

Functional Evaluation of a Hepatic Scintigraphic Defect Using Ultrasound and a Fatty Meal: Case Report

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Hepatic focal defects identified with ^{99m}Tc -sulfur colloid imaging procedures are nonspecific. This report describes a prominent scintigraphic defect shown to be a normally functioning gallbladder.

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There is marked variation in the scintigraphic appearance of the normal liver. Because of the liver's pliability, surrounding organs may produce image defects that strongly suggest space-occupying lesions of the liver (1-3). The following case of a prominent scintigraphic abnormality caused by a normal gallbladder illustrates the necessity for a keen awareness of the possibility of marked anatomic variation and emphasizes the usefulness of ultrasound correlation in suspected liver disease.

CASE REPORT

A 55-year-old woman presented with a 1-month history of diarrhea, nausea, vomiting, abdominal

cramps, and rectal pain. Vital signs and physical examination were uninformative. An upper gastrointestinal series, intravenous pyelogram, and laboratory data, including the liver-function test, were normal. Barium enema showed a pelvic mass directly invading and displacing the sigmoid colon, with characteristics strongly suggesting malignancy.

As part of a preoperative tumor evaluation, a liver scintigram was performed with ^{99m}Tc -sulfur colloid: it showed a large solitary nonfunctioning area in

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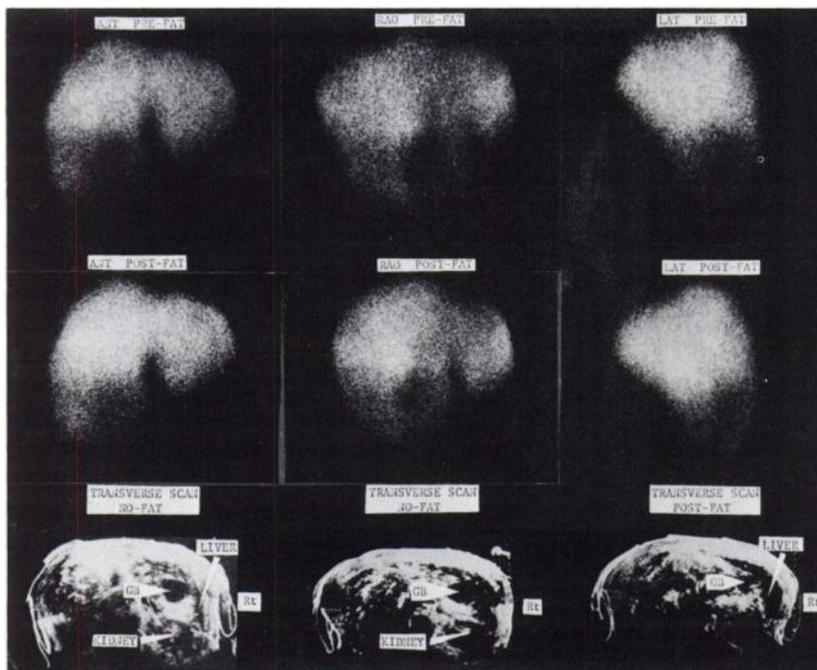


FIG. 1. (Top) Liver scintigraphs prior to fatty meal. (Middle) Liver scintigraph following fatty-meal stimulation. (Bottom) Transverse echograms through gallbladder prior to and following fatty meal.

the region of the gallbladder fossa (Fig. 1). An ultrasound examination of the liver (4,5) showed a 4 × 4-cm cystic structure in the same site as the scintigraphic defect. To prove that this was indeed the gallbladder, the patient was given 60 cm³ of Neocolex* by mouth and reimaged 1 hr later. The repeat scintigraphs following the fatty meal showed a decrease in the size of the cold defect (Fig. 1), and repeat echography confirmed the reduction in the size of the gallbladder, to 1 × 1.5 cm (Fig. 1).

Five days later the patient underwent abdominal exploration, at which time a perforated sigmoid diverticulum with associated inflammatory mass was found and resected. The liver and gallbladder were examined at surgery. The gallbladder was in an extrahepatic location behind a thin right lobe of the liver; otherwise both it and the liver were normal.

DISCUSSION

The combined results of the liver scintigram and the echogram clearly proved that the cold defect shown by scintigraphy was caused by a normally functioning gallbladder. Ultrasound provides an excellent correlative method of evaluation that is convenient, noninvasive, and without additional radiation exposure to the patient. If ultrasound is unavailable, an alternative approach is cholecystographic imaging with a ^{99m}Tc-labeled radiopharma-

ceutical such as Tc-99m Hepato-Biliary Scintigraphin^{TM†} before and after a fatty meal (6).

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FOOTNOTES

* A 40:60 mixture of pure vegetable oil in water (C. B. Fleet, Lynchburg, Va.).

† Technetium-99m-labeled mercaptoisobutyric acid (Medi-Physics, Emeryville, Calif.).

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NORTHERN CALIFORNIA CHAPTER SOCIETY OF NUCLEAR MEDICINE ANNUAL MIDWINTER MEETING

February 16, 1977
3:30 p.m.

Lawrence Hall of Science
Berkeley, California

The Scientific Program will consist entirely of invited papers on topics of current interest. Included are a presentation on brain scanning in clinical neurology by Dr. Barbara Barnes, emphasizing multiview flows, tomography and computer processed images; ¹³¹I-LH for testicular and possibly prostatic imaging by Dr. Robert Hattner; clinical experience with ^{81m}Kr for lung ventilation imaging, including comparison with ¹³³Xe, presentations and panel discussion by four Bay Area groups: Dr. Michael Goris, Dr. Paul Weber, Dr. Norton Snyder and Dr. David Shames.

A talk by a prominent speaker on some basic-science topic related to nuclear medicine is also being arranged.

A Chapter business meeting and buffet supper will follow.

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