

The Usefulness of Bone Scintigraphy in the Detection of Hypertrophic Pulmonary Osteoarthropathy

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ABSTRACT. In a patient with lung cancer, increased accumulation in both lower legs on bone scintigraphy with ^{99m}Tc -hydroxymethylene diphosphonate was confirmed radiographically to be hypertrophic pulmonary osteoarthropathy.

A characteristic scintigraphic pattern of radionuclide accumulation could be distinguished from bone metastasis.

Key words : bone scintigraphy —
hypertrophic pulmonary osteoarthropathy — bone metastasis

Hypertrophic pulmonary osteoarthropathy (HPO) is a syndrome consisting of clubbing of the fingers and toes, arthritis, and periostitis with bone tenderness. It is usually associated with intrathoracic neoplasms¹⁾ and HPO has been found in 4-12% of patients with lung cancer.²⁾

Recent reports have described the usefulness of bone scintigraphy in the detection of HPO.³⁻⁸⁾ We describe a patient with lung cancer in whom the diagnosis of was primarily suggested by bone scintigraphy.

CASE REPORT

The patient was a 62-year-old woman. She had a three-month history of non-productive cough, general fatigue, weight loss and low grade fever. On admission physical findings were negative except for moderate clubbing of the fingers. Also, joint pain was not noticed. A chest radiograph revealed a large mass in the left lower lobe (Fig. 1). A bronchial brush biopsy containing non-small cell carcinoma consistent with primary neoplasma of the left lung was obtained. Bone scintigraphy showed periosteal concentration along the femoral and tibial shafts as well as increased uptake in both wrists (Fig. 2). However, multiple hot spots suggestive of bone metastasis were not seen. Additional radiographs confirmed the existence of a periosteal reaction consistent with HPO (Fig. 3).

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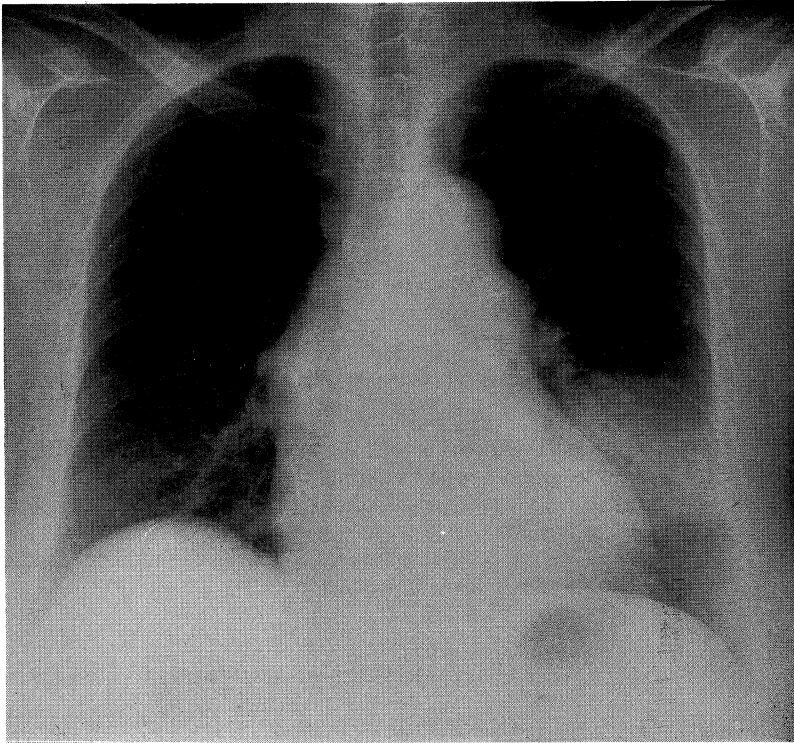


Fig. 1. A chest radiograph showed a large abnormal shadow in the lower lobe of the left lung.

DISCUSSION

Although skeletal metastasis is recognized in all kinds of malignant tumors, it is also known that lung cancer has a high frequency of bone metastasis, and bone scintigraphy is very useful in making such a diagnosis.^{9,10)}

In this patient, bone scintigraphy was performed in order to detect occult bone metastasis. However, the bone scintigraphy findings were suggestive of a diagnosis of HPO rather than one of bone metastasis. The scintigraphic pattern associated with HPO is characterized by abnormal linear activity along the cortical margin of the tubular bones of the extremities. On the other hand, metastatic lesions show irregular, focal, asymmetrical accumulation in central skeletons on bone scintigraphy.

An accurate and differential diagnosis of HPO from bone metastasis is essential, since directed treatment is quite different. Several reports have suggested that differentiation of HPO from bone metastasis may be difficult.^{11,12)} However, in regard to diagnosis, bone scintigraphy provides more useful information because the radionuclide distribution of these two conditions is entirely different.

HPO has been reported to improve after radiation treatment to the primary tumor.^{7,13)} Therefore, bone scintigraphy might be applicable in evaluating and monitoring the response to treatment. Thus, it was shown that bone scintigraphy in patients with lung cancer is useful in the diagnosis of not only bone metastasis but also HPO.

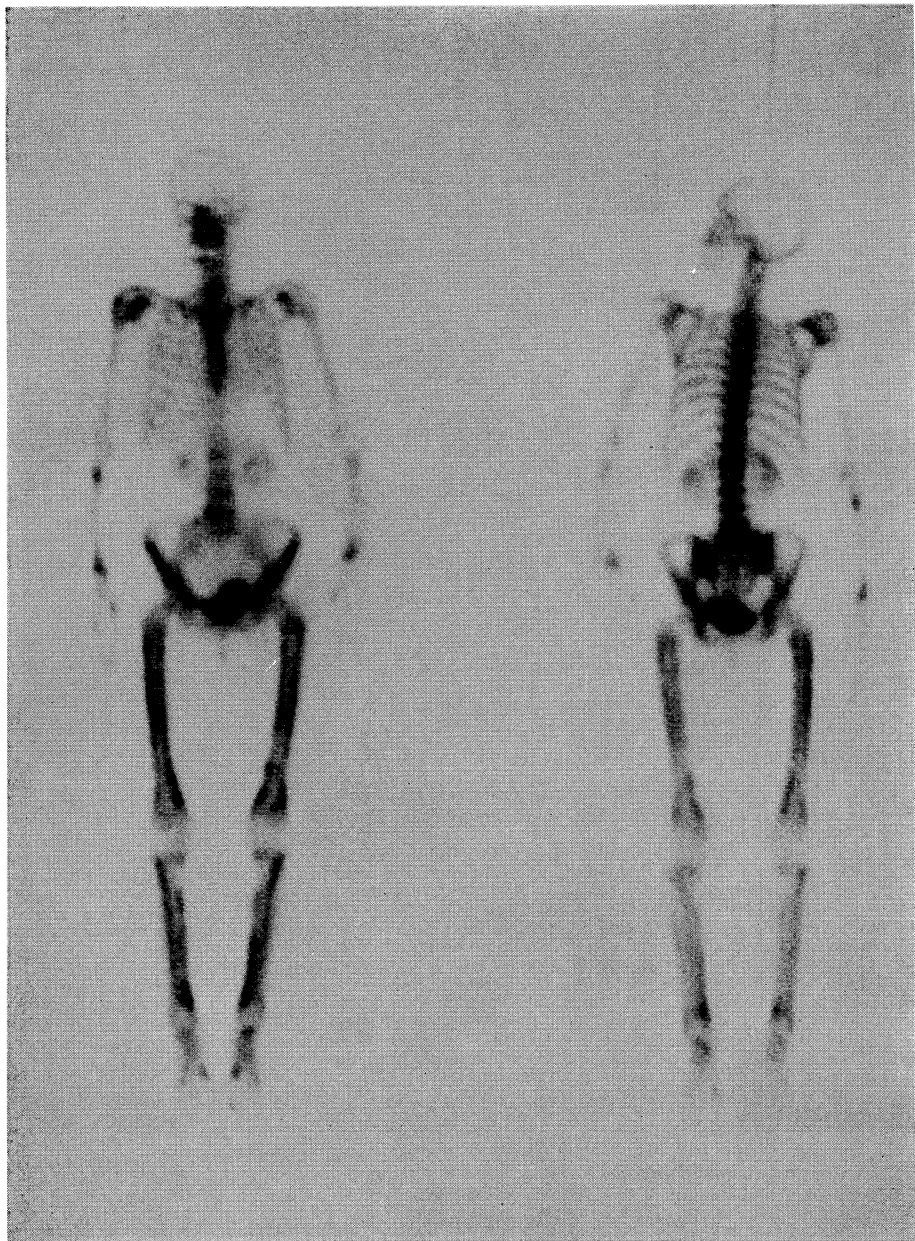


Fig. 2. Bone scintigraphy showed increased pericortical concentration along the femoral, tibial, and fibular shafts.



Fig. 3. A radiograph of the tibia and fibula showed periosteal new bone formation.

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