jnm/CASE REPORT

INTENSE UPTAKE OF ^{99m}Tc-DIPHOSPHONATE BY AN EXTRAOSSEOUS NEUROFIBROMA

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Increasing experience in the use of ^{99m}Tc phosphate complexes for bone scanning has brought to light several instances in which these agents have been concentrated by a number of pathologic entities having no known association with bone and not characterized by osteoblastic activity. In one patient, a skeletal scan was done because of previous diagnosis of adenocarcinoma of the prostate. Abnormal uptake was noted in the distal right thigh. Surgical exploration of the area revealed a mass buried in the sheath of the sciatic nerve. Histologic examination revealed that the lesion was a neurofibroma. Histologic evidence for calcification or ossification was not found.

For the correct interpretation of a bone scan performed with ^{99m}Tc it is important that the physician concerned with nuclear medicine be aware of extraosseous uptake of technetium–phosphate complexes. Such a situation is illustrated by the case of a patient who had a neurofibroma in the soft tissues of the thigh. There was no microscopic evidence of calcification in the tumor and the tumor was not attached to bone, but uptake of technetium sodium ethane-1-hydroxy-1,1-diphosphonate (^{99m}Tc-diphosphonate) was intense.

CASE REPORT

A 69-year-old man was referred to the nuclear medicine laboratory for a scan of the skeleton. In 1963, multiple foci of a Grade 2 adenocarcinoma of the prostate were identified histologically from biopsy material obtained during transurethral resection. The patient was thereafter treated with diethylstilbestrol and he has remained symptomatically well with neither clinical nor laboratory evidence of metastases. At the time of this admission, a radiologic skeletal survey was negative for metastases and the acid phosphatase value was within normal limits. Isotope scans using a Model 84 Ohio-Nuclear twin-headed rectilinear scanner in the 1:5 reduction mode and a maximum information density of 250 counts/cm^2 over the dorsal spine were performed 4 hr following the intravenous injection of 15 mCi of ^{99m}Tc-diphosphonate. The films, which were developed and inspected before the patient was released from the laboratory, were interpreted as showing an abnormal accumulation in the lower one-third of the right thigh. Because this did not appear on the an-

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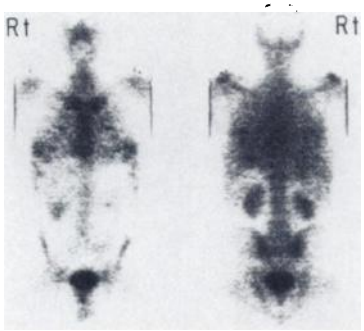

FIG. 1. Skeletal scintiphotos showing uptake of ^{99m}Tc-diphosphonate. (Left) anterior (normal); (Right) posterior, with area of abnormal uptake in right thigh.

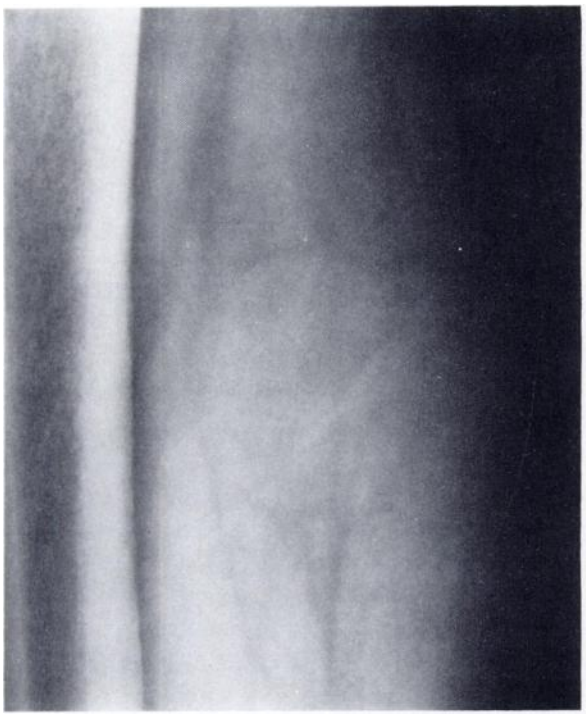

FIG. 2. Lateral radiograph of posterior right thigh showing spherical outline of lesion in soft tissues.

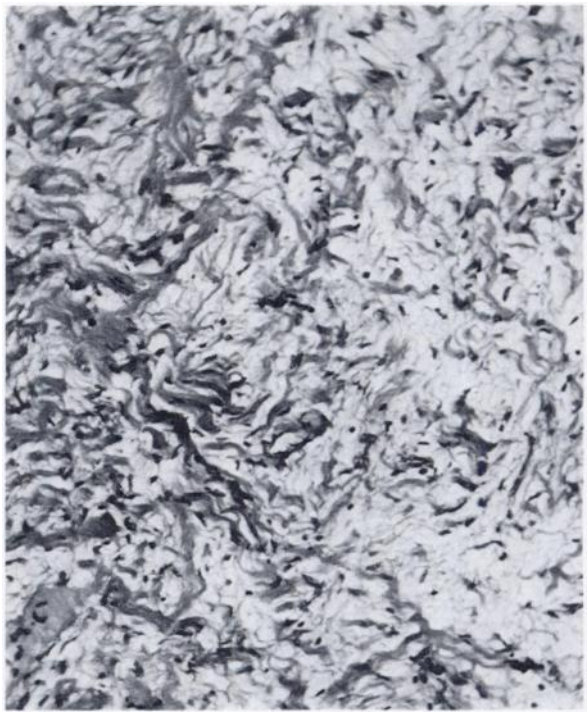

FIG. 3. Photomicrograph of tumor interpreted as neurofibroma. (Orig. magn.: × 160; present magn.: 62.40.)

terior view and was quite prominent on the posterior scan, this accumulation was attributed to activity in the soft tissues of the thigh or spillage of urine on the skin rather than uptake by bone (Fig. 1). Palpation of the area while the patient was in the laboratory revealed a previously unidentified mass (diam about 5 cm). The mass was located deeply in the soft tissues (Fig. 2) and was freely movable from side to side and, to a lesser extent, up and down. Following washing of the skin, the scan was repeated; it showed that the abnormal accumulation was still present.

Surgical exploration of the lower one-third of the posterior part of the right thigh revealed a mass (dimensions, 5.5 × 5 × 5 cm) buried in the sheath of the right sciatic nerve. The mass was not attached to the femur at any point and it was enucleated after incision of the nerve sheath. Histologic examination revealed that the tumor was a neurofibroma (Fig. 3). In view of the unexpected uptake of ^{99m}Tc-diphosphonate by this neoplasm, special stains were used to determine whether calcification or ossification might be present; use of the Von Kossa technique failed to identify calcium. Physical examination disclosed no evidence for other neurofibromas and there was no family history of tumors of this type.

DISCUSSION

Increasing experience in the use of the ^{99m}Tc-phosphate complexes has brought to light several instances in which these agents have been concentrated intensely by a variety of pathologic entities having no association with bone and not characterized by osteoblastic activity. Increased uptake has been described in cases of lung cancer, malignant lymphoma, brain tumor, metastatic embryonal cell cancer (*1*), and a cerebral infarct (*2*). This report adds another pathologic entity to the list of extraosseous lesions associated with uptake of ^{99m}Tc-phosphate.

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