ABNORMAL ^{67}Ga-CITRATE SCAN OF THE ABDOMEN IN TUBERCULOUS PERITONITIS: CASE REPORT

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Tuberculous peritonitis in a 34-year-old alcoholic man was associated with an abnormal ^{67}Ga-citrate scan of the abdomen. Repeated studies after thorough bowel cleansing revealed no change in the site and shape of the abnormality for 2–5 days after injection of the tracer. The inflammatory process may have been responsible for the abnormal scan.

Gallium-67-citrate scanning has been established as a useful tool in investigating, detecting (*1*), and staging malignant diseases (*2,3*). Recently its use in the detection of acute inflammatory diseases has also been described (*4*). This paper reports an abnormal ^{67}Ga-citrate scan in a case of tuberculous peritonitis.

CASE REPORT

A 34-year-old alcoholic man was admitted to the Veterans Administration Hospital in Buffalo for periumbilical pain of 2 days' duration. Pain was not related to food intake, nausea, or vomiting. He reported occasional loose normal-colored stools without blood, a loss of appetite, and a 15-lb weight loss over the past year. He complained of an enlarged abdomen and fever. He had three previous admissions to the same hospital for a seizure disorder attributed to his alcoholism, for which he was treated with phenobarbital and diphenylhydantoin. Ten months before the present admission he had pain and swelling of the knee joints, ankles, and fingers. At that time a purified protein derivative (PPD) skin test of intermediate strength was positive. On present admission, he was described as thin, alert, and oriented. Vital signs showed temperature 101°F, respiratory rate 16/min, and blood pressure 110/70. All abnormal findings were confined to the abdomen, which was described as distended and positive for ascites. Bowel sounds were active. There was no pain or rebound tenderness but some discomfort in the right lower quadrant was elicited on palpation. No organomegaly was found. The pertinent laboratory data on admission include negative chest x-ray, positive PPD skin test of 12 mm, white count of 7000, with 81% segmented neutrophils and 5% lymphs, six bands and two eosinophiles, decreased serum albumin, and increased globulins. Cultures of sputum, blood, and ascites fluid were negative for bacteria, including acid-fast bacteria. Upper gastrointestinal series, barium enema, and intravenous pyelography were all negative. A gallium scan was requested to rule out the possibility that an infectious focus might be causing the fever. Tuberculous peritonitis was strongly suspected.

RESULTS

After administering 3 mCi of ^{67}Ga-citrate (Diagnostic Isotopes Inc., Upper Saddle River, N.J.), scanning was done using an Ohio-Nuclear 5-in. dual-head scanner in a 2:1 minification ratio. The study was done 72 hr after administration of the tracer (Fig. 1) and repeated at 96 hr and 120 hr (not shown). Laxatives and cleansing enemas were repeated between the studies. An abnormal S-shaped retention of the radionuclide near the midabdomen (Fig. 1) was shown on all scans. Increased diffuse activity was also noted over the entire abdomen.

Exploratory laparotomy 1 week after the last scan revealed numerous small granulomas throughout the small- and large-bowel serosa and the peritoneum. The omentum was retracted and was also seeded by the process. No narrowing or obstruction of the bowel loops was observed. Microscopic examination of biopsy specimens revealed typical tuberculous granuloma, positive for acid-fast bacteria.

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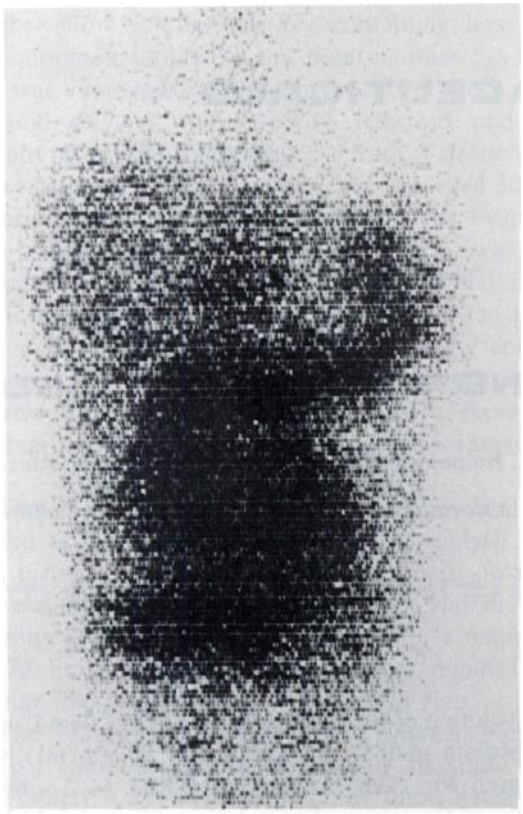

FIG. 1. Anterior rectilinear scan taken at 72 hr after injection of 3 mCi of ^{67}Ga-citrate shows S-shaped radiotracer accumulation in midabdomen. Note that accumulation in abnormal region is much higher than in liver.

DISCUSSION

Available reports of radiogallium scans in pulmonary tuberculosis suggest a relationship between tracer uptake and the activity of the disease. Whereas the majority of cases with active pulmonary tuberculosis show positive gallium uptake in the lesions, most scans of lungs with fibrous disease fail to show concentration associated with the lung abnormality (*5–7*).

The present study presents an abnormal gallium scan in an active extrapulmonary tuberculous infection. Extensive review of the literature has failed to reveal any previous case report of tuberculous peritonitis scanned with ^{67}Ga-citrate. Although the evidence that ^{67}Ga-citrate is concentrated within the lesion is not quite conclusive, a cause and effect relationship is suggested. The appearance, localization, and persistence of the abnormality over several days, in spite of repeated cleansing, suggests that the gallium is not in the large bowel or its contents.

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