

Demonstration of Uterine Leiomyoma on Bone Scan

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ABSTRACT

Background: Uterine Leiomyoma is a benign neoplasm that occurs from the overgrowth of smooth muscle and connective tissue in the uterus. A nuclear medicine scan is a sensitive indicator of metastatic bone diseases or other pathology. The diagnosis of uterine leiomyomas using nuclear medicine is straightforward, given the common clinical manifestations and typical imaging features.

Case presentation: A 45-year-old woman with a history of nasopharyngeal cancer was referred for a bone scan to assess for bone metastasis. Abnormal accumulation of radiotracer was shown in the pelvic cavity.

Conclusion: The differential diagnosis of the abnormal radioactivity included a sacral metastasis and a pelvic tumor with uptake of bone-seeking tracers. The ultrasonography of the pelvic cavity showed a huge uterine myoma with calcifications and cystic components. After the testing, a total abdominal hysterectomy was performed and multiple leiomyomata were confirmed by histopathologic examination.

Keywords: Bone Scan, Uterine Leiomyoma, Pelvic Tumor

INTRODUCTION

Uterine leiomyoma has been reported as an occasional cause of extraskeletal uptake of a bone-seeking agent in the pelvis [1-5]. The cause of tumor uptake of bone-seeking tracers is thought to be related to dystrophic calcification [6]. In dystrophic calcification, the mechanism appears to be the loss of intracellular calcium in the injured cells resulting in an increased calcium-binding capacity.

CASE REPORT

The bone scan was performed three hours after an intravenous injection of 740MBq (20mCi) Tc-99m methylene diphosphonate (MDP) into a 45-year-old woman with a history of nasopharyngeal cancer. Abnormal accumulation of radiotracer was shown in the pelvic cavity (arrow) and it was separated from a concave urinary bladder (**Figure 1**). The differential diagnosis of the abnormal radioactivity included sacral metastasis and

a pelvic tumor with uptake of bone-seeking tracers. The patient presented with vaginal spotting, dyspareunia, dysmenorrhea, and urinary urgency. Physical examination showed pale conjunctiva and a palpable mass in the lower abdomen. Laboratory data revealed a reduction of hemoglobin to 8.6 g/dl (normal range, 12 to 14 g/dl).

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Then ultrasonography was arranged to evaluate the pelvic mass, which demonstrated a heterogeneous hypo-echoic mass with calcifications and cystic components. It originated from the uterus and was approximately 11.0 x 10.0 x 9.7 cm in size (**Figure 2**). The patient underwent total abdominal hysterectomy for the uterine mass. The uterus measured 16.6 x 12.1 x 7.1 cm and weighed 801 gm. The histopathologic diagnosis revealed multiple intramural and subserous leiomyomata of the uterus. The largest measured up to 7 cm in diameter. The bone scan was repeated after the hysterectomy. The previous extraskelatal uptake of MDP in the pelvic cavity disappeared and the shape of the urinary bladder was normal (**Figure 3**).

DISCUSSION

Incidental extraskelatal uptake of bone-seeking tracers on bone scans is occasionally seen. Soft tissue uptake must be differentiated from bone pathology [7]. Additionally, normal renal uptake and excretion of bone-seeking agents

allow for gross visualization of the genitourinary system and provide useful diagnostic information. Retroperitoneal or pelvic masses should be suspected if abnormalities in the location or contour of urinary bladder are present [7-11]. Obtaining a relevant clinical history and laboratory data is helpful to clarify the incidental extraskelatal uptake of bone-seeking tracers.

COMPETING INTERESTS

The authors declare they have no conflict of interests in publishing this case study.

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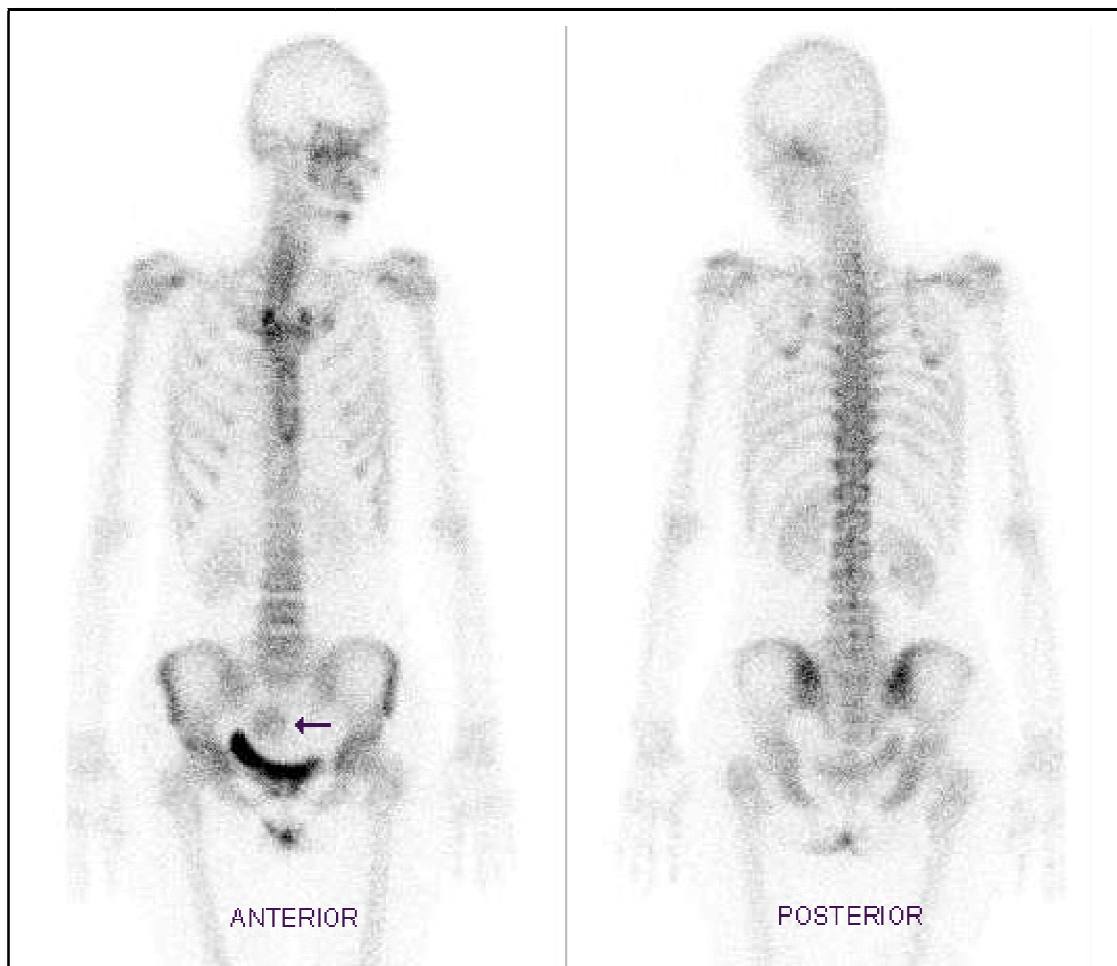


Figure 1. Abnormal accumulation of radiotracer was showed in the pelvic cavity (arrow) and it was separated from a concave urinary bladder.

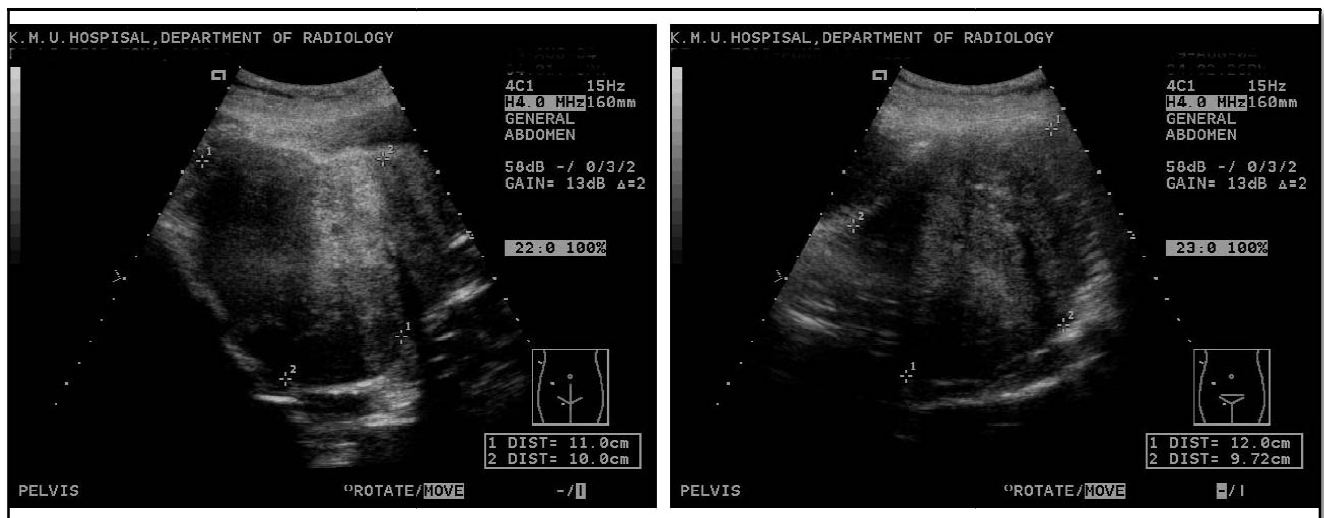


Figure 2. The ultrasonography of pelvic cavity demonstrated a heterogeneous hypo-echoic mass with calcifications and cystic components. It originated from the uterus and was approximately 11.0 x 10.0 x 9.7 cm in size.

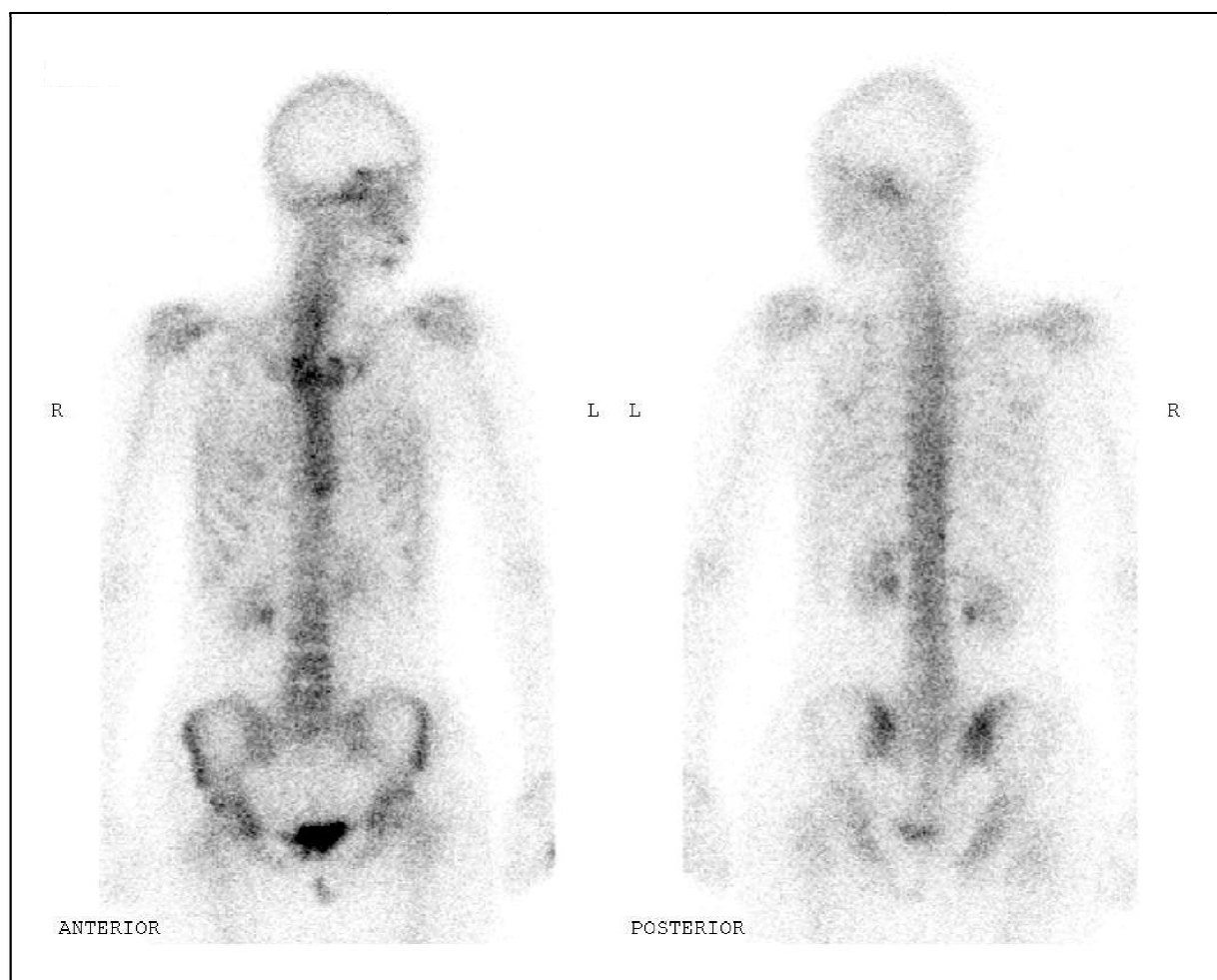


Figure 3. The previous extraskelatal uptake of MDP in the pelvic cavity disappeared and the shape of urinary bladder was normal.

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