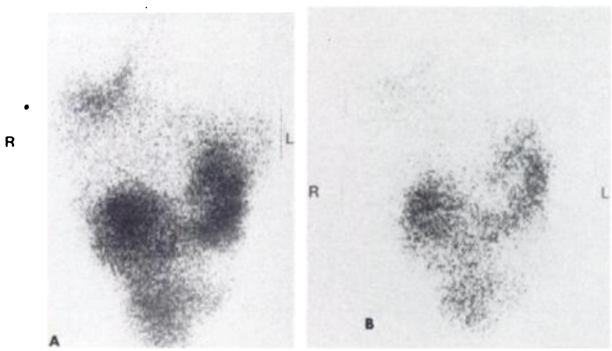

FIG. 1. (A) Anterior ^{67}Ga scan at 72 hr shows uptakes in right lower chest and throughout abdomen, separated by hepatic region that is essentially devoid of radioactivity. (B) Anterior ^{67}Ga scan at 96 hr, following further bowel cleansing, shows no change in distribution of ^{67}Ga uptake.

noted. Abdominal examination elicited generalized tenderness with nonlocalizing diffuse rebound. The remainder of the physical examination was unremarkable.

Routine blood tests and cultures were normal or negative. Chest roentgenogram showed right pleural effusion. Thoracentesis provided insufficient fluid for culture, and pleural biopsy yielded inadequate tissue for diagnosis. Fiber-optic bronchoscopy and bronchial washing were not helpful. Upper gastrointestinal series, barium enema, and intravenous cholangiogram were normal. A bone marrow aspirate was consistent with chronic infection, and a tuberculin skin test was positive (14 mm induration).

The patient's fever continued and remained undiagnosed. Prior to performing an exploratory laparotomy, a ^{67}Ga scan was requested. The initial scan at 72 hr (Fig. 1A) showed activity throughout the abdomen and in the area of the right pleural effusion and absence of activity in the hepatic area. A repeat scan at 96 hr (Fig. 1B), following cleansing enemas, showed identical tracer distribution. At surgery, biopsy of the peritoneum showed caseating granulomas, and culture eventually grew acid-fast bacilli. The patient responded to antituberculous medications and was discharged 10 days after surgery.

Our patient's distribution of ^{67}Ga within the abdomen is remarkably similar to that of Steinbach's patient. In addition, our patient had ^{67}Ga uptake in the area of his pleural effusion, most likely representing tuberculous involvement. This second case of ^{67}Ga accumulation in tuberculous peritonitis, together with the increasing evidence of positive scans in a variety of infections and inflammatory disorders, suggests that the ^{67}Ga scan may routinely diagnose tuberculous peritonitis. Confusion between diffuse peritoneal uptake and bowel radioactivity can be resolved by repeated scanning and by abdominal activity in excess of hepatic uptake.

ROBERT J. BARAN
MELVIN J. FRATKIN
Medical College of Virginia
Virginia Commonwealth University
Richmond, Virginia

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Comparison of ^{99m}Tc and ^{123}I for Thyroid Imaging

I was dismayed to read the article by Arnold and Pinsky (*1*), comparing ^{99m}Tc-pertechnetate images obtained 20–30 min after administration with ^{123}I images, obtained at 16–19 hr, in which they conclude that not only was pertechnetate better than the iodide, but "in a few cases ^{99m}Tc-pertechnetate showed abnormalities more readily."

Over three decades ago, Hamilton et al. established that the time course of radioiodide concentration by the thyroid was a function of many parameters dependent on blood flow, extraction efficiency ("trapping"), fixation ("organification"), storage, and release. It is generally appreciated that the rapid initial accumulation of tracer in the thyroid is primarily related to perfusion and extraction efficiency, whereas at later time intervals the fixation, storage, release, etc., components become more important. Thus, attempts to compare one tracer's uptake in the thyroid at 20–30 min with another tracer's uptake at 16–19 hr are absurd.

If one wishes to compare the relative efficacy of pertechnetate with iodide in evaluating thyroid function, it is necessary to perform studies on both at comparable time intervals and with comparable routes of administration. This was not done by Arnold and Pinsky.

If it was the intent of the authors to compare the results they obtained using two different techniques and types of study, which also happen to use different radionuclides, they should clearly state that the disparate techniques and nature of the two studies would be expected to influence the nature of the results.

If their intent was to show that thyroid images obtained shortly after administration of a tracer may provide useful information in addition to that which might be obtained from later studies, then they may wish to study whether such early studies are best done using pertechnetate or the iodide.

H. S. WINCHELL
Medi-Physics, Inc.
Emeryville, California

REFERENCE

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Reply

No one doubts that ^{99m}Tc-pertechnetate, ^{123}I, or both are currently used to image the thyroid in many nuclear medicine departments. On theoretical grounds, because of the different ways pertechnetate and radioiodine are handled by the thyroid (discussed in the opening paragraph of our paper), one would expect ^{123}I images to be superior. However, as ^{123}I is more expensive and less readily available than ^{99m}Tc, it seems very important to ask, "Is the theoretical superiority of ^{123}I over ^{99m}Tc for thyroid imaging significant in practice?" This is the question that our paper attempts to answer, and our results indicate that the answer is "No," with several important exceptions.

To answer the above question, it is essential that each radionuclide be used in the manner currently regarded as optimal. That this requires the use of one technique for

^{99m}Tc and a different one for ^{123}I should be obvious to anyone acquainted with either the theory or practice of thyroid imaging with radionuclides.

Incidentally, we did not state that pertechnetate was "better" than ^{123}I. We found that the two agents usually gave similar information. Our preference for pertechnetate was mainly on the basis of greater availability, lower cost, and greater convenience for the patient. However, if ^{123}I were to become as readily available and inexpensive as pertechnetate, then our choice would warrant reconsideration.

JOHN ARNOLD
Flinders Medical Centre
Bedford Park, South Australia
STEVEN PINSKY
Michael Reese Medical Center
Chicago, Illinois

Accepted Articles To Appear in Upcoming Issues

Uptake of ^{67}Ga in the Lactating Breast and Its Persistence in Milk (Case Report). Accepted 5/21/76.
Richard E. Tobin and Peter B. Schneider

Effect of Small Amounts of ^{131}I on ^{99m}Tc Detection by the Scintillation Camera (Technical Note). Accepted 5/24/76.
P. Todd Makler, Jr., Michael J. Eymontt, Peter Bloch, and Kaaron Koch

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Hajime Murata, Masayoshi Kobayashi, Masahiro Iio, Hideo Yamada, Kazuo Chiba, Kengo Matsui, and Shinichiro Kawaguchi

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Jagmeet S. Soin and Richard A. Holmes

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Milton J. Guiberteau, Majic S. Potsaid, and Kenneth A. McKusick

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