FROM: SGHXI 7 December 1971

SUBJECT: Research Proposal - Delineation of Abscesses by Gallium-67

TO: SGS

1. PURPOSE: To delineate an artificially-produced abscess by scintiphotography after injection of the isotope gallium-67.

2. The accelerator-produced isotope gallium-67 has attracted much interest as a tumor scanning agent (1, 2). Experience with this agent reveals that it is also concentrated in non-neoplastic processes, among them osteomyelitis and hepatic and pulmonary absces (3). A recent personal communication reveals a high degree of success in detecting abdominal abscesses in rabbits (4). The mechanism whereby gallium concentrates in tumors or various non-neoplastic processes is entirely unknown. However, if the finding of gallium-67 concentrated in an abdominal abscess in a rabbit can be confirmed, then this technique will have a potentially important application in humans.

3. TECHNICAL APPROACH: Abscesses will be created by implantation of bacteria-laden pellets into the pro-peritoneal cavity. One to two mCi Ga-67 as the citrate will be injected intravenously when the abscess is clinically "hot". The area of the abscess will be imaged 4, 24 and 48 hours after injection by a Nuclear-Chicago Anger camera. Ten rabbits will be so treated. Images will be collected on Polaroid prints. Thermoluminescent dosimeters will be implanted with the bacteria; these will record the incident radiation during exposure, and they will be counted after the animals are sacrificed. The dead animals will be placed in plastic bags and taken to the animal disposal area at Brooks AFB. The veterinary research section (Maj R. Haines), has agreed to support this investigation.

4. EQUIPMENT: All necessary scanning equipment is on hand.

Rabbits, 10 at $6.00 each	$60.00
Gallium-67 citrate at $60 each 3 mCi	300.00
	$360.00

5. Investigation Schedule

a. Investigation will begin early in 1972 after approval is obtained from the Research Committee and the Air Force Isotope Committee, Wright-Patterson AFB.

b. Two rabbits will be studied each week (total 5 weeks).

c. All work should be completed in 2 months.

d. Depending on the results of this study, a second phase may be planned involving human subjects.

6. EXPERIMENTAL SUBJECTS: All animals will be handled in accordance with AFR 169-2.

7. USE OF DRUGS: Gallium-67 citrate will be procured under FDA IND #8050. Requisite form FD-1573 has been filed.

8. PERSONNEL DATA:

a. Medical facility commander - Paul W. Myers, Colonel, USAF, MC

b. Principal investigator - William C. Harvey, Lt Colonel, USAF, MC

c. Associate investigators - Joseph R. Silva, Major, USAF, MC

David T. Kopp, Major, USAF, BSC

9. MANPOWER:

Lt Col	AFSC 9386	20 hours duty time	20 hours off time
Major	AFSC 9386	20 hours duty time	20 hours off time
Major	AFSC 9176	10 hours duty time	

10. BIBLIOGRAPHY:

(1) EDWARDS, C. L. AND HAYES, R. L.: Scanning malignant neoplasms with gallium-67. JAMA 212:1182, 1970.

(2) VAEDYA, S. G., CHANDHRI, M. A., MORRISSON, R., AND WHAIT, D: Localization of gallium in malignant neoplasms. Lancet 1:911, 1970.

(3) BELL, E. G., O'MARA, R. E., HENRY, G. A. et al: Non-neoplastic localization of ^{67}Ga-citrate. Presented at the Annual Meeting of the Society of Nuclear Medicine, Los Angeles, July 1971.

(4) O'MARA, R. E.: Personal communication.

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