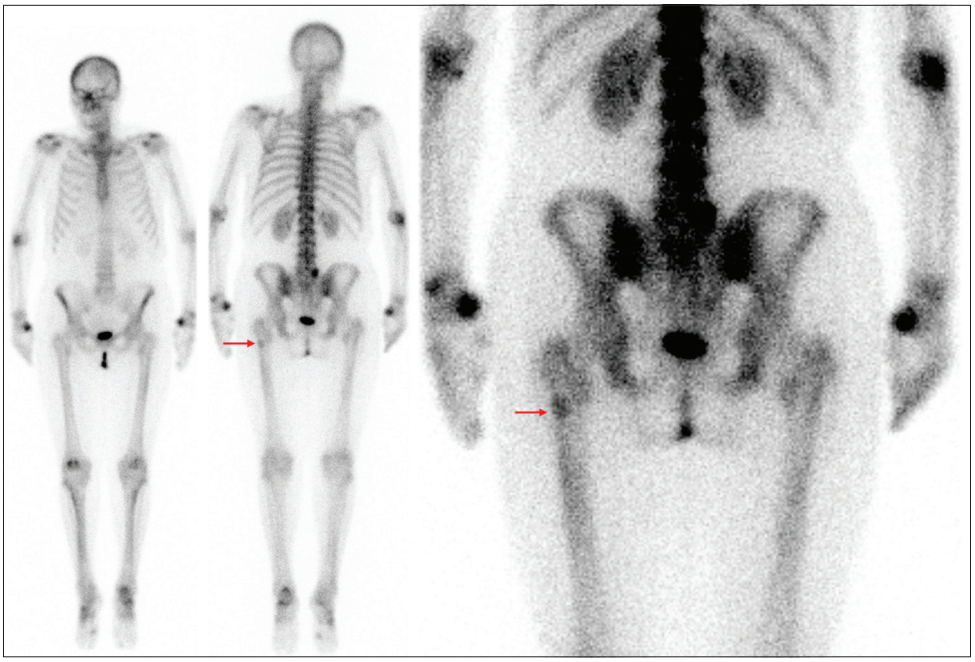

Figure 1: Bone scan showing increased uptake in the left proximal femur (arrow).

she denied any injury or fall. She was being monitored in the urology department for non-metastatic urothelial carcinoma of her bladder which was diagnosed and treated 3 years ago. With her background of bladder carcinoma, a ^{99m}Tc-MDP was undertaken to rule out metastatic disease which revealed a solitary focus of increased radiotracer uptake in the left proximal femora [Figure 1] on the posterior projection of the bone scan. An anteroposterior and lateral radiograph of the left proximal femur did not reveal any obvious bony lesions [Figure 2]. A high index of suspicion of a "tumor mimic" lead her to undergo magnetic resonance imaging (MRI). MRI revealed a T1 isointense and T2 hypointense focus involving the gluteus maximus tendon at its insertion suggestive of calcific tendinopathy. There was fluid and edema around the insertion of the gluteus maximus on fluid-sensitive sequences [Figure 3]. Clinical examination revealed no significant abnormalities. As the patient was not symptomatic, she was reassured about the findings and no specific treatment was given.

DISCUSSION

Radionuclide imaging plays a crucial role in the diagnosis, staging, treatment planning, and surveillance of patients with urothelial carcinoma of the bladder as with other cancers.[3]

Traditional scintigraphy with ^{99m}Tc-MDP is a highly sensitive method in detecting osseous abnormalities and is the standard of care in the evaluation algorithm of patients with suspected metastatic disease.[4] However, a lack of specificity and diagnostic accuracy can lead to erroneous diagnosis or misinterpretation.[5]

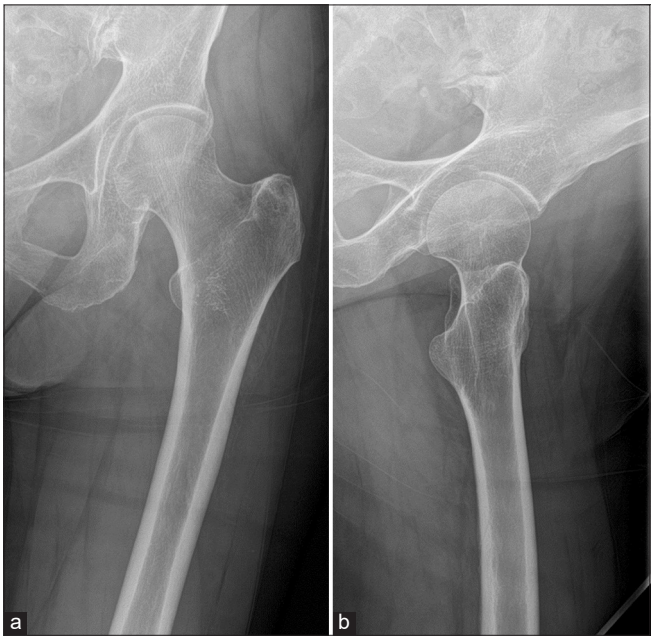

Figure 2: Anteroposterior (a) and lateral (b) radiographs of the left hip and femur did not reveal any calcification.

Calcific tendinopathy, also known as calcific tendinitis, is a well-known disorder of unknown etiology. It is commonly seen around the shoulder (supraspinatus/rotator cuff tendons) and the hip joint.[6] Although these can be asymptomatic with a self-limiting course, symptomatic calcific tendinitis at unusual sites (hip, knee, wrist, and elbow) has been reported in the literature.[7] Calcific tendinitis is a cell-mediated disease

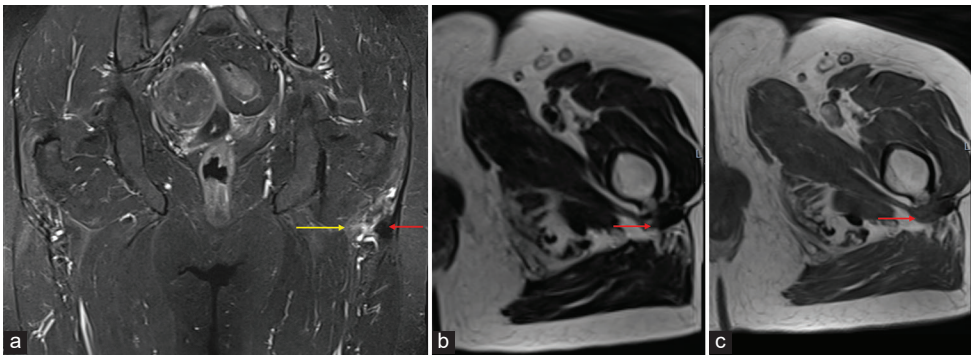

Figure 3: Short tau inversion recovery coronal (a), T1 (b), and T2 (c) showing calcification in relation to the insertion of the left gluteus maximus (red arrow) with mild edema (yellow arrow).

passing through four stages of development, leading to fibrocartilaginous metaplasia and secondary mineralization which is subsequently resorbed in the resorptive phase by phagocytosis.[1] Crystal deposition incites an inflammatory response with increased tissue metabolism and activated inflammatory cells which are possibly responsible for the increased uptake of tracer on nuclear imaging.[8] A typical clinical picture is characterized by spontaneous onset, pain in the affected joint with referred pain, and spontaneous resolution. Radiologically, it can cause a diagnostic dilemma with findings such as calcification, subperiosteal formation of bone, and bone erosions illuminating as a metastatic "hot spot" on traditional ^{99m}Tc-MDP bone scans. Cross-sectional imaging with ultrasound and MRI plays a crucial role in reaching the appropriate diagnosis and initiating management. Computer tomography (CT) is useful to visualize calcification in doubtful cases.

Calcific tendinopathy demonstrating uptake on nuclear imaging studies mimicking malignancy has been well documented in the literature. Low and Toms in a systemic narrative review analyzed 55 case reports of calcification along the linea aspera which included calcific tendinopathy or enthesopathy of gluteus maximus and adductor muscles. They found that all 17 patients who had nuclear imaging demonstrated uptake in the region of abnormality.[9] Similarly, Van Damme *et al*., in a case series, described the uptake of tracer in the bone scan in five patients with gluteus maximus calcific tendinitis.[10] In line with these reports, our case highlights that calcific tendinopathy may demonstrate uptake on nuclear imaging and mimic malignancy. Other described causes of false-positive uptake in the similar region are stains/avulsion injuries, bursae, and enthesopathy.[8]

As our patient was asymptomatic, she was reassured about the findings and no specific treatment was given. In symptomatic cases, it can be treated by ultrasound-guided steroid injection with or without barbotage.

Learning points

1. Nuclear medicine imaging applies radiotracer physiology in non-invasive evaluation, diagnosis, staging, treatment, and monitoring of spectrum of malignancies
2. Calcific tendinopathy can mimic a malignant pathology on nuclear medicine imaging
3. Scintigraphy techniques should be used in conjunction with anatomic imaging such as CT or MRI to confirm the diagnosis in such a patient.

CONCLUSION

This case highlights that calcific tendinopathy may demonstrate increased uptake on nuclear imaging and mimic malignancy. We want to emphasise the importance of using additional imaging modalities like MRI or CT to accurately diagnose abnormalities detected on bone scan.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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