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Case Report

Suprapatellar bursitis presenting as unilateral "Hot" patella sign on ^{99m}Tc-methylene diphosphonate skeletal scintigraphy

ABSTRACT

"Hot" patella sign is a less commonly seen finding in bone scintigraphy defined as increased tracer activity in the patella greater than the ipsilateral distal femur and ipsilateral proximal tibia. We present a case of suprapatellar knee bursitis manifesting as unilateral "hot" patella sign on three-phase ^{99m}Tc-methylene diphosphonate bone scintigraphy. This case portrays the image findings of suprapatellar bursitis on three-phase bone scintigraphy.

Keywords: Skeletal scintigraphy, suprapatellar bursitis, unilateral "hot" patella sign

INTRODUCTION

Bursae are fluid filled sacs lined by synovial membrane that reduce friction and cushion pressure points between muscles and skin, bones and tendons. They are usually present adjacent to joints. Suprapatellar bursa refers to synovial space located posterosuperior to patella in-between tendon of rectus femoris muscle and femur. It usually communicates with knee joint in most of the individuals.[1] Inflammation involving this bursa refers to suprapatellar bursitis.

CASE REPORT

A 52-year-old female presented to our department with dull aching pain in the left anterior knee for 4 days. On clinical examination, the pain was not associated with any external signs of inflammation along with an unrestricted range of motion in the left knee joint. Three-phase ^{99m}Tc-methylene diphosphonate (MDP) bone scintigraphy done for further evaluation revealed increased tracer activity in the suprapatellar region of the left knee (black arrows) in early anterior flow [Figure 1a], anterior blood pool images [Figure 1b] along with minimal increased tracer uptake in the corresponding left anterior knee region in the delayed whole-body image [Figure 1c] and planar static image [Figure 1d, black arrow]. Axial, sagittal, coronal computed tomography (CT) [Figure 1e-g] and fused single-photon emission CT/CT images [Figure 1 h-j] localize the increased tracer uptake in the left knee to patella along with fluid collection in the suprapatellar bursa (white arrows). No morphological abnormality is noted in the patella in the corresponding CT images. Based on scan findings of increased flow, blood pool activity in the suprapatellar region, a diagnosis of suprapatellar bursitis was considered. Increased osteoblastic activity involving patella predominantly along the superior rim in the delayed phase imaging is possibly due to reactive increased blood flow to the patella.

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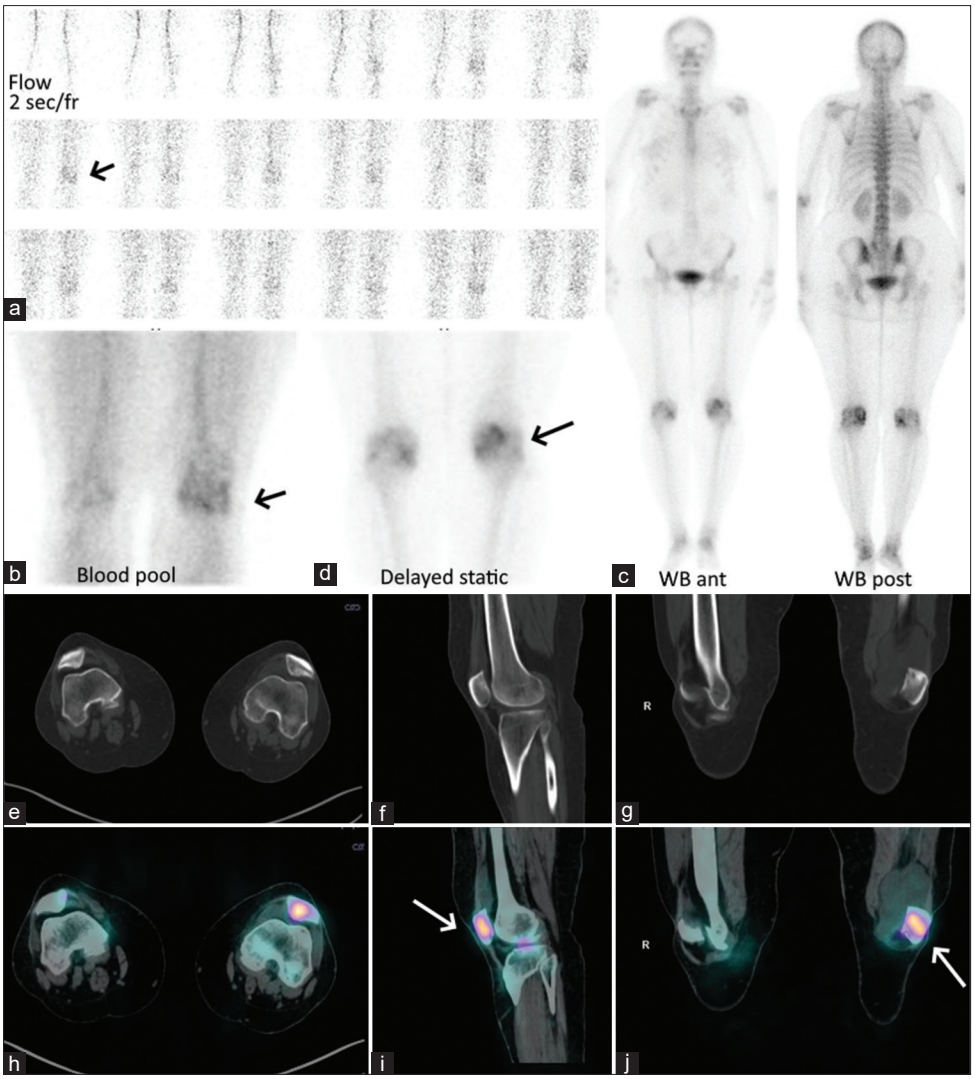

Figure 1: Three phase skeletal scintigraphy shows increased flow, (a) blood pool (b) involving the left suprapatellar region along with increased tracer uptake in the left knee in delayed images (c,d). SPECT-CT images (e-j) localize increased tracer uptake to left patella along with fluid collection in the left suprapatellar bursa.

DISCUSSION

Various other causes of "hot" patella sign include fracture, chondromalacia patellae, malignancy, Paget's disease, osteomyelitis, and patellofemoral arthritis following total knee replacement.[2-4] Chondromalacia patellae often presents as bilateral "hot" patella sign compared to other causes.[3] Patella bone can be site of primary bone tumor apart from metastatic spread from various cancers such as the breast, lung, kidney, esophagus, and cervix along with its involvement in multiple myeloma.[5,6] Absence of lytic-sclerotic component, erosions, osteophytes, and sclerosis on CT images along with fluid collection in the suprapatellar space in our case excludes mitotic disease, osteomyelitis, osteoarthritis, and Paget's disease favoring a diagnosis of suprapatellar bursitis. In addition, the absence of tenderness over the patella clinically excludes patellar osteomyelitis in our case. Even though monostotic Paget's disease can present as a unilateral "hot" patella sign, it presents with diffuse intense tracer uptake in the patella in the late phase of bone scan compared to our case.[7] Patellar metastases usually present as tracer avid lytic-sclerotic lesion involving part of the patella on ^{99m}Tc-MDP bone scan along with increased osteoblastic activity in rest of the lesions in the skeleton.[8] Ahmad *et al*. reported the association of "hot" patella sign with patellofemoral arthritis and anterior knee pain in the setting of total knee replacement.[9] Patients having "hot" patella sign in that study showed clinical improvement following secondary patellar resurfacing.

CONCLUSION

This index case emphasizes the importance of three-phase bone scan in musculoskeletal inflammation and lists out various other causes of "hot" patella sign along with its clinical significance on skeletal scintigraphy.

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 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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