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Case Report

Calciophylaxis on bone scan: correlation between molecular and cross-sectional findings

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ABSTRACT

Calciophylaxis is a rare devastating medical condition commonly associated with end-stage renal disease and characterized by extensive microvascular calcifications. We describe a case of calciophylaxis presenting on Tc-99m MDP bone scan imaging with asymmetric radiotracer uptake within the lower extremities corresponding to extensive soft tissue calcifications on Computed tomography. Familiarity with the classic clinical presentation and imaging features of this rare entity may help its early identification and treatment.

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Introduction

Calciophylaxis is a rare condition characterized by calcific uremic microangiopathy, a disease process in which extensive vascular calcifications are seen in the microvasculature, usually in the skin and subcutaneous fat. Systemic calciophylaxis refers to involvement of the visceral organs, such as the heart or the stomach. Calciophylaxis is reported in 1%-4% of patients with end-stage renal disease, and is occasionally seen with other disease processes such as multiple myeloma [1]. We describe a case of calciophylaxis detected on technetium-99m methyl diphosphonate (Tc-99m MDP) bone scan with correlative cross-sectional imaging findings.

Case report

A 65-year-old male with long-term end-stage renal disease and diabetes presented with a long-term nonhealing ulcer of

the right lower extremity and bilateral ankle pain of unclear etiology. A whole-body bone scan was obtained and demonstrated that diffuse increased soft tissue uptake thought to be contributed by delayed soft tissue clearance secondary to renal failure. However, there was asymmetric pronounced radiotracer deposition in the bilateral calves subcutaneous tissues more pronounced compared with the rest of the body soft tissue uptake (Fig. 1). Patient could not tolerate the single-photon emission computed tomography (CT) portion of the examination due to severe pain, so a low attenuation CT was obtained for further characterization of the planar images findings. CT images showed extensive subcutaneous and a few cutaneous calcifications corresponding to the areas of abnormal radiotracer uptake on bone scan (Fig. 2) pathognomonic for calciophylaxis in this patient with a classic presenting history of end-stage renal disease and nonhealing lower extremity ulcers. Skin punch biopsies of the right lateral calf and right shin were performed, and pathology showed ulcer with ischemic necrosis and underlying calcification of

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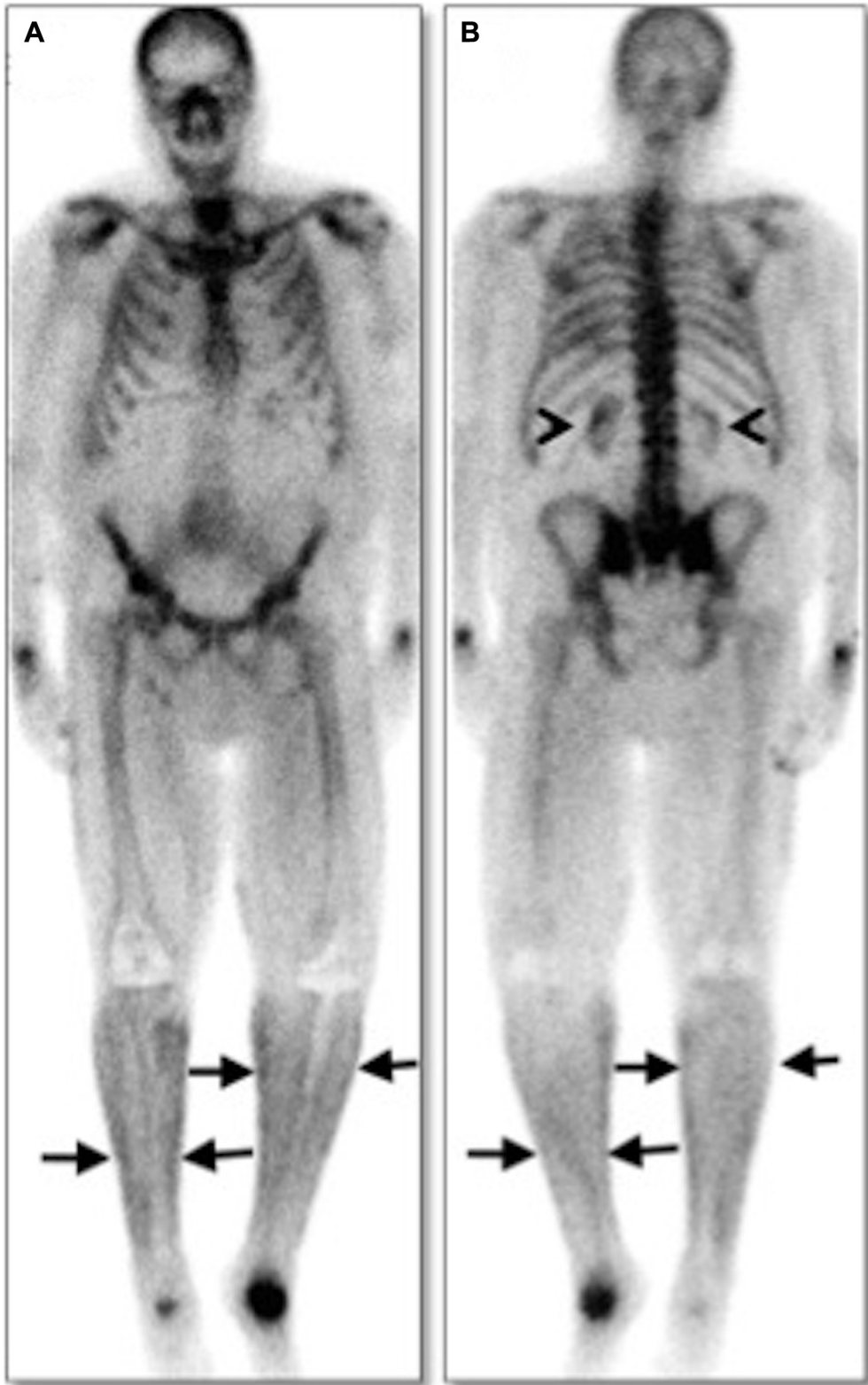


Fig. 1 – A 65-year-old male with end-stage renal disease (ESRD) and a long-term nonhealing ulcer of the right lower extremity. (A) Anterior and (B) posterior planar images demonstrate marked radiotracer uptake in the subcutaneous tissues of the lower extremities bilaterally, predominantly in the bilateral calves (arrows). There is faint activity in the diminutive bilateral kidneys (arrowheads) consistent with history of long-term renal failure. Incidental note of photopenia in the bilateral knees related to prior knee arthroplasties, and severe uptake in the left midfoot joints and to a lesser degree in the right midfoot joints secondary to degenerative changes.

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