

Colon Visualization in Bone Scintigraphy: Case Report

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A woman with squamous cell carcinoma of the uterine cervix, status post-irradiation therapy, was evaluated for skeletal metastasis. Technetium-99m hydroxy methylene diphosphate bone images showed an area of abnormal radiotracer localization in the left abdomen corresponding to the descending colon. Contrast radiographic study using gastrograffin enema confirmed a large colovesical fistula between the sigmoid colon and the urinary bladder. We believe that the presence of radiotracer accumulation in the bowel during a routine bone scintigraphy suggests communication between the urinary collecting system and the bowel.

Accumulation of bone imaging radiopharmaceuticals outside of the skeletal system is not uncommon and has been reported in a variety of organs and pathophysiologic states. Accumulation of radiopharmaceuticals in the bowel during the performance of a bone scan can result from a communication between the urinary collecting system and the bowel due either to a fistula formation (1-4) or as the result of a surgical procedure (5,6). We present a patient with uterine cervical cancer whose bone images showed abnormal radiotracer localization in the left abdomen laterally.

CASE REPORT

A 57-yr-old woman, who completed external and internal radiation therapy for Stage IIB squamous cell carcinoma of the uterine cervix 2 yr previously, was admitted to the hospital because of a four-day history of fecal contents within the vagina, a one-month history of abdominal and back pain, and moderate dysuria. She also complained of nausea, vomiting, and recent weight loss. Physical examination revealed a cachectic woman. On abdominal examination, local tenderness was elicited over the left lower abdomen with voluntary guarding. Computed tomography (CT) of the abdomen and pelvis showed the presence of the air within the urinary bladder and uterus. Bone scintigraphy using technetium-99m hydroxy methylene diphosphate (^{99m}Tc -HMDP) demonstrated abnormal radiotracer accumulation in the left side of

the abdomen and radiotracer accumulation in the urinary collecting system bilaterally (Fig. 1). Contrast radiographic examination by gastrograffin enema indicated a large colovesical fistula between the sigmoid colon and the urinary bladder (Fig. 2).

DISCUSSION

Normally about 50% of injected bone radiopharmaceutical is excreted from the kidneys by glomerular filtration; therefore, both kidneys and urinary bladder are visualized on a routine bone image. Incidental abnormal findings in the kidneys and urinary system during a routine bone scintigraphy have been reported (7). Accumulation of bone radiopharmaceutical in the bowel may indicate a communication between the urinary collecting system and the bowel. Surgical urinary diversion procedure after cystectomy for urinary bladder carcinoma is expected (5). Another expected observation of colon activity occurred after a uretersigmoidostomy (6). Unexpected bowel activity might be observed with fistula formation between the urinary collecting system and the bowel. A fistula opening in the bowel can be in any segment of intestine: large or small intestine. A fistula opening of the urinary collecting system can be at any level of the system—ureter or urinary bladder.

Colovesical fistulae are the most common type of abnormal communication between the urinary bladder and the gastroin-

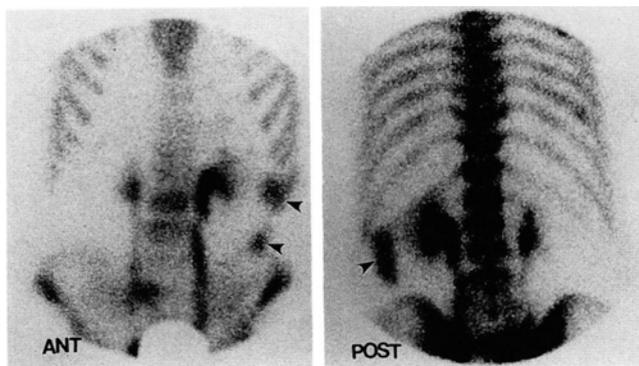


FIG. 1. Technetium-99m HMDP bone scintigrams, anterior and posterior views, show accumulation of radiotracer in the renal pelvis and ureter, bilaterally (worse on the left side), and abnormal radiotracer localization in the left side of the abdomen (arrowheads).

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FIG. 2. Gastrograffin enema examination shows contrast presence (arrows) in the communication between the sigmoid colon (SC) and the urinary bladder (UB) indicating colonovesicular fistula.

testinal tract, with most arising from the rectosigmoid colon (8). Sigmoid vesicular fistula formation, the situation in this case, is the most common cause of colon visualization (1-3). A fistula formation between ileum and bladder has also been

reported (4). A fistula formation has been a sequela of either bowel or bladder disease: carcinoma of bladder (1), carcinoma of prostate after irradiation therapy (2), squamous cell carcinoma of uterine cervix after irradiation therapy (3), or status post-left nephrectomy and splenectomy for Banti's disease (4). This patient, status post-irradiation treatment for uterine cervix cancer, developed sigmoid colon and urinary bladder communication.

In conclusion, bone scintigraphic demonstration of colonic activity suggests the possibility of a communication between the bowel and the urinary system.

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