exercise with moderate[28] or severe[53] thermal strain, hypohydration (3% to 4%) elicited an increased heart rate, reduced stroke volume, and reduced cardiac output relative to euhydration levels. The combination of exercise and heat strain results in competition between central and peripheral circulation for a limited blood volume.[53,54] As body temperature increases during exercise, cutaneous vasodilation occurs, thus decreasing venous resistance and pressure. As a result of decreased blood volume and blood displacement to cutaneous vascular beds, venous return and, thus, cardiac output will be decreased below euhydration levels.[28,53] Nadel et al[28] reported that these conditions also reduce cutaneous blood flow for a given core temperature and, thus, the potential for radiative and convective heat exchange.

Table 3 presents the effects of hypohydration on maximal aerobic power and physical work capacity. In the absence of heat stress, a relatively large water deficit (6% to 7%) has a minimal effect on maximal aerobic power,[5,55] but reduces physical work capacity.[55] In a hot environment, Craig and Cummings[56] demonstrated that small (2%) to moderate (4%) water deficits reduce maximal aerobic power and physical work capacity. In addition, these decrements increased with the magnitude of the water deficit. Consistent with these findings, hypohydration (4%) combined with hyperthermia in a moderate environment reduced maximal aerobic power by 6%, and exercise time by 12%, from euhy
els.[57] These investigati
demonstrate that maxim
performance is reduced wh
dration is combined wit
strain. Part of the ph
mechanism responsible fo
aerobic power when hypoh
probably an inability to
increase cardiac output
fore, oxygen delivery to
muscles).

Hyperhydration

If hypohydration reduc
ance during exercise-heat
excess body fluids impro
ance beyond the levels ac
euhydrated? Moroff and
ined the influence of exc
ingestion on thermoreg
sponses to exercise in the
reported that hyperhydrat
core temperatures while
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During the control experi
ever, their subjects we
(>1%) hypohydrated.
these results may have de
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than hyperhydration. Mo
Greenleaf and Castle[17] re
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core temperature or sw
values from control le
exercise in the heat.

If hyperhydration did i
formance during exercise
these improvements would
ly be mediated by hyperv
expanded blood volume. In fa
of the thermoregulatory ad
gained through heat acclimat
been associated with an
plasma volume.[58] Two recent
on the effects of artificially
plasma volume have indicate
ferences in core temper
sweating rate," cardiac outp
rial blood pressure," or
blood flow[28] in comparison
movolemic control levels du
cise-heat stress. Both studi
that plasma volume expan
ered heart rate respons
exercise in the heat.[28,59] In
Fortney et al[23] reported tha
cially expanded blood volum
core temperature below cont
during exercise. This was
despite no differerence in t
ing rate in a 30 °C env

...e results indicate that the thermoregulatory advantages of hyperhydration are small and may be affected ... protocol-inducing hypervole-

...ssinger, Patti DeMusis, Edna Safran, ...ifer Vangel provided technical assistance preparing the manuscript.

...views, opinions, and/or findings contained ... report are those of the author(s) and ... not be construed as an official Department ... the Army position, policy, or decision, ... so designated by other official documentation.

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Event Number:	MRDC004	**Service:**	Army		
Event Title:	Role of thermal factors for metabolic adaptations to physical training				
Reporting Organization Name:	Army Medical Research & Development Command				
Begining Date:	Unknown	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Unknown	**Subject Names Identified:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown	**Gender:**	Unknown

Locations:

Army Research Institute of Environmental Medicine (USRIEM)	Natick	MA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents
Andrew J. Young	Unknown	Unknown	Profile Only

Event Abstract:

The inclusive dates for this study conducted at the Army Research Institute of Environmental Medicine at Brooke Army Medical Center in Houston, TX are presently undetermined. This study involved the use of *radioactive iodine and/or chromium* to estimate plasma volume and/or erythrocyte mass. To date no information is available on the number of study participants or results.

EVENT NUMBER: MRDC004
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

Event Number:	MRDC006	**Service:**	Army		
Event Title:	Hyperhydration with a glycerol solution: Effects on fluid and electrolyte balance during rest and cold/exercise exposure				
Reporting Organization Name:	Army Medical Research & Development Command				
Begining Date:	Unknown	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Yes	**Subject Names Identified:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown	**Gender:**	Unknown

Locations:

Army Research Institute of Environmental Medicine (USRIEM)	Natick	MA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents
Beau Freund	Unknown	Unknown	Profile Only

Event Abstract:

The inclusive dates for this study conducted at the Army Research Institute of Environmental Medicine at Brooke Army Medical Center in Houston, TX are presently undetermined. To date no information is available on teh number of study participants. The study involved the use of radioactive iodine and/or chromium to estimate pladma volume and/or erythrocyte mass. Radiation exposures and results of this study are unavailable at this time.

EVENT NUMBER: MRDC006
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

Event Number:	MRDC007	**Service:**	Army		
Event Title:	Effects of autologous erythrocyte infusion in sea-level residents rapidly transported to high altitude				
Reporting Organization Name:	Army Medical Research & Development Command				
Begining Date:	Unknown	**Ending Date:**	Unknown	**Note Field:**	
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Yes	**Subject Names Identified:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown	**Gender:**	Unknown

Locations:

Army Research Institute of Environmental Medicine (USRIEM)	Natick	MA	USA

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents
Andrew Young	Unknown	Unknown	Profile Only

Event Abstract:

The inclusive dates for this study conducted at the Army Research Institue of Environmental Medicine at Brooke Army Medical Center in Houston, TX are presently undetermined. To date no information is available on the number of study participants. The study involved the use of radioactive iodine and/or chromium to estimate plasma voulme and/or erythrocyte mass. Radiation exposures and results of this study are not available at this time.

EVENT NUMBER: MRDC007
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

Event Number:	MRDC018	**Service:**	Army		
Event Title:	Prediction of tissue loss in human frostbite with xenon-133				
Reporting Organization Name:	Army Medical Research & Development Command				
Begining Date:	Unknown	**Ending Date:**	71	**Note Field:**	
Informed Consent Forms Available:		**Informed Consent Request:**		**Subject Names Identified:**	
Number Subjects:		**Informed Consent Docs Exist:**		**Gender:**	

Locations:

Unknown		Unknown

Contract/Project/Protocol Numbers:

Contractor: **Issuing Agency:**

Investigators	Subject Type	Race/Ethnicity	Documents
D. S. Sumner			
J. A. Boswick			
T. L. Criblez			
W. H. Doolittle			

Event Abstract:

Unknown: citation Surgery 69:899-903, 1971

EVENT NUMBER: MRDC018
RECORDS: None available.
CIRS: No references found.
MEDLINE: Sumner DS, Boswick TL, Doolittle WH: Prediction of tissue loss in human frostbite with xenon-133. Surgery, 69:899-903, 1971 describes this study.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

Stimson Library - OVID System

<1>
Unique Identifier
72154919
Authors
Sumner DS. Boswick JA Jr. Briblez TL. Doolittle WH.
Title
Prediction of tissue loss in human frostbite with Xenon-133.
Source
Proceedings of the Institute of Medicine of Chicago. 29(2):83, 1972 Mar.

<2>
Unique Identifier
71203654
Authors
Sumner DS. Boswick JA Jr. Doolittle WH.
Title
Prediction of tissue loss in human frostbite with xenon-133.
Source
Surgery. 69(6):899-903, 1971 Jun.
Local Messages
STIMSON / BAMC

Prediction of tissue loss in human frostbite with xenon-133

DAVID S. SUMNER, LIEUTENANT COLONEL, MC, USA
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WILLIAM H. DOOLITTLE, LIEUTENANT COLONEL, MC, USA
ALASKA AND CHICAGO, ILL.
From the Arctic Medical Research Laboratory, Alaska, and the Cook County Hospital

Although mild frostbite usually presents no prognostic problem, in severe freezing injury, the clinician is often unable to determine whether tissue is likely to survive, particularly when the patient is seen early. Frequently several days may pass before the extent of tissue loss can be estimated. Since the clinical evaluation of new therapeutic measures requires an early, accurate assay of the severity of the freezing injury, it is desirable to have an objective means of predicting the likelihood of tissue necrosis when the patient is first seen.

The survival of previously frozen tissue is largely determined by the extent of the peripheral vascular damage.[1-3, 6, 7, 11] Within minutes after thaw, capillaries and venules become occluded with thrombi; after several hours, most of the blood flows through arteriovenous shunts, thus depriving the injured cells of life-sustaining nutrition. Since a functioning microvascular bed is necessary for continued cellular viability, the magnitude of the capillary flow should correlate well with the potential for tissue survival.

In a previous study, xenon-133 was used to measure blood flow after freezing injury in rabbits' feet.[9] The level of flow was shown to have prognostic value as early as 10 minutes after thaw. The accuracy improved with time. Fifty minutes and 24 hours later, the estimated error was less than 2.5 percent.

Because the work on animals was so promising, studies involving clinical materials seemed justified. This paper reports the results of preliminary investigation in which xenon was used to measure blood flow in severely frostbitten human tissue. The flows were correlated with the extent of the eventual tissue loss.

MATERIAL AND METHODS

Twenty patients with severe frostbite were selected for the study. In each case, the location and extent of the clinically evident injury were carefully documented by means of drawings, photographs, and written descriptions. As soon as possible after the patients had been admitted to the hospital, a xenon clearance test was conducted at one or more sites along the involved extremity. Approximately 0.03 to 0.05 c.c. of a saline solution of Xe-133, with an activity less than 50 microcuries, was injected through a 25 gauge needle into the deeper cutaneous layers. The biological clearance rate of the xenon was measured over a ten-minute period with a scintillation detector and recorded by means of a linear potentiometer. The data were plotted on semilog paper, and

The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of Defense.

Accepted for publication Nov. 18, 1970.

Table I. *Extent of tissue loss in seven patients*

Patient	*Tissue loss*
W. D.	Left big toe and portions of 6 other toes
J. H.	Both little fingers and portions of 7 other fingers
W. H.	Tips of 2 fingers
R. H.	Portions of 7 toes
A. N.	Middle and distal phalanges of 4 fingers, tips of 2 fingers, and all toes
R. S.	Middle and distal phalanges of one finger and tips of 3 fingers
L. W.	Both little fingers, middle and distal phalanges of 6 fingers, and distal phalanges of both thumbs

the initial slope of the resulting curve was used to estimate the blood flow. Flows were calculated from the following formula:

$$F = 100 \lambda \frac{\ln C_o/C_t}{t}$$

where F = blood flow in milliliters per 100 Gm. of tissue per minute; $\ln C_o/C_t$ = natural logarithm of the ratio of the counts per minute at the time of injection to the counts per minute at time, t; t = time in minutes; and $\lambda = 0.7$, the partition coefficient of xenon between cutaneous tissue and blood.

When more than one area of a patient was studied, the previously injected area was carefully shielded with lead and a background count taken prior to studying the second area. The site of each xenon injection was carefully recorded on drawings and the distance of each site from easily recognizable anatomic landmarks was noted.

None of the patients received special treatment such as low molecular weight dextran or sympathectomy. After the extent of the tissue loss became clearly evident (one to eight weeks after admission), the precise location of the demarcation lines between viable and necrotic tissue was recorded. Again, in each case, drawings, photographs, and written descriptions were made.

RESULTS

Thirteen patients suffered no tissue loss. The extent of the necrosis in the remaining seven patients is documented in Table I. Part or all of 31 fingers and 24 toes required amputation.

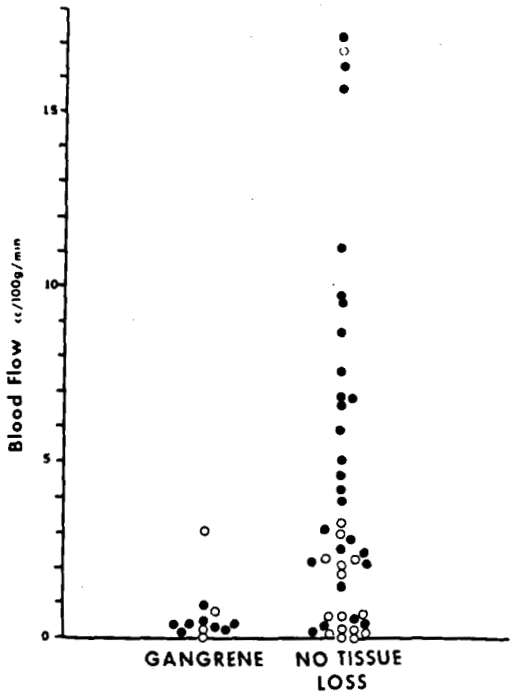


Fig. 1. Blood flow estimated from the biological clearance rate of xenon compared with the clinical outcome of the tissue at the site of the xenon injection. Open circles represent determinations performed less than 24 hours after thaw and closed circles those performed more than 24 hours after thaw.

Fifty-six xenon injections were made, 40 in the hand and 16 in the feet. There were no complications associated with the injection, and most of the patients did not even feel the needle stick, presumably due to the hypesthesia associated with the cold injury.

In Fig. 1, the blood flow estimated from the xenon clearance was plotted for each injection site according to the final outcome of the tissue on which the flow determination was made. Flows ranged from 0.0 to 17.1 ml. per 100 Gm. per minute in those tissues which remained viable and from 0.0 to 3.0 ml. per 100 Gm. per minute in the tissues which ultimately became necrotic. As shown in Table II, the average flow in the viable tissue (4.6 ± 5.0 ml. per 100 Gm. per minute) was significantly ($P < 0.01$) greater than the average flow in those tissues which became gangrenous (0.6 ± 0.8 ml. per 100 Gm. per minute). When the flows obtained

Table II. *Average blood flow (milliliters per 100 Gm. per minute) of frostbitten tissue*

Xenon injection site	Final condition of tissue at injection site			
	Viable	Necrotic	t	P
Hand:				
Mean flow	5.00	0.75	2.160	<0.05
S.D.	5.40	0.96		
S.E.M.	0.95	0.34		
No.	32	8		
Foot:				
Mean flow	3.48	0.34	1.673	<0.20
S.D.	3.51	0.10		
S.E.M.	1.01	0.05		
No.	12	4		
Both hand and foot:				
Mean flow	4.58	0.61	2.712	<0.01
S.D.	4.96	0.79		
S.E.M.	0.75	0.23		
No.	44	12		

from the hand were considered separately, the viable and necrotic groups differed significantly ($P < 0.05$), but the foot flows for the two groups were not statistically different.

In Fig. 2, the flow values obtained from the viable tissues are plotted against the time between thaw and the xenon study. With each ensuing day, the average flow rose. Although this was not a longitudinal study (no area was repetitively tested), there appeared to be a trend toward a higher flow with the passage of time. No such trend was evident in the necrotic group.

With one exception, all the flows in the gangrenous group fell below 1 ml. per 100 Gm. per minute. If this value had been chosen as the dividing line between the viable and necrotic tissues, predictions based on xenon clearance would have been 75 percent correct (Fig. 1 and Table III). If it were used only to predict viability, there would have been but one error in 32 determinations (an accuracy of 97 percent).

Fifty percent (10 of 20) of the determinations made within 24 hours would have led to an erroneous prediction. In contrast, had the studies been limited to tissues which had been thawed for more than 24 hours, 32 of 36 determinations (89 percent) would have

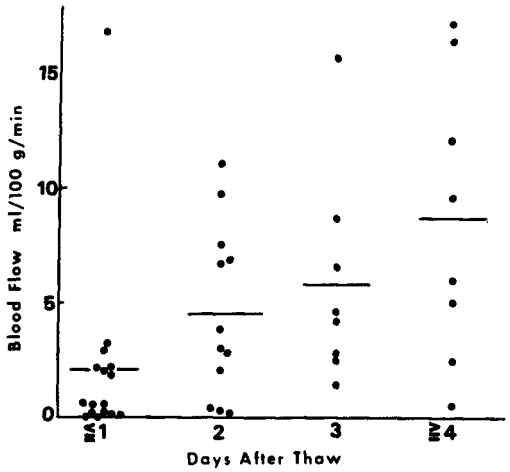


Fig. 2. Blood flow in the viable tissues compared with the time between thaw and the xenon study. Horizontal bars represent the mean flow for each post-thaw day.

Table III. *Comparison of blood flow with final condition of frostbitten tissue*

Xenon blood flow (c.c./100 Gm./min.)	No tissue loss	Gangrene	Total
>1	31	1	32
<1	13	11	24
Total	44	12	56

led to an accurate prognosis. It is also instructive to note that all the errors would have been made in the examination of the distal phalanx, with 14 of 39 (36 percent) of the studies in that area leading to the "wrong" conclusion. All predictions based on the study of the more proximal phalanges would have been correct.

Clinical predictions were 61 percent (34 of 56) correct. Although only 4 of 56 clinical assessments were in error (7 percent), predictions could not be made in fully 32 percent of the cases. Three of the four errors were made when the clinical predictions were attempted during the first 24 hours after thaw, and no prediction could be made in 40 percent of those studied during the first 24 hours after thaw. In 12 cases, the xenon clearance techniques would have led to the correct diagnosis when the clinical impression was wrong or when no clinical predic-

tion could be made. In 30 cases, the xenon clearance and the clinical impression coincided and led to the correct diagnosis, but in two cases both were wrong. The xenon clearance method would have led to the wrong diagnosis in eight patients in the "unable to predict" group and in four patients in whom the clinical impression was correct. In all but one of these cases, the error would have been in predicting necrosis based on a xenon clearance blood flow less than 1 ml. per 100 Gm. per minute.

DISCUSSION

This study was conducted in an attempt to assess the feasibility of using xenon to predict tissue survival in severe frostbite. Since there was no preceding work defining the limits of the blood flow in previously frozen human digits, it was necessary to establish arbitrarily and somewhat artificially a flow level which would separate the potentially viable from the necrotic tissues. Within the limitations of this study, the xenon clearance proved reasonably accurate. At any rate, the results were better than those usually clinically obtainable. Mills[5] has stated that the clinical ability to predict the outcome in severe frostbite is no better than 50 percent.

In retrospect, there were several potential sources of error. Occasionally when the studies were conducted on the distal phalanx, there was some blanching evident in the region of the injection. Although the volume of the xenon solution was less than 0.05 c.c., this was sufficient to mechanically compress the adjacent capillaries leading to an erroneously low flow. In addition, if the injections were made too deeply, flows would be recorded from the underlying adipose tissue which has a xenon partition coefficient of 10.0.[4] Failure to recognize this error would also lead to an erroneously low flow calculation. The single high recording in the necrotic group probably was the result of patient movement which altered the geometrical relationship between the site of the xenon injection and the scintillation detector.

Although the validity of the xenon clearance method for measuring cutaneous blood flow may be questioned, the values obtained in the viable tissues were comparable to those reported by Sejrsen.[8] If, for the sake of the following argument, it is assumed that the flows were reasonably accurate, then the differentiation between necrotic and viable tissue was not always clear cut. The wide range of flows in the viable group probably reflected the remarkable vasoactivity of normal microvasculature. In a previous study,[9] blood flow in the frostbitten feet of experimental animals was measured with the use of xenon. Flows in the viable tissues of these animals varied widely but were invariably greater than those in the necrotic tissues. However, the animals were anesthetized with pentobarbital, a vasodilator. It is probable that the resistance vessels within the ultimately necrotic tissues were incapable of further vasodilation while those in the potentially viable tissues dilated readily in response to the anesthetic agent, thus artificially augmenting the difference in flow between the viable and necrotic tissues. In the present clinical studies, no attempt was made to increase the flow pharmacologically.

In our previous experimental studies, the line of demarcation between viable and necrotic tissue proved to be an unsettled region in regard to blood flow. Plethysmographically,[10] it was often an area of increased flow, but in the xenon studies[9] it usually represented an area where the flow was relatively restricted, the flow values overlapping those of both the viable and the necrotic tissues. Parenthetically, this suggests that the anteriovenous-preferential channel flow was emphasized while the nutritive flow was depressed. Since many of the clinical examinations were performed in such a junctional region, it is not unreasonable to suspect that the flow values obtained would not always fall into well-defined categories.

Moreover, in animal experiments,[9] low flows in the junctional area tended to rise to normal levels by 48 hours after thaw. Again, this is consistent with our clinical observations (Fig. 2).

In conclusion, these studies emphasize our

previous findings[9, 10] that flow is depressed in severely frostbitten tissue and is relatively normal in tissues which retain their viability. If xenon is to be used to predict tissue viability, it should be injected in small quantities, relatively proximally on the digit, and repeated after 24 hours when there is a low flow recording. Employed in this fashion, it should provide an objective, accurate tool for predicting tissue loss in severe frostbite.

SUMMARY

Blood flows in the digits of 20 severely frostbitten patients were studied by the xenon clearance method as soon as possible after hospital admission. Seven patients in the group lost a portion of two or more digits. Flows in the viable digits averaged 4.6 ml. per 100 Gm. per minute, while those in the digits which ultimately became necrotic averaged only 0.6 ml. per 100 Gm. per minute. In only one case did the flow in the necrotic group exceed 1 ml. per 100 Gm. per minute. If this level of flow was chosen as a dividing line between viable and necrotic tissues, the accuracy of predicting the outcome of frostbitten tissues would have been 75 percent. Used only to predict viability, the test would have been 97 percent accurate.

The reliability of the test could be improved by injecting smaller amounts of xenon, restricting injections to the proximal phalanges, and repeating the test after 24 hours when there is a low flow recording.

The authors wish to express their appreciation to Dr. Hyo Hyun Byun, Assistant Director of the Department of Radiation Therapy and Nuclear Medicine, Cook County Hospital, for his aid in supplying the facilities for this study.

REFERENCES

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8. Sejrsen, P.: Blood flow in cutaneous tissue in man studied by washout of radioactive xenon, Circ. Res. 25: 215, 1969.
9. Sumner, D. S., Criblez, T. L., Novak, J. K., and Doolittle, W. H.: Prediction of tissue loss in experimental frostbite with Xe-133, Surg. Gynec. Obstet. 131: 417, 1970.
10. Sumner, D. S., Simmonds, R. C., LaMunyon, T. K., Boller, M., and Doolittle, W. H.: Peripheral blood flow in experimental frostbite, Ann. Surg. 171: 116, 1970.
11. Weatherley-White, R. C. A., Sjostrom, B., and Paton, B. C.: Experimental studies in cold injury. II. The pathogenesis of frostbite, J. Surg. Res. 4: 17, 1964.

Event Number:	MRDC029	**Service:**	Army
Event Title:	Annual progress report, Department of Biophysics, Division of Nuclear Medicine and Chemistry, Walter Reed Army Institute of Research, Washington D.C.		
Reporting Organization Name:	Army Medical Research & Development Command		
Begining Date:	62	**Ending Date:**	63
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Unknown
Number Subjects:		**Informed Consent Docs Exist:**	Unknown

Note Field:

Subject Names Identified: Unknown

Gender: Unknown

Locations:

Walter Reed Army Hospital	Washington	DC	USA

Contract/Project/Protocol Numbers:

Contractor:

Issuing Agency:

Investigators	Subject Type	Race/Ethnicity	Documents
Kent T. Woodward	Unknown	Unknown	Profile Only

Event Abstract:

From 1962 to 1963, researchers at the Walter Reed Army Hospital in Washington, D.C. examined the way individual metabolize xenon-133 and krypton-85. The number and type of participants are presently undetermined. Participants inhaled or were intravenously injected xenon-133 and krypton-85 and elimination studies were performed. The results of the study are unavailable at this time.

EVENT NUMBER: MRDC029
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

Event Number:	MRDC030	**Service:**	Army		
Event Title:	Determination of internally deposited radioactive isotope in the Marshallese people by excretion analysis				
Reporting Organization Name:	Army Medical Research & Development Command				
Begining Date:	54	**Ending Date:**	58	**Note Field:**	No Test Expos
Informed Consent Forms Available:	Unknown	**Informed Consent Request:**	Unknown	**Subject Names Identified:**	Unknown
Number Subjects:	141	**Informed Consent Docs Exist:**	Unknown	**Gender:**	Unknown

Locations:

Marshall Islands	Marshall Islands		Marshall Islands

Contract/Project/Protocol Numbers:

Contractor:	**Issuing Agency:**
	Army Office of the Surgeon General
	Defense Atomic Support Agency (DASA)

Investigators	**Subject Type**	**Race/Ethnicity**	**Documents**
Kent T. Woodward	Unknown	Unknown	Profile Only
A. G. Schrodt			
J. E. Anderson			
L. A. Claypool			
James S. Hartgering			

Event Abstract:

From 1954 to 1958 the Army Surgeon General's Office and the Defense Atomic Support Agency evaluated fallout exposure in Marshallese people.

On March 1, 1954 a thermonuclear device was exploded at a Pacific test site. As a result, Marshall Island inhabitants were exposed to gamma radiation from fallout and via contamination in air and locally produced food. After the Marshallese were relocated to other islands, diagnostic studies to determine radiation exposure were conducted. One hundred forty-one native provided urine samples for analysis of cesium-137, zinc-65, cobalt-60, and strontium-90. Results of this study are not available at this time.

EVENT NUMBER: MRDC030
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

DEPARTMENT OF THE ARMY
U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
2250 STANLEY ROAD
FORT SAM HOUSTON, TEXAS 78234-6100

REPLY TO
ATTENTION OF

MCCS-GCI (15-1a)

10 January 1997

MEMORANDUM FOR Deputy Director, Radiation Experiments Command Center, ATTN: COL Claud Bailey, 6801 Telegraph Road, Alexandria, VA 22310

SUBJECT: Update of Human Radiation Experiment Events

1. I reviewed human ionizing radiation clinical investigation experiments sponsored by the U.S. Army from 1944 to 1974. My review (enclosed) included a search of available records, a search of the Clinical Investigation Regulatory Office (CIRO) research study electronic database referred to as the Clinical Investigation and Research System (CIRS), and a review of related MEDLINE citations.

2. There are no records available in my office or the MEDCEN Departments of Clinical Investigation for pre-1975 research studies. Contact the Records Repository in Saint Louis to obtain these records. MEDCOM Preventive Medicine worked diligently to obtain the MEDLINE citations, abstracts, and manuscripts for this review.

3. In no instance was there any information indicating that U.S. Army clinical researchers used ionizing radiation in humans for anything other than acceptable clinical indications, e.g., cancer treatment or diagnosis.

4. Contact me at DSN 471-2511 or commercial 210-221-2511 if you have questions.

James M. Lamiell

JAMES M. LAMIELL
COL, MC
Chief, Clinical Investigation
Regulatory Office

enclosure
cf: R. Neve

Printed on Recycled Paper

Attachment 5

Update of DOD Human Radiation Experiment Events

EVENT NUMBER: ACIR54000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Bricker NS, Hlad CJ: Observations of the mechanisms of the renal clearance of I-131. J Clin Invest, 34:1057-72, 1955 probably describes this study.
MEDICAL ASSESSMENT: The study involved 49 adults and did not benefit the subjects.

EVENT NUMBER: ACIR54000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: Bricker NS, Hlad CJ: Renal function and I-131 clearance in hyperthyroidism and myxedema. J Clin Endo, 14:1539-50, 1954 probably describes this study.
MEDICAL ASSESSMENT: The study involved 11 adults and did not benefit the subjects.

EVENT NUMBER: ACIR56000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

EVENT NUMBER: ACIR59000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR62000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR64000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study probably does not involve ionizing radiation.

Encl 1 to Attachment 5

EVENT NUMBER: ACIR66000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: de Lena M, et al: Clinical trials with intensive chemotherapy and radiotherapy in Hodgkin's disease. Nat Cancer Instit Mono, 36:403-20, 1973 may be related to study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR66000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: There was probably no ionizing radiation associated with this study.

EVENT NUMBER: ACIR67000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR67000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: There was no ionizing radiation associated with this study.

EVENT NUMBER: ACIR67000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR67000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR68000
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

EVENT NUMBER: ACIR69000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

EVENT NUMBER: ACIR69000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR69000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: Nusynowitz ML, Strader WJ, Waliszewski JA: Predictability of red cell volume from RISA blood volume. Am J Roent, Rad Ther, Nuc Med 109:820-2, 1970 describes this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR70000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Strader WJ, Nusynowitz ML: The meaning of mottling on the colloidal radiogold liver scan. Milit Med 138:725-7, 1973 describes this study. There were 132 liver scans between 1968 and 1969.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR70000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: Hreshchyshyn MM: Results of the Gynecologic Oncology Group trials on ovarian cancer: preliminary report. Nat Cancer Instit Mono, 42:155-65, 1975 describes the results of the ▒Postoperative treatment of women with resectable ovarian cancer with radiotherapy, Melphalan, or no further treatment▒ which coincides with this study title.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR70000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: Piver MS, et al: Hydroxyurea and radiation therapy in advanced cervical cancer. Am J Obstet Gynecol, 120:969-72, 1974 describes a similar clinical trial.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR70000-E
RECORDS: None available.
CIRS: The investigator was COL Louis H. Guernsey, DC. The study was approved on 23 May 70 and terminated on 14 Dec 71.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The study probably did not involve ionizing radiation.

EVENT NUMBER: ACIR71000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR71000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR71000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR71000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR71000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR71000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR71000-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: Holoye PY, et al: Combination chemotherapy and radiation therapy for small cell carcinoma. JAMA 237:1221-4, 1977 describes a similar clinical trial.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Pinsky SM, et al: Gallium-67 tumor scanning. Semin Nuc Med, 6:397-409, 1976 states 67Ga is best available isotope for scanning this tumor.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: Subramanian G, et al: Technetium-99m-methylene diphosphate -- a superior agent skeletal imaging: comparison with other technetium complexes. J Nuc Med 16:744-55, 1975 states technetium-99m is best available isotope for scanning bone.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: Humans may not have been exposed to ionizing radiation in this study.

EVENT NUMBER: ACIR72000-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: Production of iodine-123 does not involve exposure of humans to ionizing radiation.

EVENT NUMBER: ACIR72000-H
RECORDS: None available.
CIRS: No references found.
MEDLINE: Richman SD, et: Radionuclide studies in Hodgkin's disease and lymphomas. Semin Nuc Med 5:103-8, 1975 states gallium-67 is best available isotope for scanning Hodgkin's disease.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-I
RECORDS: None available.
CIRS: No references found.
MEDLINE: Raney RB, et al: Rhabdomyosarcoma of the ear in childhood. A report from the Intergroup Rhabdomyosarcoma Study. Cancer 51:2356-61, 1983 may be a description of this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-J
RECORDS: None available.
CIRS: No references found.
MEDLINE: Perez CA, et al: Analysis of local tumor control in Ewing's sarcoma: preliminary results of a cooperative intergroup study. Cancer 40:2864-73, 1977 may be a description of this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-K
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

EVENT NUMBER: ACIR72000-L
RECORDS: None available.
CIRS: No references found.
MEDLINE: Teates CD, et al: Tumor detection with 67Ga-citrate: a literature survey (1970-1978). Clin Nuc Med, 3:456-60, 1978 reports this imaging technique.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-M
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-N
RECORDS: None available.
CIRS: No references found.
MEDLINE: Ytredal DO, Bradfield JS: Seminoma of the testicle: prophylactic mediastinal irradiation versus periaortic and pelvic irradiation alone. Cancer 300:628-33, 1972 describes this study. The study was retrospective and involved 80 adult males treated during 1947 to 1971.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-O
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-P
RECORDS: None available.
CIRS: No references found.
MEDLINE: Richman SD, et al: Radionuclide studies in Hodgkin's disease and lymphomas. Semin Nuc Med, 5:103-8, 1975 states gallium-67 is excellent for imaging Hodgkin's disease.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-Q
RECORDS: None available.
CIRS: The investigator was LTC Jeffrey L. Berenberg, MC. The study was approved on 27 Mar 73 and terminated on 15 Apr 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-R
RECORDS: None available.
CIRS: The investigator was LTC Fredrich H. Stutz, MC. The study was approved on 15 Nov 77 and terminated on 5 May 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR72000-S
RECORDS: None available.
CIRS: The investigator was COL Merrill C. Johnson, MC. The study was approved on 30 May 72 and terminated on 18 Feb 75. The IND number was 9169.
MEDLINE: Thrall JH, et al: Pitfalls in Tc99m polyphospahte skeletal imaging. Am J Roent, Rad Ther, Nuc Med 121:739-47, 1974 and Thrall JH, et al:: Abnormal radionuclide patterns adjacent to focal skeletal lesions. Radiology, 115:659-63, 1975 may report this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR72000-T
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR73000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: Kaplan WD, et al: A comparison of two technetium-99m-labeled radiopharmaceuticals for lymphoscintigraphy. J Nuc Med 20:933-7, 1979 describes this imaging technique.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: Chahinian AP, et al: Small cell anaplastic carcinoma of the lung. The Cancer and leukemia Group B Experience. Bulletin du Cancer 69:79-82, 1982 describes this study (CALGB 7283).
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR73000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-H
RECORDS: None available.
CIRS: The investigator was LTC Robert Lull, MC. The study was approved on 4 Dec 73 and terminated on 30 Oct 82.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-J
RECORDS: None available.
CIRS: The investigator was LTC Jeffrey L. Berenberg, MC. The study was approved on 7 Nov 73 and terminated on 15 Apr 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR73000-K
RECORDS: None available.
CIRS: The investigator was MAJ Richard Littenberg, MC. The study was approved on 4 Dec 73 and terminated in Jul 77.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-L
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-M
RECORDS: None available.
CIRS: The investigator was COL John W. White, MC. The study was approved on 7 May 73 and terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-N
RECORDS: None available.
CIRS: The investigator was COL Martin P. Nusynowitz, MC. The study was approved on 4 Dec 73.
MEDLINE: Blumhardt R, Nusynowitz ML: A guide to bone scanning. Am Fam Phys, 9:153-7, 1974 may describe this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-O
RECORDS: None available.
CIRS: The investigator was MAJ David Milstein, MC. The study was approved on 4 Dec 73 and terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-P
RECORDS: None available.
CIRS: The investigator was MAJ David Milstein, MC. The study was approved on 15 Nov 73 and terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-Q
RECORDS: None available.
CIRS: The investigator was MAJ David P. Milstein, MC. The study was approved on 1 Nov 73.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-R
RECORDS: None available.
CIRS: The investigator was MAJ David P. Milstein, MC. The study was approved on 1 Nov 73.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR73000-S
RECORDS: None available.
CIRS: The investigator was MAJ Richard P. Littenberg, MC. The study was approved in 15 Dec 73.
MEDLINE: Littenberg RL, et al: A clinical evaluation of gallium-67 citrate scanning. Surg, Gynecol, Obstet 137:424-30, 1973 may describe this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-AB
RECORDS: None available.
CIRS: The investigator was MAJ David Milstein, MC. The study was terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-AC
RECORDS: None available.
CIRS: The investigator was MAJ David P. Milstein, MC. The study was approved on 15 Nov 73 and terminated on 1 Dec 77.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: Hunig R, et al: Quality control of radiotherapy in acute lymphocytic leukemia protocol treatment: experience with 610 cases. European J Cancer Clin Oncol 19:1585-91, 1983 describes this study (CALGB 7411).
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

EVENT NUMBER: ACIR74000-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: Eyre HJ, et al: Randomized comparisons of radiotherapy and CCNU versus radiotherapy, CCNU plus procarbazine for the treatment of malignant gliomas following surgery. A Southwest Oncology Group Report. J Neuro-Onc 1:171-7, 1983 probably reports this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-G
RECORDS: None available.
CIRS: The investigator was MAJ Timothy M. Boehm, MC. The study was approved on 26 Nov 74 and terminated on 15 Apr 80.
MEDLINE: Boehm TM, et al: Lithium and iodine combination therapy for thyrotoxicosis. Acta Endocrinologica 94:174-83, 1980 describes this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-H
RECORDS: None available.
CIRS: The investigator was LTC Jeffrey L. Berenberg, MC. The study was approved on 28 Jan 75 and terminated on 15 Apr 80.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-I (Probably duplicates ACIR740000-U)
RECORDS: None available.
CIRS: No references found.
MEDLINE: Lamoy RE, et al: Indium-111 chloride scanning for identification of experimental abscesses. J Surg Res, 21:85-90, 1976 may describe this study.
MEDICAL ASSESSMENT: This study may not involve humans.

EVENT NUMBER: ACIR74000-J
RECORDS: None available.
CIRS: The investigator was LTC Robert Telepak, MC. The study was approved on 4 Dec 73 and terminated in 30 Sep 82.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-K
RECORDS: None available.
CIRS: The investigator was LTC Robert J. Lull, MC. The study was approved on 10 Sep 74 and terminated on 30 Oct 82.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-L
RECORDS: None available.
CIRS: The investigator was COL Martin Nusynowitz, MC. The study was approved on 4 Dec 73 and terminated on 1 Dec 77.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-M
RECORDS: None available.
CIRS: The investigator was COL Merrill C. Johnson, MC. The study was approved on 29 Jan 74 and terminated in Apr 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-N
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was approved on 19 Mar 74 and terminated on 14 Oct 76.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-P
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-Q
RECORDS: None available.
CIRS: The investigator was LTC Michael Corder, MC. The study was approved on 16 Aug 74 and terminated in 1975.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-R
RECORDS: None available.
CIRS: The investigator was MAJ Richard Littenberg, MC. The study was terminated in 1974.
MEDLINE: Littenberg RL, el al: A clinical evaluation of gallium-67 citrate scanning. Surg, Obstet, and Gynecol, 137:424-30, 1973 may describe this study.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-S
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-T
RECORDS: None available.
CIRS: The investigator was MAJ Robert P. Lull, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-U (Probably duplicates ACIR740000-I)
RECORDS: None available.
CIRS: No references found.
MEDLINE: Lamoy RE, et al: Indium-111 chloride scanning for identification of experimental abscesses. J Surg Res, 21:85-90, 1976 may describe this study.
MEDICAL ASSESSMENT: This study may not involve humans.

EVENT NUMBER: ACIR74000-V
RECORDS: None available.
CIRS: The investigator was LTC Thomas A. Verdnon, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-W
RECORDS: None available.
CIRS: The investigator was LTC Thomas P. Verdnon, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-X
RECORDS: None available.
CIRS: The investigator was LTC Thomas P. Verdnon, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74000-Y
RECORDS: None available.
CIRS: The investigator was Anthony P. Borski. The study was terminated on 30 Dec 74.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74000-Z
RECORDS: None available.
CIRS: The investigator was COL Merrill P. Johnson, MC. The study was terminated in 1974.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74999-A
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study did not involve ionizing radiation.

EVENT NUMBER: ACIR74999-B
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

EVENT NUMBER: ACIR74999-C
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

EVENT NUMBER: ACIR74999-D
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical diagnosis.

EVENT NUMBER: ACIR74999-E
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was probably employed only for medical diagnosis.

EVENT NUMBER: ACIR74999-F
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: ACIR74999-G
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: The ionizing radiation associated with this study was employed only for medical treatment.

EVENT NUMBER: CBDCOM001
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USACBDC and not by CIRO. Contact USAMRMC for additional information.

EVENT NUMBER: MRDC002
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USARIEM and not by CIRO. Contact USARIEM for additional information.

EVENT NUMBER: MRDC003
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USARIEM and not by CIRO. Contact USARIEM for additional information.

EVENT NUMBER: MRDC004
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

EVENT NUMBER: MRDC006
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

EVENT NUMBER: MRDC007
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

EVENT NUMBER: MRDC018
RECORDS: None available.
CIRS: No references found.
MEDLINE: Sumner DS, Boswick TL, Doolittle WH: Prediction of tissue loss in human frostbite with xenon-133. Surgery, 69:899-903, 1971 describes this study.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

EVENT NUMBER: MRDC029
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.

EVENT NUMBER: MRDC030
RECORDS: None available.
CIRS: No references found.
MEDLINE: No related citations located.
MEDICAL ASSESSMENT: This study was conducted by USAMRDC and not by CIRO. Contact USAMRMC for additional information.