

Superscan on both ^{99m}Tc -MDP and ^{153}Sm -EDTMP Bone Scans in a Patient with Breast Cancer

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Case Summary

A 64-year old woman with breast cancer was having severe exacerbating pain in her pelvic bones and lower extremities. She had a ^{99m}Tc -MDP bone scan which showed diffuse osseous metastases in a “superscan” pattern.

Anterior and posterior whole body images of a ^{99m}Tc -MDP bone scan show diffuse metastatic disease involving the entire axial and appendicular skeleton, a non-visible left kidney, a very faint right kidney and minimal tracer accumulation in the bladder, representing a superscan (a). A superscan is defined as a bone scan which demonstrates markedly increased skeletal radioisotope uptake relative to soft tissues in association with absent or faint genito-urinary tract activity [1]. While a superscan is relatively uncommon, its recognition is important, as it is associated with a number of important underlying diseases [2,3] (Figure 1a).

One month later the patient received 4.22 GBq (114 mCi) ^{153}Sm -EDTMP for palliation of severe bone pain. Post treatment, whole body ^{153}Sm -EDTMP scan was also a “superscan” showing very similar osseous metastases pattern to the ^{99m}Tc -MDP bone scan. Anterior and posterior whole body images 24 hours after intravenous administration of ^{153}Sm -EDTMP demonstrate diffuse osseous metastases in a very similar pattern with the prior bone scan. However on this scan both kidneys and the bladder were not visualized, consistent with a ^{153}Sm -EDTMP superscan (b). ^{153}Sm -EDTMP is used for relief of bone pain predominantly in breast cancer patients with painful osteoblastic skeletal metastases. ^{153}Sm has a half life of 46.3 hours and has a 103 keV gamma emission, suitable for scintigraphic imaging. Superscans on the conventional bone scintigraphy have been described both in metastatic and metabolic bone diseases, with differ-

ent patterns and appearances of radiotracer uptake [4-8] (Figure 1b). Presence of “superscan” both on conventional ^{99m}Tc -MDP bone scan and on the ^{153}Sm -EDTMP bone scan of the same patient with almost identical osseous metastatic pattern has yet not been reported. A superscan indicates the extensive presence of osseous metastases. A similar superscan pattern on both conventional and ^{153}Sm -EDTMP bone scans may indicate a better outcome for palliation of metastatic bone pain. All the lesions seen on conventional imaging will also be taking up the palliative bone treatment agent “ ^{153}Sm -EDTMP”, leading to efficient palliation of bone pain.

This case is unique with the presence of metastatic “superscan” both on conventional ^{99m}Tc -MDP bone scan and on the ^{153}Sm -EDTMP bone scan of the same patient.

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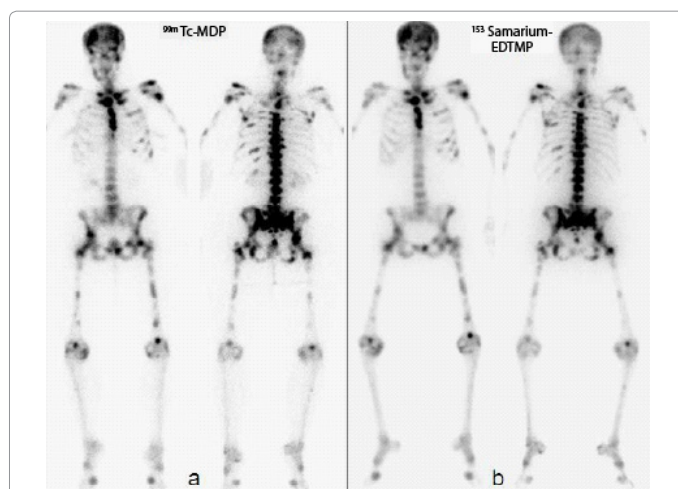


Figure 1: (a) Anterior and posterior whole body images of a ^{99m}Tc -MDP bone scan. (b) Anterior and posterior whole body images 24 hours after intravenous administration of ^{153}Sm -EDTMP.

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