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Synovial Osteochondromatosis of the Peritrochanteric Femoral Bursa: A Case Report

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Abstract **Case Report**

Synovial osteochondromatosis is an uncommon and chronic condition characterized by a metaplasia of the synovium leading to the formation of cartilaginous or osteocartilaginous bodies in a joint and less commonly, bursa or a tendon sheath. The imaging appearances are variable depending on the stage of the disease. Its development in the peritrochanteric femoral bursa remains exceptional. To our knowledge, this localisation has not been previously described. We present in this work the case of synovial chondromatosis of péritrontéric left femoral bursae diagnosed in a 55-year-old woman. Hip pain was the main symptom. The diagnosis was confirmed by computed tomography (CT) and magnetic resonance imaging (MRI). A breef review of the litterature was also performed to recall the main imaging caracteristics of this rare localisation.

Keywords: Synovial osteochondromatosis, chronic, osteocartilaginous, synovium, computed tomography (CT).

INTRODUCTION

Synovial Chondromatosis or osteochondromatosis is a rare, uncommon and chronic condition characterized by a metaplasia of the synovium leading to the formation of cartilaginous bodies (chondromas) or osteocartilaginous bodies (osteochondromas). In a joint (intra-articular synovial chondromatosis) and less commonly, bursa or a tendon sheath (tenosynovial, bursal chondromatosis). Joint pain, which is not specific, dominates the clinical symptomatology. Hence the interest of imaging means. The imaging appearances are variable depending on the stage of the disease [1, 2].

There have been only few reports till date describing the extra articular synovial chondromatosis. Its development in the perithrochanteric bursa remains exceptional. To our knowledge, this has not been previously described.

The aim of this work is to report a new case of synovial chondromatosis (SC) of péritrochantéric left bursae diagnosed in a midle age women. Hip pain was the main symptom. The diagnosis was confirmed by computed tomography (CT) and magnetic resonance imaging (MRI). A breef review of the litterature was performed to recall the main imaging caracteristics of this rare localisation.

CASE REPORT

A 55-year-old woman with a medical history of hight blood pressure and dyslipidemia and no other co-morbidities presented with a five years history of a painful swelling over the hips and increasing discomfort. The pain was also present at rest, and it disturbed sleep. In examination, joint mobility was preserved and no overlying skin changes or palpable masses were noted. The remaining joints were normal. There was no history of trauma or fever. Routine haematological tests were within normal limits, as were routine biochemical test results. An anteroposterior pelvic and hips review x ray revealed the presence of round calcified foreign bodies, located at soft tissues around left major trochanter. It shows a normal aspect of the bone structure and some degenerative changes of the coxofémoral space, without evidence of bone erosion, bone invasion, or periosteal reaction (Figure 1). Ultrasounds showed a defined margin with a capsule containing numerous small, hyperechoic and avascular foci with acoustic shadowing, surrounded by fluid (effusion), no abnormalities of tendon sheats in particullary the glutes medius one (Figure 2). CT of the hip shows multiple extra articular, small round shape, ostéochondral bodies, with peripheral calcification and central clear focus, located arround left major trochanter, with thickenning of the surrouding soft tissues (Figure 3). For a more detailed study, an MRI examination was

performed and shows a péritrochantéric intrabursal bilateral effusion, with left internal distinct osteochondromal lesions with low signal intensity on T1 weighted imaging and central hight signal intensity on T2 weighted imaging surrounded by a peripheral hyposignal margins witch correlated with mineralized peripheral matrix. There was no signifiant synovial thickening or bone signal abnormalities and no joints effusions (Figure 4). This apperance pleaded for bilateral peritrochanteric bursistis complicated with osteochondromatosis in the left side.

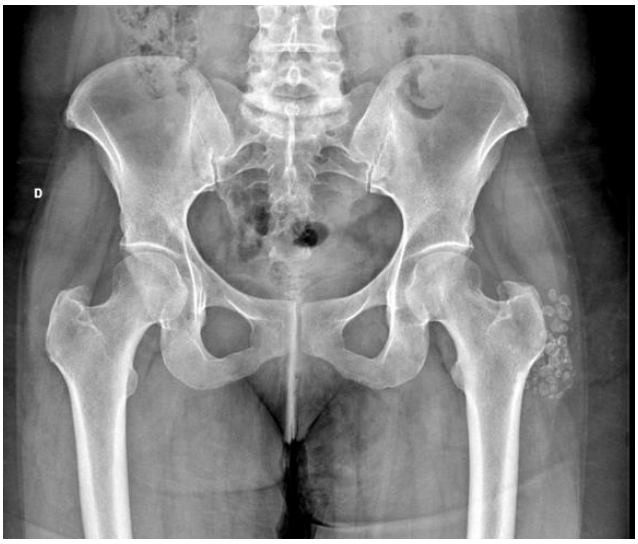

Fig 1: Pelvic x-ray (antéro-posterior view) round calcified bodies, located at soft tissues around left major trochanter. Coxo-fémoral joint normal

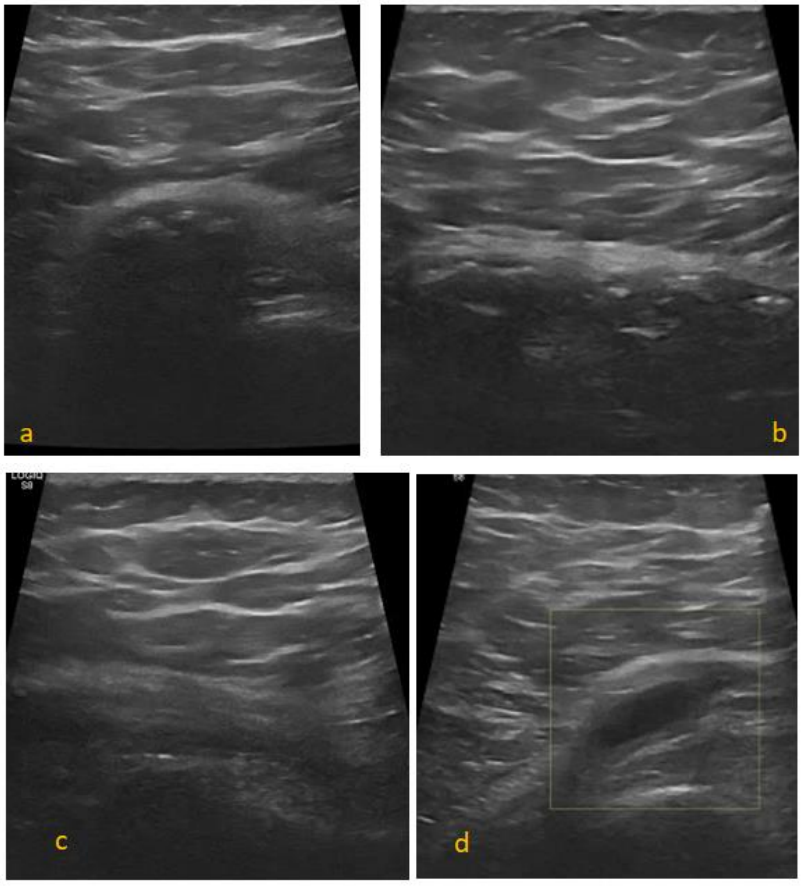

Fig 2: hip ultrasonography: a, b: Lateral formation corresponding to the peritrochanteric right bursa containing rounded small, hyperechoic foci with acoustic shadowing, surrounded by fluid, C: Normal aspect of gluteus medius sheath, D: Right peritrochanteric bursa effusion

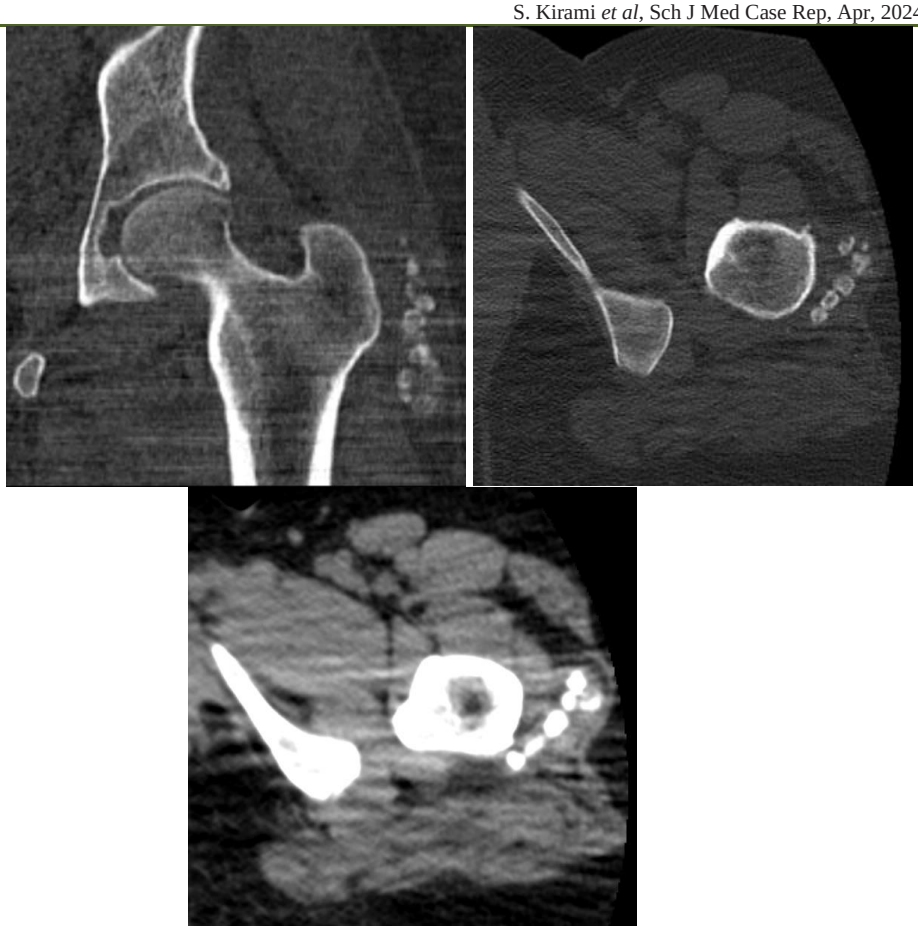

Fig 3: Axial and coronal CT imaging of the left hip (bone window, soft tissue window) showing soft tissues small round shape bodies, with peripheral calcification and central clear focus, located arround left major trochanter, with thickenning of the surrouding soft tissues

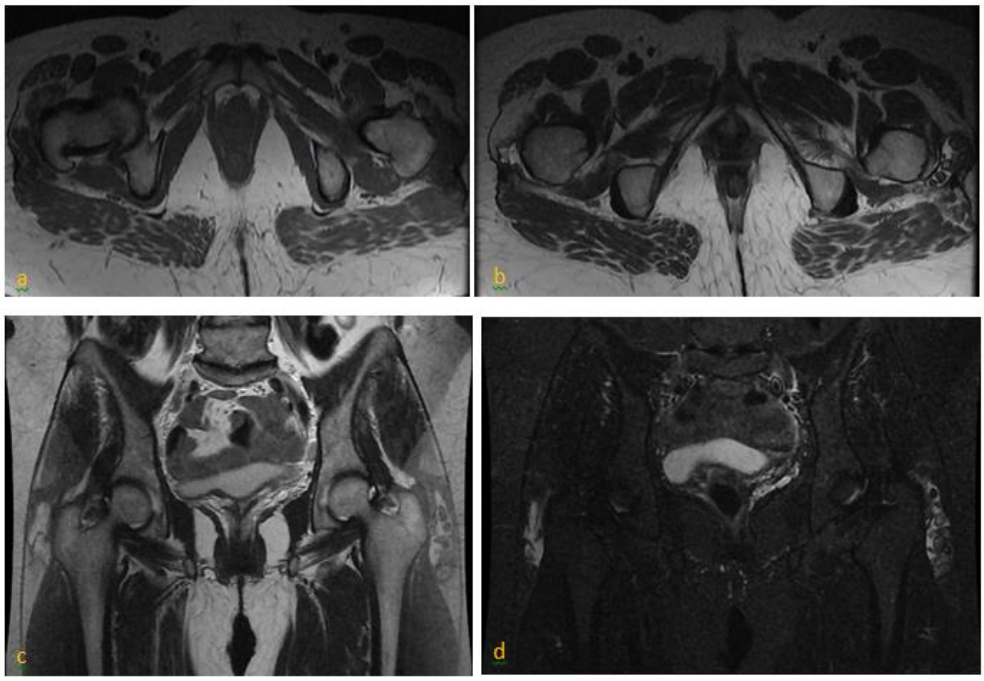

Figure 4: Axial weighted T1 MRI (a), axial and Coronal weighted T2 MRI (b, c) and Coronal weighted T2 STIR MRI (d) Showing pertrochanteric intrabursal bilateral effusion, with left internal osteochondromal lesions with low signal intensity on T1 and central hight signal intensity on T2 surrounded by a peripheral hyposignal margins without signal suppression on fat saturation sequences

DISCUSSION

Synovial chondromatosis was first described by Reichel in 1900 and termed as a rare benign disorder characterized by chondroid metaplasia leading to the formation of cartilaginous bodies (chondromas) or osteocartilaginous bodies (osteochondromas) from articular synovial membrane in intraarticular SC, or from bursa or tendon sheath synovium in extraarticular SC [1, 3].

Primary and secondary forms of the disease have been described. Secondary synovial chondromatosis is the result of a mechanical injury to the joint and most commonly related to degenerative arthropathy. Even primary form has no certain etiology; trauma, infections and fibroblast growth factor-9 (FGF-9) as possible etiologies have been mentioned in the literature.

Depending on the stage of development, the nodules may be attached to the synovial membrane (Miligram I), encapsulated by the synovial tissue (Miligram II), or completely free floating (Miligram III) [4, 5].

Epidemiology

Primary synovial chondromatosis (PSC) is a monoarticular disease that can affect any synovial joint especially the large joints. The lesion tends to occur unilaterally. It mostly presents in between 3rd and 5th decades with male predominance however when extraarticular disease is diagnosed in older patients [after the fifth decade], there is a female predominance. This condition rarely occurs in children [6, 7].

Macroscopically, synovial chondromatosis nodules may vary in size and shape, from 1 mm lesions to nodules greater than 1 cm or may also coalesce to form a larger mass. Microscopically, SC forms multiple lobules of chondrocytes within a hyaline matrix with variable degree of synovial proliferation or hyperplasia [5, 6].

Clinical Presentation

Patients with SC often present with symptoms related to mass effects of the tumor, pain, swelling, locking, crepitus and limitation of motion [3].

Imaging

The imaging features in extraarticular osteochondromatosis are similar to intraarticular form with a distribution of calcifications reflecting the anatomy of the tendon sheath or bursa.

Radiographs in extra-articular SC are usually non specific, including the existence of calcifications, soft tissue mass or ossification in the cartilaginous nodules [1]. The classical radiological appearance is multiple, calcified bodies of uniform size evenly distributed throughout the joint, or in juxta articular location (less commonly), within bursae or tendon sheaths. The calcifications may show a pathognomonic appearance of ring and arc pattern of mineralization. Sometimes, these individual loose bodies coalesce to form a giant single chondroma. Additional findings include scalloping of the underlying osseous structures and new bone formation [2, 6, 8]. The soft tissue mass is a low-attenuation lesion with a lobular outline on CT (this helps distinction from synovial fluid). As the majority lesions contain calcifications this is the optimal modality.

Calcified nodules can have ring and arc patterns of mineralisation or a target appearance (central focus with peripheral calcification). Although CT is the most sensitive imaging technique for detecting early mineralization and confirming intraarticular involvement, it does have three shortfalls. Firstly, CT does not show marrow invasion as well as MR; secondly, the chondromal nodules (Kramer subtype A) are not apparent, and finally, the extent of the disease is better appreciated on MRI due to its superior musculoskeletal anatomical definition [8, 9].

On MR imaging, typical appearances include a joint effusion, intrabursal or a tendon sheath (tenosynovial) effusion and a soft mass with internal nodules.

Kramer has described three subtypes based on the MR signal of the (osteo) chondromal nodules. Unmineralised (chondromal) lesions (subtype A) which are difficult to distinguish from the synovial fluid/mass as both display low/intermediate signal intensity on T1 weighting and high signal intensity on T2 weighting. In such cases, intravenous contrast medium (Gd-DTPA) may be helpful in distinguishing nodules from synovial fluid as the nodules typically peripherally enhance if they are attached to and derive a vascular supply from the synovium. The B subtype accounts for the majority of cases. These (osteochondromal) nodules are of low signal intensity on all sequences due to calcification of cartilaginous nodules. The nodules in subtype C contain fatty marrow and consequently are isointense to fat with high and intermediate signal on T1 and T2 weighting, respectively. They show signal suppression on fat saturation sequences with a low signal rim on all sequences (similar to bony cortex). MR is also useful at assessing extrinsic erosion of bone and in excluding true marrow invasion, which can be a feature of a more malign process [8, 10, 12].

Ultrasound shows a heterogeneous, avascular mass surrounded by fluid. If osteochondral nodules are present, they may be seen as hyperechoic foci with acoustic shadowing. Dynamic ultrasound examination is a particularly useful technique as the nodules can be gravity dependent [11].

In arthrography, Intraarticular nodules may be attached or separated from the synovium, but will show up as numerous rounded filling defects on arthrography, whether it be fluoroscopic, CT or MR arthrography. It is a particularly useful technique in suspected type A, as all other imaging techniques, including contrast-enhanced MR, may fail to show the chondromal nodules [12].

Differential diagnosis for bursal chondromatosis lesions includes synovial chondromatosis, soft tissue/periosteal chondroma, calcifying aponeurotic fibroma, bizarre parosteal osteochondromatous proliferation, and the focal form of pigmented villonodular synovitis, which is also referred to as giant cell tumor of tendon sheath. In addition, two malignant lesions, synovial sarcoma and extraskeletal chondrosarcoma, should also be considered.

The treatment of choice is surgical complete exision of the involved bursa [7, 8].

CONCLUSION

Synovial osteochondromatosis occurring within the peritrochanteric femoral bursa is an uncommon etiology of persistent hip pain. Although it typically follows a benign clinical course, it can be susceptible to misdiagnosis. Radiological assessments play a crucial role in guiding towards the correct diagnosis. Surgical excision stands as the preferred therapeutic approach. Prolonged, vigilant monitoring is imperative to exclude the infrequent occurrences of recurrence or malignant transformation.

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