

Differential diagnosis of a persistent tracer uptake in the paraspinal lumbar area detected by SPET and CT: an ureteral calculus?

To the Editor: A 58 years old male with hepatitis C and hepatocellular carcinoma underwent bone scintigraphy to evaluate possible bone metastases. The patient had a history of peptic ulcer and kidney stones. His family history was also prominent for kidney stones. Anterior and posterior planar whole-body scans (Hawkeye, General Electric Medical Systems, Milwaukee, WI, USA) were obtained 3h after administration of 795.5 MBq technetium-99m methylen diphosphonate (^{99m}Tc -MDP) intravenously (iv). Focal increased uptake in the right paraspinal region lateral to the L3 vertebra was demonstrated (Fig. 1A). Immediate subsequent single photon emission tomography (SPET) ^{99m}Tc -MDP images (Hawkeye, General Electric Medical Systems, Milwaukee, WI, USA) of lower abdomen and upper pelvis revealed intense focal uptake in the right paraspinal region, anterior and lateral to the inferior vena cava (Fig. 1B) corresponding to a calcification within the proximal right ureter shown also on the computerised tomography (CT) image of the abdomen (Fig. 2A). CT scan of the abdomen with and without i.v. administered contrast, demonstrated a 7mm calcification (arrow) within the proximal right ureter consistent with a ureteral calculus (Fig. 2A), as well as a 3mm stone in the left kidney. Subsequent ^{99m}Tc -MDP bone scans at 4 months and 13 months demonstrated persistent by increased tracer activity in the same area. The focal area of paraspinal tracer accumulation remained unchanged when compared to the previous studies (Fig. 2B).

Bone tracer uptake in a ureteral calculus is a very rare finding in MDP bone scan which has only been reported once [1] and persistency of uptake in our case is even more unusual. The mechanism of tracer uptake in bone is considered to be related to various factors including tracer reaction with organic and inorganic components of bone [2-5]. Accumulation of radionuclide due to sluggish flow and its absorption onto the crystal surface within the calculus, are possible mechanisms in this case [1]. In addition, as the position of the stone has remained unchanged and there was no evidence of significant obstruction, the stone could be within an ureteral diverticulum. Other than ureteral stone, there are several differential considerations for paraspinal calcification on CT scans such as: atherosclerotic calcification, vein-stone (phlebolith), dystrophic calcification following trauma, infection, or necrosis, an intra-abdominal fallen gallstone or attached intestinal stone. Previous history of kidney stones and twice lithotripsy, having a simultaneous stone in the other kidney, positive family history of kidney stones, no history of trauma in the area; all suggest the presence of an ureteral calculus in our case. We shall follow this patient in the future.

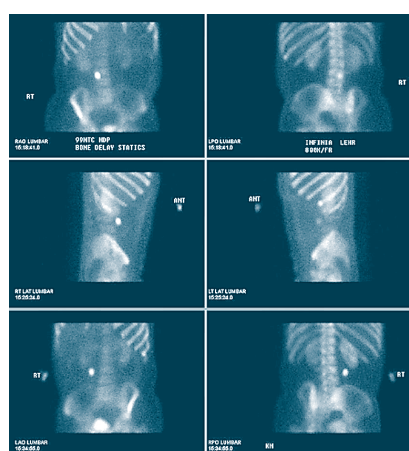
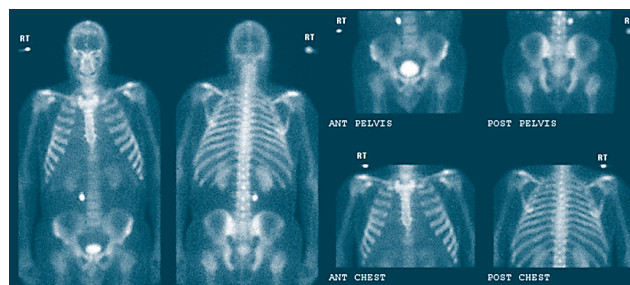


Figure 1A: Anterior and posterior whole-body scans demonstrated focal increased uptake in the right paraspinal region just lateral to the L3 vertebra. **B:** SPET ^{99m}Tc -MDP images of lower abdomen/upper pelvis revealed intense focal uptake in the right paraspinal region just anterior and lateral to the inferior vena cava.

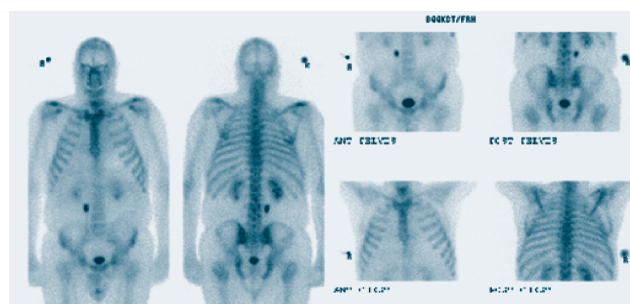
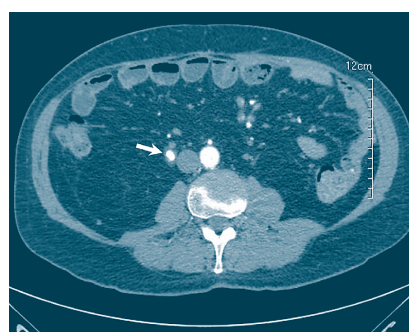


Figure 2A: Axial contrast-enhanced computed tomography of the abdomen demonstrated a 7-mm calculus in the right ureter (arrow). **B:** Anterior and posterior whole-body scans were performed after i.v. administration of 802.9MBq ^{99m}Tc -MDP. The focal area of paraspinal tracer accumulation was unchanged as compared to the previous scans, 13 months earlier.

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