
Multiple Extra-Bone Accumulations of Technetium-99m-HMDP

Hiroo Ikehira, Yoshiaki Furuichi, Masaki Kinjo, Yoshikazu Yamamoto and Tadashi Aoki

Departments of Radiology and Surgery, Kawatetsu Chiba Hospital, Chiba, Japan

Bone scintigraphy was performed on a woman 2 y and 10 mo after surgery for rectal cancer. Intense extra-bone accumulations of ^{99m}Tc -HMDP were visible in an aortic atherosclerosis lesion and in a metastatic liver tumor. Uptake in the metastatic lesion was confirmed by x-ray CT. Uptake in the aortic lesion was shown as typical calcification by x-ray CT.

Key Words: technetium-99m-HMDP; extra-bone accumulation; metastasis; atherosclerosis

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Technetium-99m-labeled phosphate bone scanning agents are used for detecting reactive bone lesions. There are many reports of extra-osseous accumulation. These reports are usually due to extra-osseous calcification.

CASE REPORT

An 81-y-old woman with a history of rectal cancer was referred for possible bone metastasis. Whole-body bone scintigraphy images were obtained using a high-resolution parallel-hole collimator following injection of 740 MBq ^{99m}Tc -HMDP. X-ray CT was performed with a 10-mm slice thickness.

Figure 1 shows an anterior whole-body scintigraphic bone image. This image shows striking hepatic tumor and abdominal accumulations. Figure 2 is the posterior whole-body scintigraphic bone image acquired at the same examination. There is a hot spot on the left 12th rib bone, possibly a bone metastasis.

Figure 3A and B are x-ray CT images at the levels of the liver and middle abdomen, respectively. A large hepatic metastasis and typical calcification of the abdominal aorta and iliac arteries are visible.

DISCUSSION

The use of ^{99m}Tc -labeled HMDP or MDP for bone scintigraphy in skeletal tumors is well established and uptake in a variety of soft-tissue malignancies has been reported (1–5). The

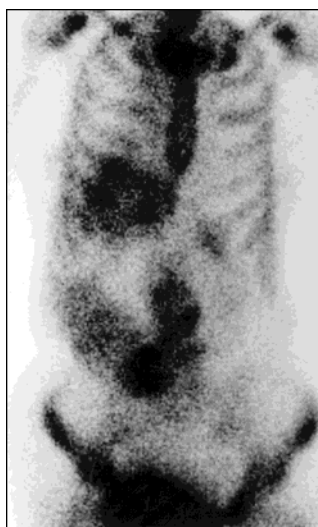


FIGURE 1. Anterior whole-body scintigraphic bone image. This image shows uptake in a known hepatic metastasis and an abdominal accumulation.

concentration of ^{99m}Tc diphosphonate in calcifications has been reported (6–8). This case demonstrates accumulation in both a hepatic metastasis and an abnormal arterial calcification.

The exact mechanism for soft-tissue uptake of bone-seeking radiopharmaceuticals is not established, although there are

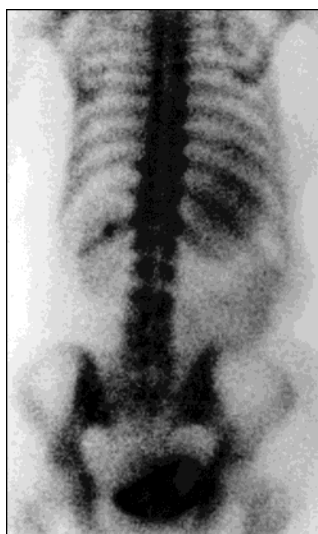


FIGURE 2. Posterior whole-body scintigraphic bone image acquired at the same examination as in Figure 1. There is a hot spot on the left 12th rib bone.

For correspondence or reprints contact: Dr. Hiroo Ikehira, Dept. of Radiology, Kawatetsu Chiba Hospital, 1-11-2, Minamicho, Chuo-ku, Chiba-shi, Chiba-ken, 260-0842, Japan.

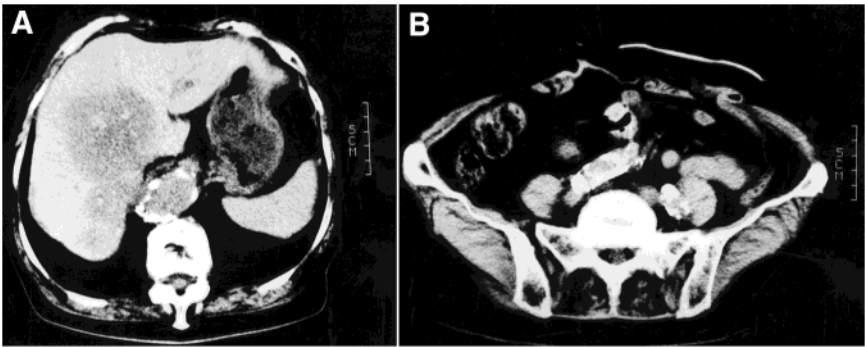


FIGURE 3. X-ray CT images at the level of (A) the liver and (B) the middle abdomen. A large hepatic metastasis is visible. Typical calcification of the abdominal aorta and iliac arteries is visible also.

many explanations for the accumulation in calcifications and malignant tissues. In this case there were multiple accumulations of ^{99m}Tc -HMDP.

Care is needed to differentiate multiple extra-osseous accumulations in an individual patient, especially when metastatic lesions are known to be present. The uptake in the calcified abdominal aortic aneurysm could have been mistaken for another liver metastasis.

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