

An Incidental Finding of Gastrointestinal Bleeding on Bone Scintigraphy: Case Report

Michael T. Hackett, Paul R. Jolles, and Pintse C. Frawley

Nuclear Medicine Service, Veterans Affairs Medical Center, Richmond, Virginia and Division of Nuclear Medicine, Medical College of Virginia Hospitals, Richmond, Virginia

Objective: A 63-yr-old male with history of metastatic carcinoid tumor and heme-positive stool was referred for a bone scan. We attempted to determine if obtaining serial images would be helpful in characterizing the nature of extraosseous activity seen in the bowel region.

Methods: We performed delayed whole-body bone imaging and then serial imaging on the patient.

Results: The delayed whole-body bone imaging demonstrated extraosseous activity in the area of the descending and sigmoid colon. During additional serial imaging, the activity progressed to the area of the rectum, suggesting that the patient had experienced a gastrointestinal bleed subsequent to initial tracer injection. There was no evidence of free pertechnetate by imaging or chromatographic criteria, nor reason to suspect a vesicoenteric/colic fistula.

Conclusion: This case report demonstrates that serial imaging of extraosseous abdominal activity seen on bone scintigraphy may be helpful to differentiate a gastrointestinal bleeding pattern from other etiologies.

Key Words: Bone scintigraphy, ^{99m}Tc -MDP, extraosseous uptake of bone agent.

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Bone scintigraphy plays an important role in the evaluation of metastatic bone disease. Incidental extraosseous accumulations of bone agents have commonly been reported (1-4). This case report of suspected gastrointestinal (GI) bleeding seen on a bone scan demonstrates the importance of additional serial imaging when extraosseous abdominal accumulations are seen.

CASE REPORT

A 63-yr-old white male was admitted to the hospital with complaints of abdominal pain and diarrhea for two months. The patient had a heme-positive stool at the time of admis-

sion. After extensive negative clinical work-up of the chest and abdomen, a bone marrow biopsy demonstrated metastatic involvement secondary to carcinoid tumor. However, the location of the primary tumor was not identified. A 24-hr urine collection revealed an elevated 5-hydroxyindole acetic acid (5-HIAA) level, confirming carcinoid syndrome as the etiology for the patient's diarrhea. A computed tomography study showed no evidence of liver metastasis, which is often, but not always, associated with carcinoid syndrome (5). The patient was referred as an out-patient for a bone scan to rule out bone metastasis.

Whole-body bone scintigraphy was performed using technetium-99m (^{99m}Tc) methylene diphosphonate (MDP). Delayed whole-body imaging revealed extraosseous tracer activity in the area of the descending and sigmoid colon (Fig. 1). Additional serial imaging demonstrated progression of tracer activity from the area of descending and sigmoid colon toward the rectum (Figs. 2 & 3). As there was no evidence of free pertechnetate by imaging or chromatographic criteria,

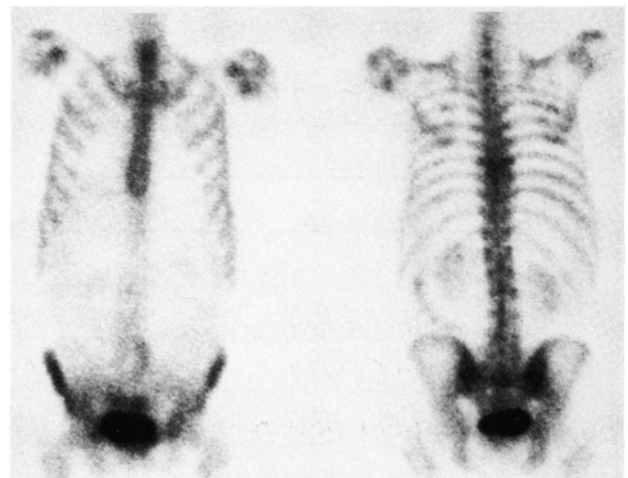


FIG. 1. Anterior and posterior whole-body bone images show extraosseous abdominal activity in a configuration consistent with descending colon and rectosigmoid.

For reprints contact: Michael T. Hackett, MSA, CNMT, Administrative Technologist, Nuclear Medicine Service (115), Veterans Affairs Medical Center, 1201 Broad Rock Blvd., Richmond, Virginia 23249.

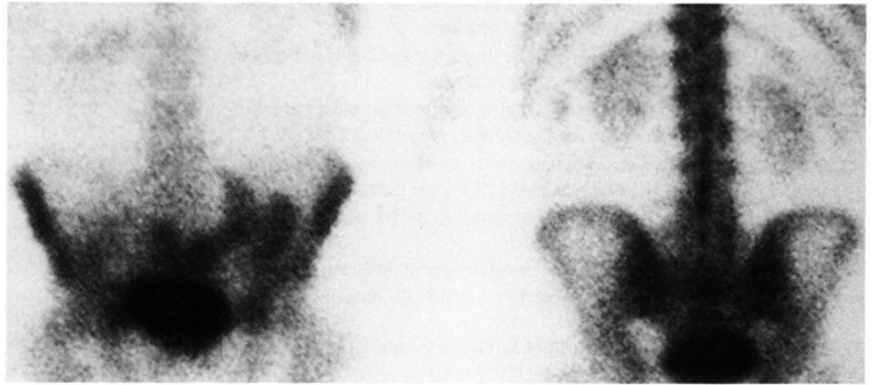


FIG. 2. Anterior and posterior static images obtained after whole-body images show progression of activity into distal descending colon and rectosigmoid.

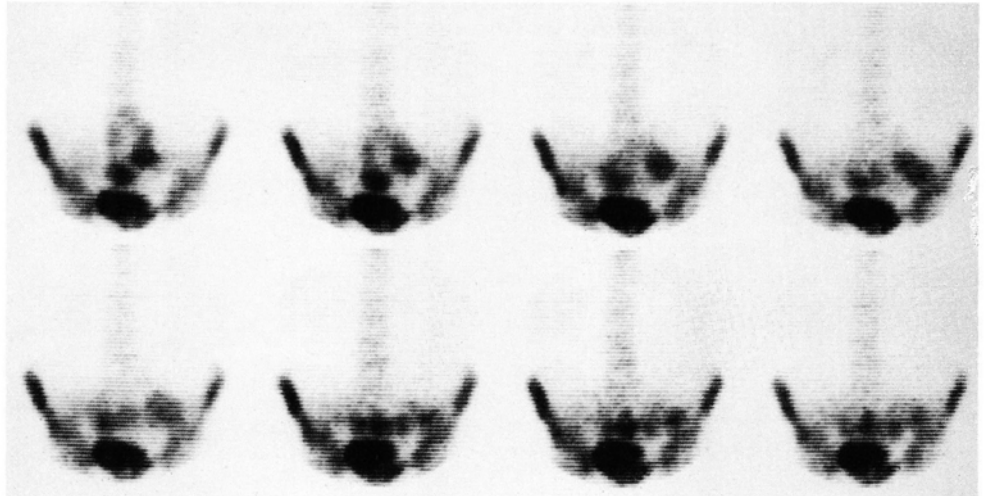


FIG. 3. Subsequent serial 1-min anterior images show continued progression of activity into rectosigmoid. Cine review of these images demonstrates tracer movement typical of a GI bleed.

nor reason to suspect a vesicoenteric/colic fistula, this pattern was highly suggestive of a gastrointestinal (GI) bleed. This finding was immediately conveyed to the referring physician; however, the patient refused any further diagnostic work-up that day. The patient remained clinically stable on follow-up. The bone scan also showed an area of increased uptake in the midthoracic spine, suspicious for metastasis (Fig. 1).

DISCUSSION

Carcinoid tumors are a class of neuroendocrine neoplasms that typically present as small, slow-growing masses. They are commonly found in the appendix, rectum, and the ileum but may arise in any of the foregut, midgut, or hindgut structures. Serotonin production is associated with carcinoid tumors and can be easily detected in the urine via its metabolite, 5-HIAA. Some patients with carcinoid tumors exhibit carcinoid syndrome, which may manifest as diarrhea and flushing (5,6).

Carcinoid tumors have been reported to metastasize to bone and can be demonstrated using bone scintigraphy (7-10). Also, carcinoid tumors have been associated with GI bleeding (11,12). There has been a report of utilizing ^{99m}Tc -labeled red blood cells to localize the site of bleeding from a carcinoid tumor (12).

Extraosseous ^{99m}Tc -MDP activity due to a variety of etiologies has been reported (1-4), as well as a case of GI bleeding detected on both bone and renal scintigraphy in a patient with a gastric ulcer (13). This case report demonstrates the importance of additional serial imaging of the abdomen when extraosseous activity is seen on bone scintigraphy. This can help differentiate focal uptake such as GI tract calcification/infarction (14-18) from dynamic patterns, including GI bleeding and vesicoenteric/colic fistulas (13,19-21). This distinction will give the referring physician the necessary information to obtain additional clinical and diagnostic follow-up to determine its cause.

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