

Unusual Bone Scintigraphic Finding of Metastasis from Prostatic Cancer

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ABSTRACT. In a patient with prostatic cancer, bone scintigraphy using ^{99m}Tc -phosphorus compounds showed markedly increased in the entirety of a left tibia and foot bone, while bone roentgenography could not show clearly metastatic change. The metastatic lesion of present case occurred in the tibia, which is a rare site of metastasis from prostatic cancer. Differential diagnosis should include Paget's disease and acute osteomyelitis.

Key words : Bone scintigraphy — Prostatic cancer — Paget's disease — Acute osteomyelitis

Whereas a 30% to 50% change in the mineral content of bone is necessary before it is possible to detect a bone lesion on X-ray films,¹⁾ bone scintigraphy using ^{99m}Tc -phosphorus compounds is capable of revealing bone lesions at an early stage of metastasis.²⁻⁴⁾ It is for this reason that bone scintigraphy is particularly valuable for the diagnosis of bone metastasis which occurs with high frequency in prostatic cancer. We report a case in which diffuse uptake over the entire left tibia was observed by bone scintigraphy, while a picture of metastasis characteristic of that originating from prostatic cancer did not appear in roentgenograms for several months.

CASE REPORT

The patient was a 73-year-old man. He was diagnosed as having anaplastic cancer of the prostate in August of 1974. After undergoing a bilateral orchiectomy, the patient received hormone therapy. No abnormalities were recognized in two subsequent bone scintigraphic examinations.

The patient complained of pain and numbness in the left leg, and was hospitalized in February of 1977 due to the presence of abnormally high alkaline phosphatase and acid phosphatase level.

Roentgenography revealed thickening of the cortical bone of the tibia, and a periosteal reaction was suspected (Fig. 1a). However, intense abnormal uptake was recognized over the entire left tibia in bone scintigrams (Fig. 1b). Diffuse osteoporotic changes noted one month later in roentgenograms of the left

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Fig. 1 a. Bone X-ray showed thickening of the cortical bone of the tibia.

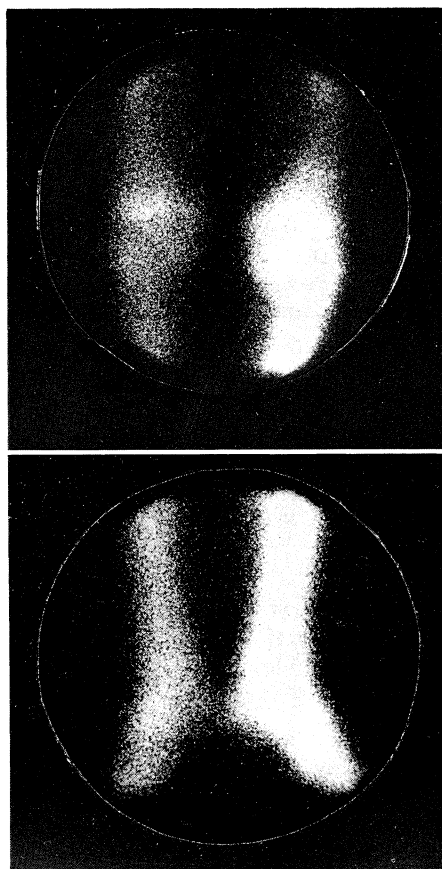


Fig. 1 b. Bone scintigraphy showed markedly increase activity in the entire left tibia and foot bone.

tibia suggested metastasis (Fig. 2).

On roentgenogram, definite osteosclerotic clouds appeared in the tibia, fibula and tarsus (Fig. 3), six months after the appearance of abnormalities on the initial bone scintigram.

DISCUSSION

Bone metastases from prostatic cancer are often visualized as multiple hot spots by bone scintigraphy or as diffuse symmetrical lesions by so-called super-bone scan. Cases of bone metastases from prostatic cancer in which uptake is observed over the entirety of a single long bone are seldom experienced. Usually when scintigraphic uptake is localized in one long bone, metabolic bone diseases, especially hyperparathyroidism or Paget's disease, is indicated rather than metastasis. The obvious abnormal uptake over the entire tibia shown by bone scintigraphy in the present case closely resembled findings typical of Paget's disease⁵⁾ and was clearly different from the usual scintigraphic uptake observed



Fig. 2. Bone X-ray showed diffuse osteoporotic change in the left tibia.

in cases of bone metastasis from prostatic cancer. It is worth noting that Paget's disease is extremely rare in Japan and is usually discovered by chance during the observation or treatment of another disease. The lesion diagnostic of Paget's disease is most often detected by bone scintigraphy. Interestingly, Dokoh *et al.*⁶⁾ reported one case among 15 cases of Paget's disease that was complicated with prostatic cancer. This fact, along with the obvious scintigraphic uptake, especially over one entire long bone, gave ample evidence of Paget's disease. However, roentgenography revealed neither the usual irregular bone destruction accompanying cortical thickening nor the localized osteosclerosis typical of Paget's disease. In addition, the bending of bones which occurs in the pathogenesis of long bones was not observed throughout the entire course of the present case. Furthermore, acute osteomyelitis should be ruled out, since the bone scan showed the increased activity in entire of affected long bone in the early stage of acute osteomyelitis before the abnormality on roentgenogram became evident.

The metastatic lesion of present case occurred in the tibia, which is a rare site for metastasis from prostatic cancer. Therefore, differential diagnosis of diffuse long bone activity should include Paget's disease and acute osteomyelitis.

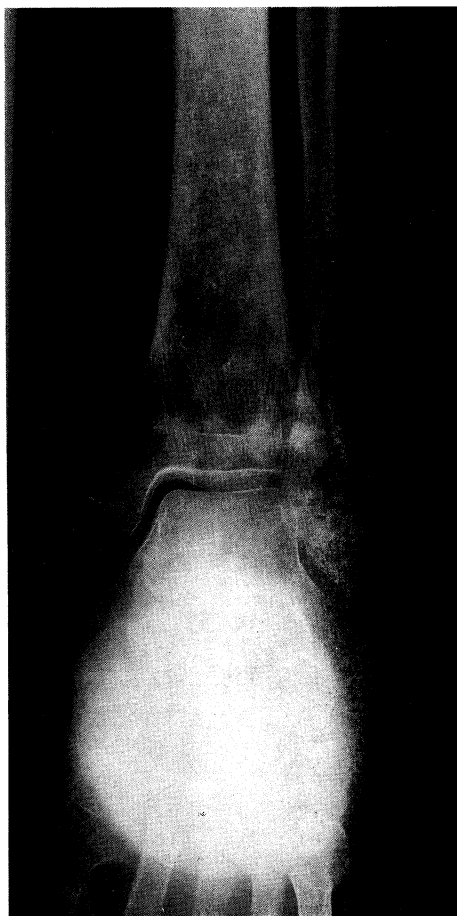


Fig. 3. Bone X-ray showed osteosclerotic change in the left tibia fibula and tarsus.

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