

— Interesting Image —

당뇨병 환자에서 Tc-99m MDP 신티그라피에서 관찰된 하지 혈관의 석회화

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Vascular Calcification of the Lower Extremities Demonstrated by Tc-99m MDP Bone Scintigraphy in a Patient with Diabetes Mellitus

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A 78 year-old woman was admitted for non-insulin dependent diabetes mellitus. She had hypertension and peripheral neuropathy. She underwent Tc-99m MDP bone scintigraphy for evaluation of osteomyelitis of the left foot. Anterior and posterior images of the bone scintigraphy demonstrated bilateral linear or curvilinear patterns of increased activities medial to the femurs and tibias (Fig.1 A, B). On the image where the activity was controlled at the window level, the activities medial to the tibias were visualized more prominently (Fig.1 C).

The femoral vessels are sometimes visualized on bone scintigraphy.¹⁻³⁾ This is almost always caused by calcification of the femoral artery associated with atherosclerotic changes of the arterial wall.^{2,3)} Vascular calcification is frequently seen in the elderly and in diabetics. The activity

of femoral vessels increases with age.³⁾ In contrast, the degree of lower limb vascular calcification is not related to age or type of the patients with diabetes mellitus.⁴⁾

The primary mechanism of diphosphonate uptake by bone is chemisorption, which occurs via chemical bonding at kink and dislocation sites on the surface of hydroxyapatite crystals. Most tissue calcification is in the form of hydroxyapatite. Soft tissue calcification is an important causal factor in the uptake of Tc-99m MDP. Silverstein et al confirmed that Tc-99m phosphate uptake in tissues is proportional to their calcium contents.⁵⁾

In this patient with diabetes mellitus, tibial arteries as well as femoral arteries were visualized on Tc-99m MDP bone scintigraphy in contrast with visualization of femoral artery alone observed in the elderly. On the subsequent plain radiography, calcification of the femoral and tibial arteries and their branches were demonstrated (Fig. 2).

Received Mar. 21, 2001; accepted Mar. 21, 2001

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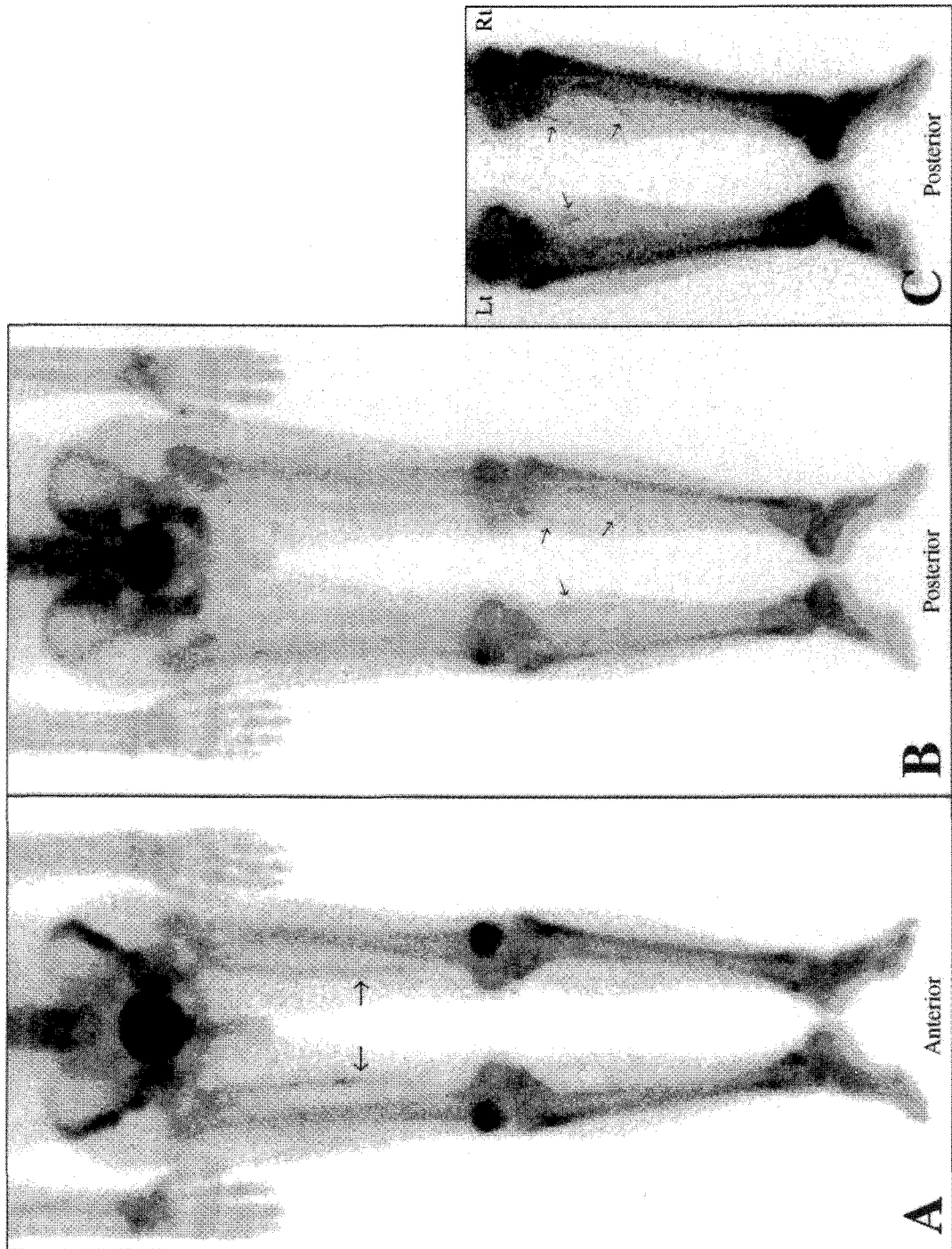


Fig. 1. Anterior (A) and posterior (B) images of the bone scintigraphy demonstrate bilateral linear or curvilinear patterns of increased activities medial to the femurs (large arrows) and tibias (small arrows). On the image where the activity is controlled at the window level (C), the activities medial to the tibias are visualized more prominently (small arrows).

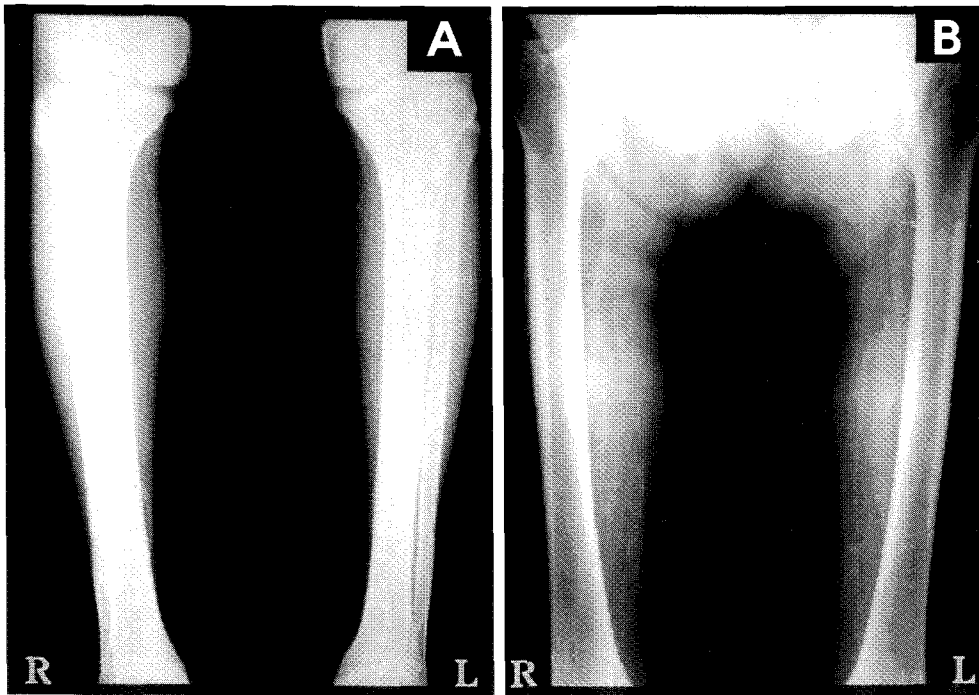


Fig. 2. Plain radiography of both femurs (A) and tibias (B) shows extensive calcifications in the femoral and tibial arteries and their branches.

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