# Rare Case of Diffuse Splenic Uptake on Methylene Diphosphonate Bone Scan in a Patient with Sickle Cell Disease

**Abstract**

Extraskeletal tracer uptake in methylene diphosphonate (MDP) bone scan is not a common finding. There have been several case reports in the literature showing diffuse splenic uptake in MDP bone scan. We present a case of sickle cell disease, which showed diffuse splenic uptake on MDP whole-body bone scan.

**Keywords:** *Methylene diphosphonate bone scan, sickle cell disease, splenic uptake*

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A 33-year-old female with a history of sickle cell disease presented to our hospital complaining of multiple joint pain involving bilateral knee and elbow joints. Diagnostic imaging including X-rays of knee and elbow joints was unremarkable. As she continued to complain of pain, a bone scan was advised. After the intravenous administration of 780 MBq of $^{99m}$Tc-methylene diphosphonate ($^{99m}$Tc-MDP), flow and blood-pool images of the joints were obtained, followed by delayed whole-body images. There was no abnormal tracer accumulation in the flow and pool images. Whole-body images showed diffuse increased radiotracer uptake in the left upper quadrant of the abdomen just superolateral to the left kidney, suggesting uptake in the spleen [Figure 1a and 1b, anterior and posterior images, respectively]. There was no other abnormal tracer accumulation in the whole-body images. The patient had undergone noncontrast abdominal computed tomography abdomen for pain abdomen previously, which showed heterogeneous calcification in the splenic parenchyma [Figure 1c-e, transaxial images].

Few theories have been believed for splenic uptake in sickle cell disease. One of them is microscopic calcium deposits that may not get detected radiographically, but can cause uptake of $^{99m}$Tc-MDP in spleen.[1] The other mechanism is hemosiderosis that occurs because of recurrent transfusion and increased deposition of iron from the sequestration of abnormal red blood cells within the spleen.[2,3] Besides sickle cell disease, multiple other causes of splenic uptake have also been described in the literature. They include malignant hematologic diseases;[4,5] recent gadolinium contrast agent injection;[6-8] alcoholic cirrhosis;[9] hypercalcemia;[10] hemochromatosis;[11] hypersplenism;[1] chronic hemolysis such as glucose-6-phosphate dehydrogenase deficiency or thalassemia;[12,13] splenic hemangioma;[14] splenic hematoma, infarction, abscess, or metastasis;[15] amyloidosis;[16] and renal failure.[10] Hence, we can infer that extraskeletal uptake in MDP bone scan is not a usual finding. However, it should be kept in mind that this finding can be of certain clinical significance and should not be ignored.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical



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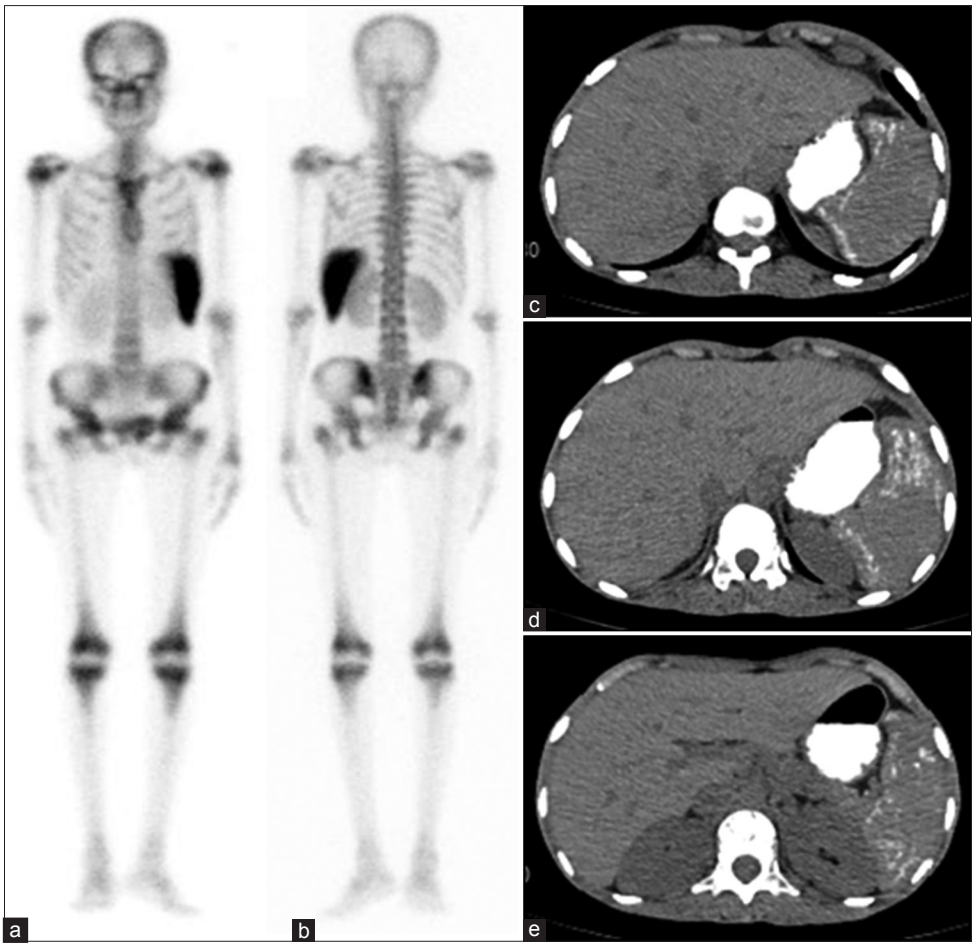


**Figure 1: Diffuse increased radiotracer uptake in the left upper quadrant of the abdomen just superolateral to the left kidney, suggesting uptake in the spleen (a: anterior and b: posterior images). Heterogeneous calcification in the splenic parenchyma on computed tomography abdomen (tranaxial images, c-e)**

information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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