
Leiomyoma of Terminal Ileum Producing a False-Positive Meckel's Scan

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A case of positive Meckel's diverticulum scan caused by a leiomyoma of the terminal ileum is reported. The early appearance of activity on the perfusion study aided in recognition of a false-positive scan.

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Technetium-99m (^{99m}Tc) pertechnetate is commonly used for detection of Meckel's diverticulum by localization within ectopic gastric mucosa (1,2). For accurate diagnosis, it is important to differentiate abnormal accumulation in a Meckel's diverticulum from normal activity in the gastrointestinal and genitourinary track as well as other uncommon causes of abnormal accumulation.

A case is reported in which activity accumulated in a leiomyoma of the small bowel and was recognized as a false-positive study because of early appearance on the perfusion scan.

CASE REPORT

A 60-yr-old man was admitted for acute onset of hematochezia. Proctoscopy was normal. A ^{99m}Tc -tagged red blood cell (RBC) study was done. The perfusion study and immediate static image were unremarkable (Figs. 1 and 2). Subsequent static images obtained at 10-min intervals over 2 hr failed to demonstrate bleeding, but delayed images at 24 hr showed radionuclide in the terminal ileum and colon (Fig. 3). This was interpreted as either distal small bowel bleeding or large bowel bleeding with reflux into the terminal ileum. Colonoscopy, upper endoscopy, and abdominal arteriography were unrevealing.

A Meckel's diverticulum scan was then performed with imaging done in the supine position using scintillation camera* with a low-energy, all-purpose, parallel-hole collimator. A perfusion study was performed for the first minute immediately after injection of 10 mCi of [^{99m}Tc]pertechnetate, with subse-

quent static images obtained at 10-min intervals for the next hour and delayed images at 2 and 4 hr. The perfusion study demonstrated a blush of activity in the pelvis overlying the right iliac artery (Fig. 4). Static images showed gradually increasing activity in the same distribution and location (Fig. 5). Delayed images at 4 hr failed to show any movement (Fig. 6). The serendipitous appearance of activity on the perfusion study prior to appearance in the stomach indicated that this was not typical accumulation within ectopic gastric mucosa in a Meckel's diverticulum. The early appearance was felt to represent bleeding, but the lack of movement indicated this was not intraluminal. The patient was not pretreated with glucagon which might have altered normal intestinal motility. The possibilities of bleeding into a mass or encapsulated bleeding were considered.

Subsequently small bowel enteroclysis demonstrated an ulceration in the distal ileum lying in the right lower quadrant of the abdomen with slight displacement of adjacent bowel loops suggesting the presence of a mass (Fig. 7). At laparotomy, a $6 \times 6 \times 5$ cm tumor was found ~2 ft from the ileocecal valve. Pathologic examination revealed a benign leiomyoma. The patient did well postoperatively with no recurrence of bleeding.

DISCUSSION

A [^{99m}Tc]pertechnetate Meckel's diverticulum scan is frequently performed in patients with gastrointestinal bleeding to identify those cases in which a Meckel's diverticulum is the etiology. An intra-abdominal focus of hyperactivity of small size, appearing simultaneously with that in the stomach between 10 and 20 min after injection and increasing in intensity parallel to the intensity of the stomach constitute findings strongly suggestive of ectopic gastric mucosa in a Meckel's diverticulum. An extensive list of rare causes of so-called false-positive images has been compiled (3). Case reports of positive Meckel's

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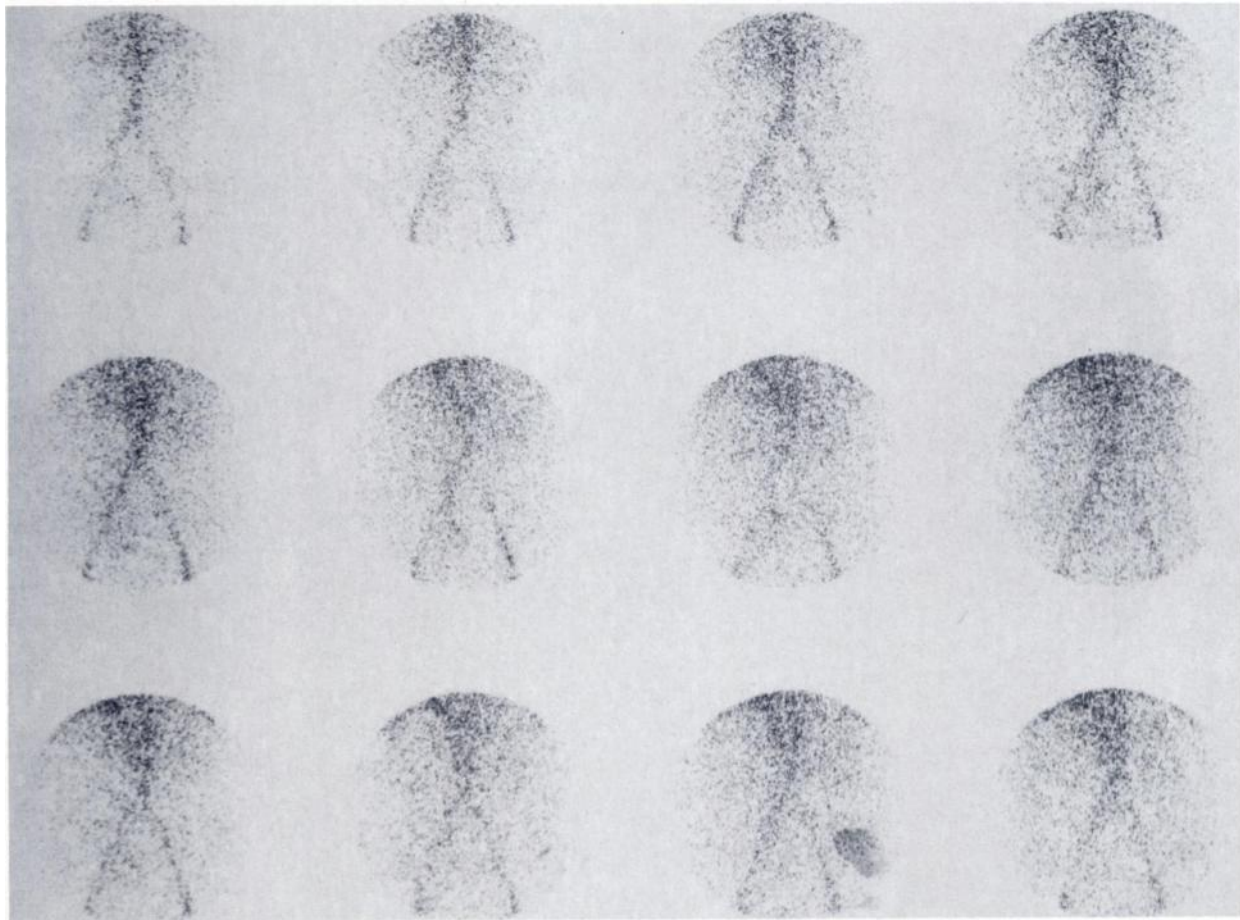


FIGURE 1
 ^{99m}Tc -tagged RBC perfusion study

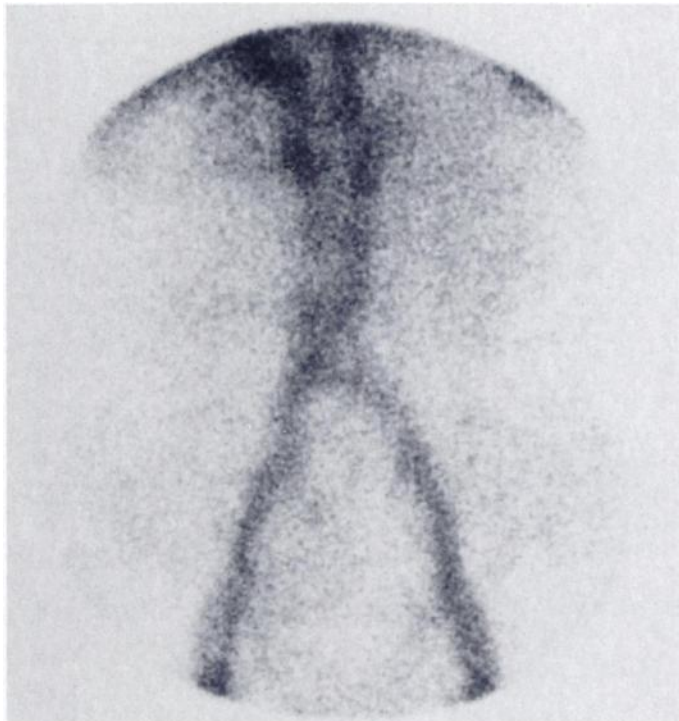


FIGURE 2
Immediate static image from ^{99m}Tc -tagged RBC study

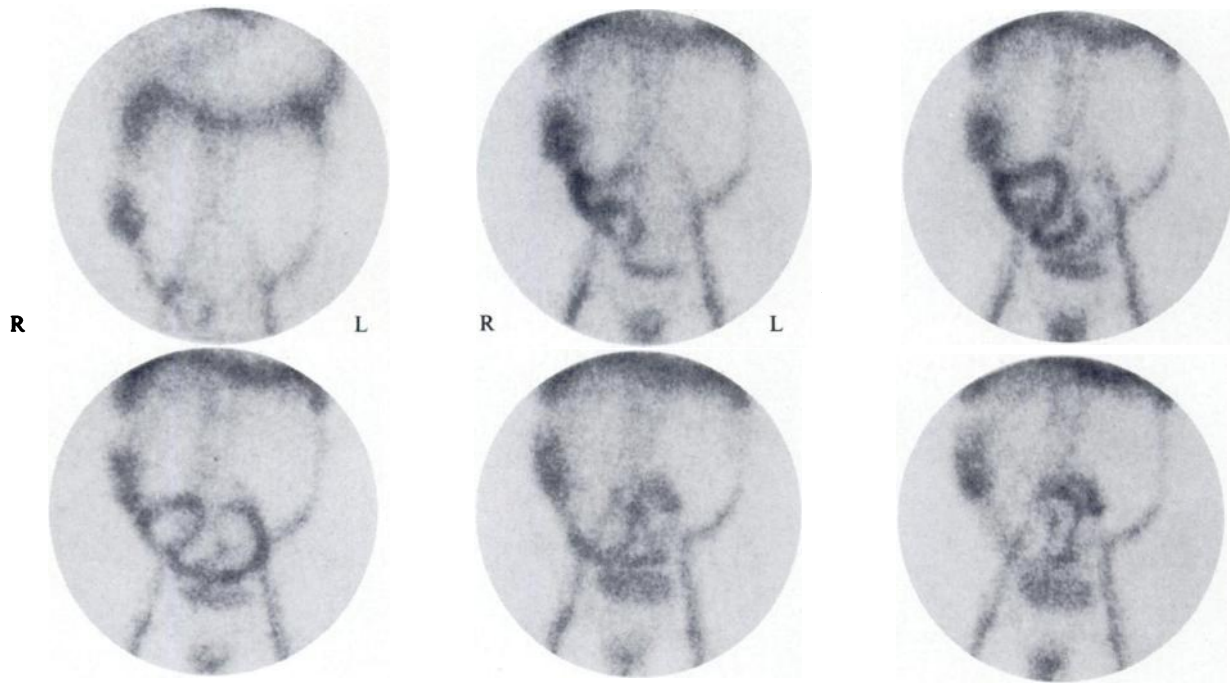


FIGURE 3
 ^{99m}Tc -tagged RBC scintigrams obtained at 10-min intervals, 24 hr postinjection, demonstrating activity in distal small bowel and colon

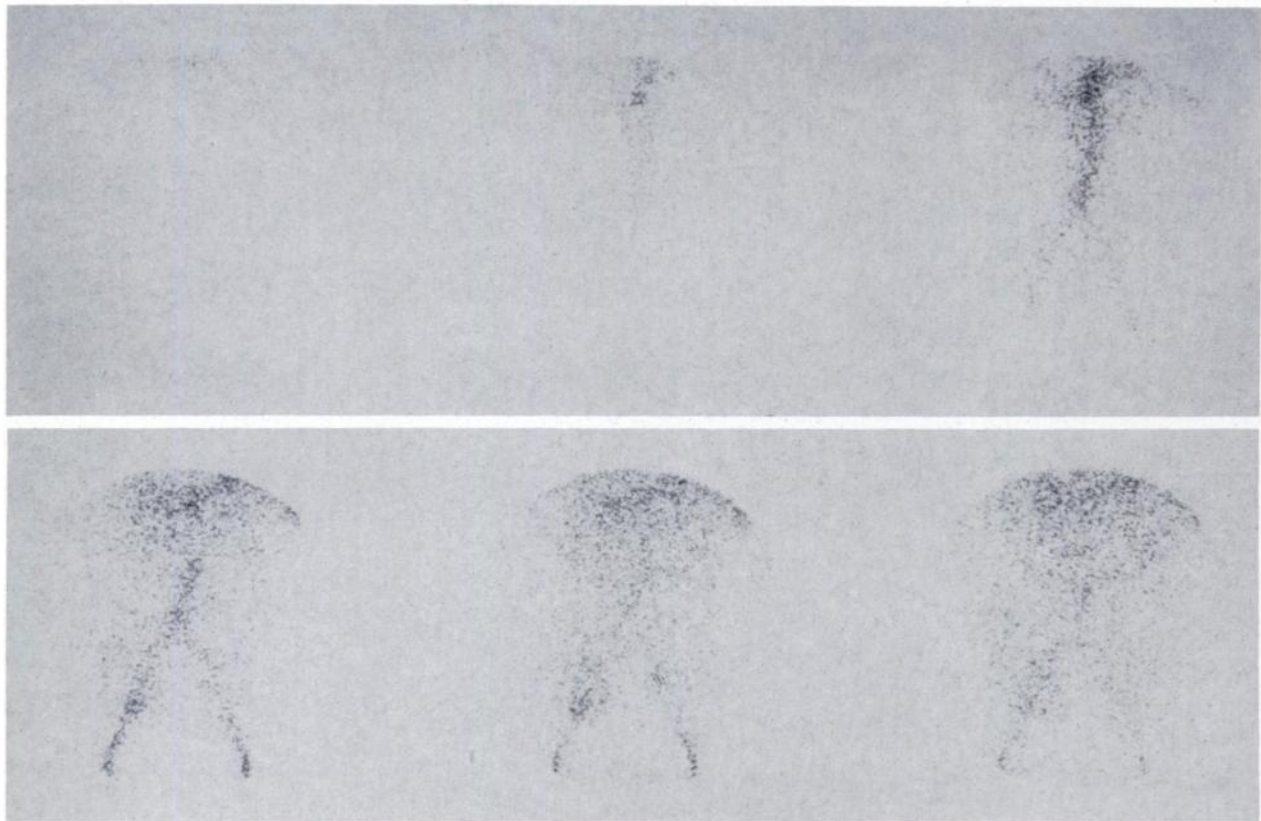


FIGURE 4
 ^{99m}Tc]pertechnetate perfusion study demonstrating immediate focal accumulation of activity over right iliac artery

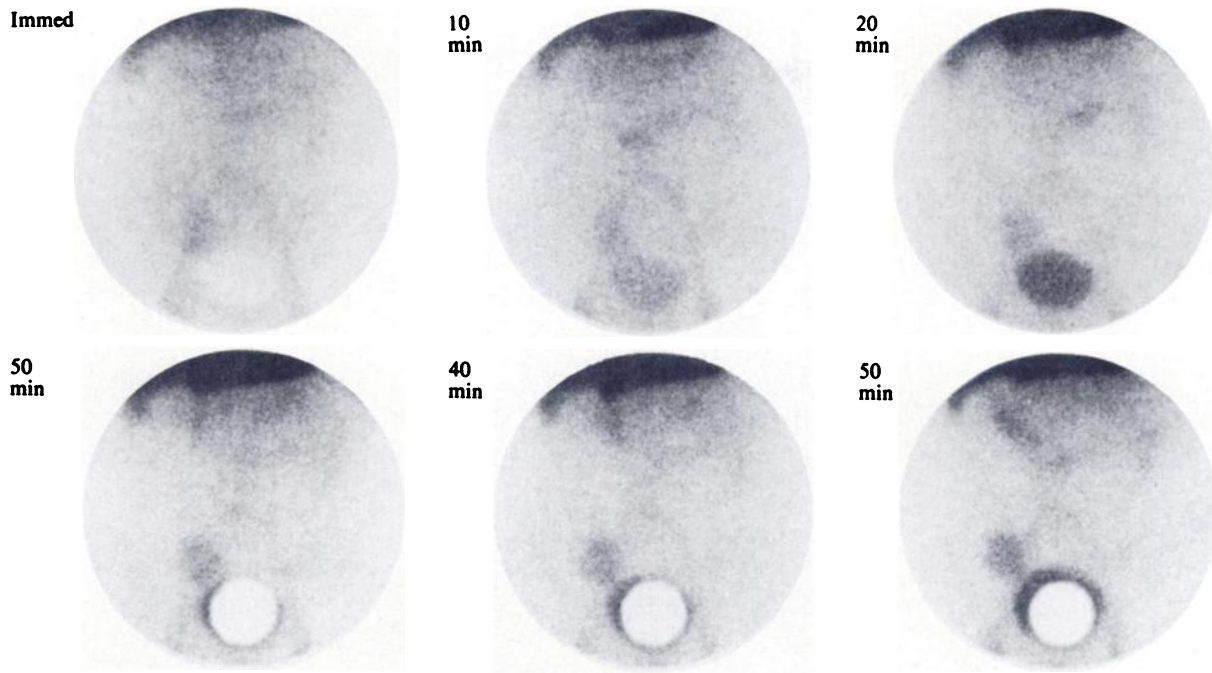


FIGURE 5
 $[^{99m}\text{Tc}]$ pertechnetate sequential static images obtained at 10-min intervals, beginning immediately after injection

scans caused by tumors of the small bowel have appeared in the literature, including carcinoid tumor (4) and undifferentiated malignant lymphoma (5). It has been suggested that dynamic early appearance of activity on the basis of increased blood pool might help differentiate such lesions from a Meckel's diverticulum (1). Whereas this mechanism of an increased blood pool may have been at

work in the present case, the lack of hypervascularity at angiography as well as the absence of abnormal accumulation of activity on perfusion or immediate static images from the ^{99m}Tc -tagged RBC study don't support it. Bleeding into the tumor itself at the time of the study is another possible mechanism for the early appearance of activity. The patient had frequent episodes of bleeding throughout

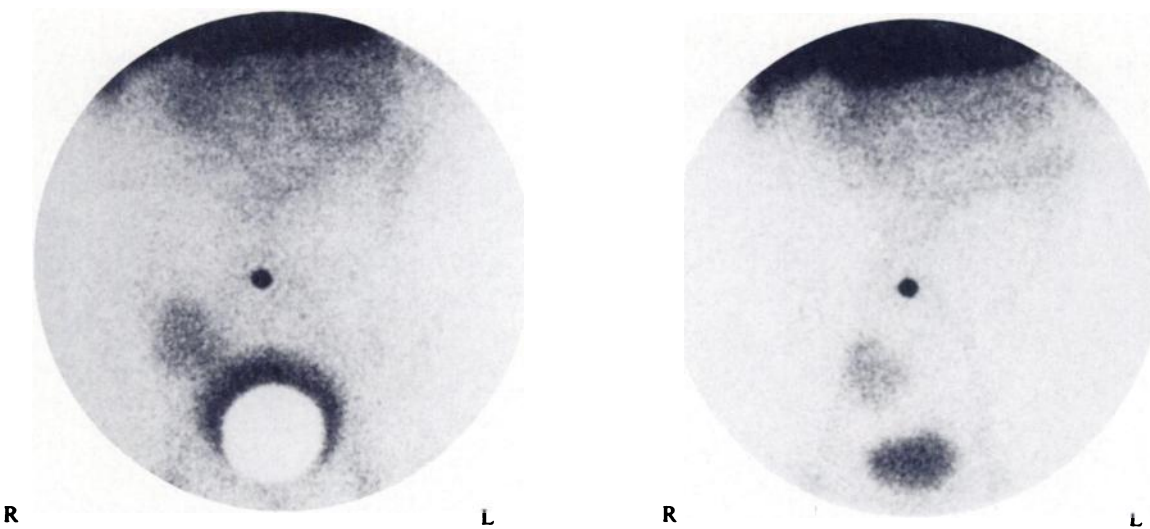


FIGURE 6
 $[^{99m}\text{Tc}]$ pertechnetate scintigrams at 4 hr, pre- and postvoid images with ^{57}Co marker at umbilicus

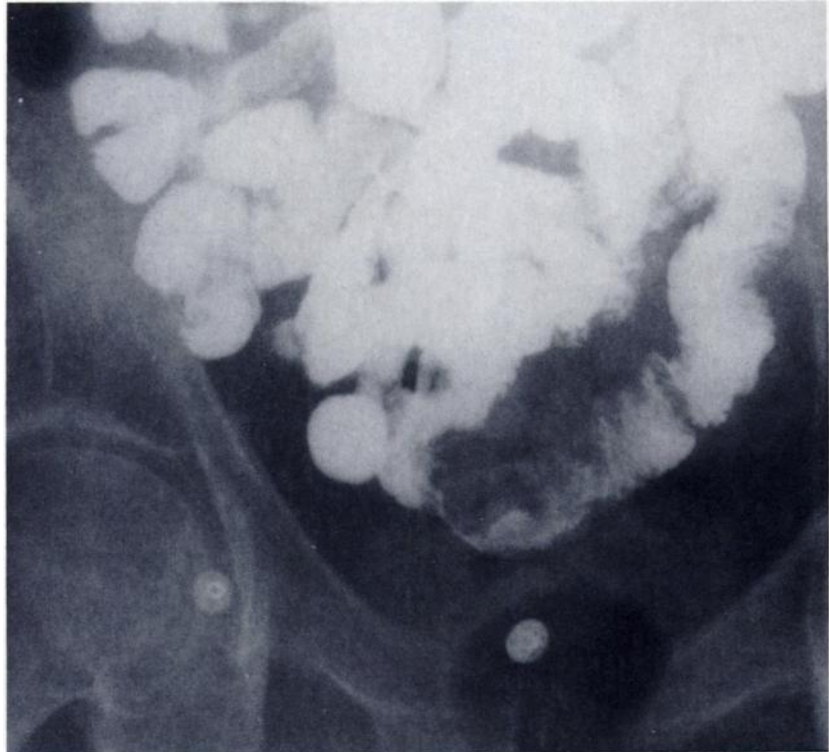


FIGURE 7
Small bowel enteroclysis demonstrating ulcer and suggestion of mass involving distal ileum immediately superior to bladder

his admission requiring transfusion of five units of packed red cells. The pathologic specimen demonstrated multiple foci of hemorrhage with a central ulceration at the mucosal surface of the bowel. The most common clinical presentation of small bowel leiomyomas is that of gastrointestinal bleeding, often in repeated episodes (6).

This case is presented for two reasons. First, the ^{99m}Tc -tagged RBC study provides an excellent demonstration of the utility of delayed imaging to identify intermittent gastrointestinal bleeding, even when early sequential images are unremarkable. Second, it provides an excellent clinical demonstration of what has only been suggested previously in the literature; namely that a perfusion study performed as part of a Meckel's diverticulum scan can help identify those false-positive studies caused by a tumor (1). The mechanism of recognition of a false-positive study in the present case is most likely related to fortuitous intratumoral bleeding at the time of the study.

FOOTNOTE

*Siemens 75-ZLC, Searle-Siemens Medical Systems Inc., Iselin, NJ.

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