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Case Report

A case report on synovial chondromatosis in adult with secondary arthritis

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ABSTRACT

Introduction: Primary synovial chondromatosis (PSC) is a rare, usually monoarticular disorder of synovial joints. PSC is characterized by the formation of osteocartilaginous nodules in the synovial connective tissue.
Case Description: We report a case of 65 year old male with Primary synovial chondromatosis in left hip. On clinical examination, patient had restricted abduction, rotational movements and a flexion deformity of 30 degree in left hip with an antalgic gait. Patient gives a history of difficulty in walking since last 10 years. The patient had taken some treatment to relieve his pain which were relieved temporarily. Patient's symptoms were only of pain when he started observing a change in gait and progressive deformity since last 2 years. The patient has not taken any definitive treatment for his complaints. Ultrasound examination of the left hip revealed joint effusion and demonstrated numerous multiple hyperechogenic foci. Plain radiographs anteroposterior view of pelvis with both hips show multiple soft tissue shadows with multiple irregular shaped calcification around femoral neck.
Conclusion: Rounded lesions seen in the joint should always be investigated histopathologically and on the basis of non-invasive investigations for Synovial Chondromatosis. The imaging appearance of PSC appears sufficiently unique to allow its differentiation from other causes of intra-articular pathology.

1. Introduction

Synovial Chondromatosis has been defined by the formation of osteocartilaginous nodules originating in the synovial connective tissue and is believed to be caused by synovial metaplasia.[1,2]

During early stages, joint function is not significantly affected, but with advancement of disease process, there is joint involvement which can range from pain and swelling to restriction of movements and deformity.

The disease may recur and malignant transformation has been rarely reported.[3] This self-limited and non-aggressive condition that occurs most commonly in the knee following hip, shoulder, and elbow.[4]

2. Case Description

We report a case of synovial chondromatosis with secondary arthritis in adult. On examination, patient had restricted abduction, rotational movements and a flexion deformity of 30 degree in left hip with an antalgic gait. Patient gives a history of difficulty in walking since last 10 years. The patient had taken some treatment to relieve his pain which were relieved temporarily. Patient's symptoms were only of pain when he started observing a change in gait and progressive deformity since last 2 years. The patient did not take any definitive treatment for his complaints.

On inspection, pelvis was squared with no limb length discrepancy, no fullness was seen in the scarpa's triangle, no scar marks and no discharging sinuses seen. We could appreciate some muscle wasting in the left thigh with no Limb length discrepancy seen. There was an exaggerated

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lumbar lordosis with a flexion deformity at left hip.

There was superficial and deep tenderness present at left hip joint both anteriorly and posteriorly and over the scarpas triangle. Greater trochanter on the left side could not be appreciated clearly because of gross irregularity and multiple loose fragments beneath.

There was a flexion deformity of 30 degrees present in left hip, with restriction of movements, only 10 degrees of external rotation was possible at left hip with 10 degrees of internal rotation in axial plane.

We performed Open Total Synovectomy, and for which dislocation of femoral head was warranted. Multiple, numerous rounded calcified lesions were removed from the left hip throughout (Figure 1). Macroscopically size ranges from 3 mm in diameter to largest 4 cm in diameter (Figure 2). These nodules were firm on cut sections. The synovium was thoroughly excised and samples of calcified nodules and synovium was sent for histopathological studies. Histologically the lesions have a typical nodular appearance. Each nodule is composed of hyaline cartilage with hyper-cellularity. Chondrocytes are clustered and most have a pycnotic dark-stained nuclei. Some cells had atypical features including large nuclei, dispersed chromatin and nucleoli. We were able to remove majority of the loose bodies.

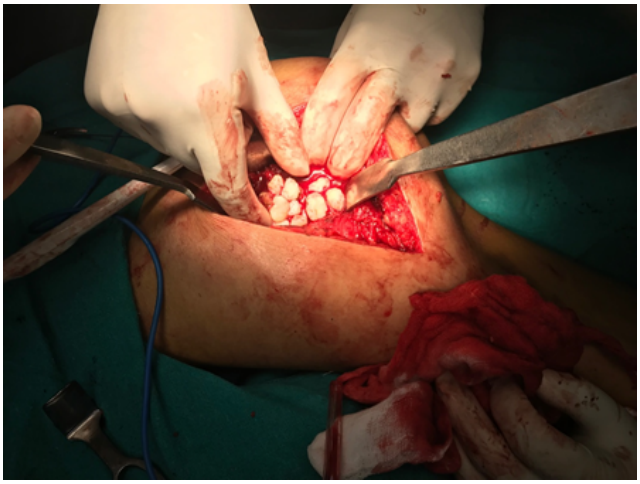

Fig. 1: Intraoperative image showing calcified nodules

After counselling the patient regarding the need of Total Hip Arthroplasty, due to increase in chances of ongoing osteoarthritis, patient was symptom free with complete improvement from pain and was followed up till 2 years. Patient after 2 years again presented to us with vague pain in left hip for which MRI left hip was done.

MRI revealed avascular necrosis femoral head grade III with osteoarthritic changes. Patient finally underwent uncemented Total Hip Arthroplasty left hip and is at present symptom free since last 6 months.

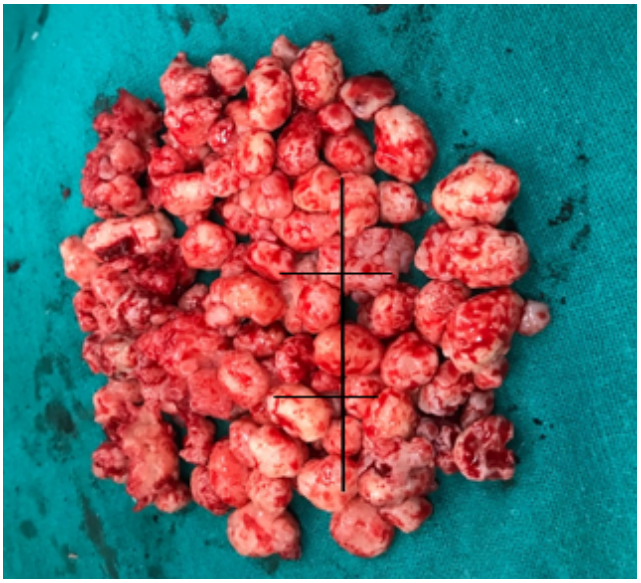

Fig. 2: Rounded calcified lesions with maximum diameter of2.8cm

3. Review of Literature and Discussion

Synovial chondromatosis is a rare metaplastic condition which has been characterized by the formation of cartilaginous bodies within the synovium of large joints.

There are mainly three phases in the ongoing disease process.

Phase 1: Metaplasia of synovium with active synovitis and absence of loose bodies.

Phase 2: Active synovitis with the formation of loose bodies, which are still cartilaginous.

Phase 3: Loose bodies tend to calcify and synovitis subsides.

The patient typically presents in this stage where there is swelling, pain, and restriction of movements and usually in their third to fifth decades, with rare occurrence in childhood.

It is twice more common in males than females. The knee joint is commonly involved joint, but it has been reported in hip, shoulder, elbow, and other joints.[5]

It is usually unilateral, but bilateral involvement has also been reported. Plain radiograph, ultrasound, computed tomography, and magnetic resonance imaging are the imaging modalities which can be used to assist in diagnosing this condition.

Involvement of hip can be intra-articular, extra-articular, or combination of both. Nodules of the metaplastic growth are usually embedded within the synovium or loosely attached to it.

Diagnosis is based on the radiograph showing well-defined calcific masses near the joint line (Figure 3). Arthritic changes can be seen in secondary synovial chondromatosis at presentation, whereas in primary the

articular cartilage may be normal in architecture initially. MRI findings are more variable, depending on the degree of mineralization, although the most common pattern (77% of cases) reveals low-to-intermediate signal intensity with T1-weighting and very high signal intensity with T2-weighting with hypointense calcifications.[6]

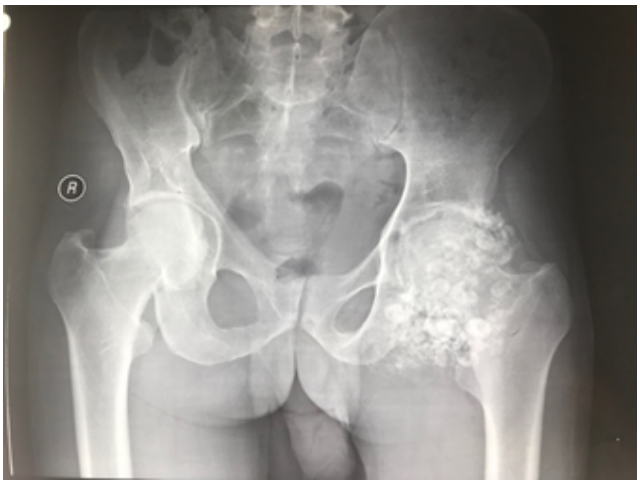

Fig. 3: Pre operative x-ray showing soft tissue shadow and irregular nodules

Foci of hyaline cartilage studded throughout the hyperplastic subsynovial layer of connective tissue.

Complications can be secondary osteoarthritis, malignant transformation (rarely), and recurrence. Pigmented villonodular synovitis, synovial hemangioma, and lipoma arborescens are few conditions which can mimic the same. Radiography and histology may help in accurately differentiating among them.

The treatment is primarily surgical. Open surgery or hip arthroscopic intervention can be performed with resection of the diseased synovium and removal of any loose bodies. Recurrence is usually frequent after partial synovectomy, hence we advocate the need of total synovectomy (Figure 4).[7]

Recurrence rates for PSC after surgical treatment have been reported as varying from 7 to 23%.[8]

Magnetic resonance imaging is considered as an valuable tool in detecting synovial chondromatosis in its early stages. In the treatment of the disease, surgical removal of the loose bodies and partial or total synovectomy have been suggested. MRI scan also reveals the precise site of the bodies and there extent, shows the amount of intra-articular fluid, deformed cartilage in the late stages.

In patients with advanced arthritis, we suggest total hip arthroplasty as the treatment of choice.

4. Conclusion

If left untreated, synovial chondromatosis of the hip joint may lead to secondary arthritis due to cartilage damage.

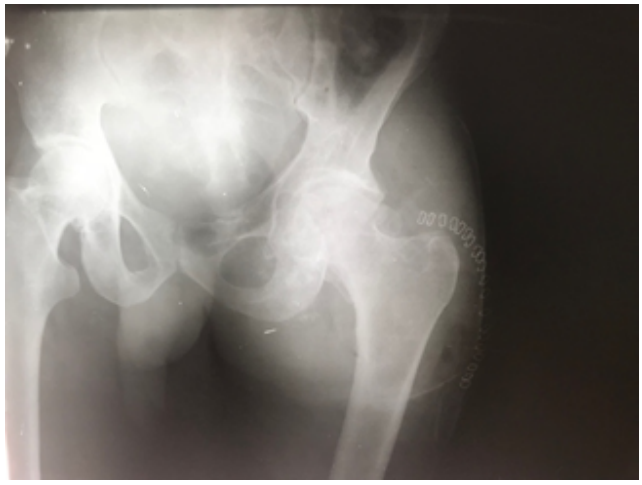

Fig. 4: Immediate post operative after total synovectomyleft HIP

Therefore, early diagnosis and treatment is very useful. The treatment of synovial chondromatosis is primarily surgical. The long term clinical outcome of complete synovectomy with dislocation of the hip and removal of all loose bodies is excellent and may also prevent following secondary arthrosis and need for Replacement (Figure 5 A,B).[9] The reported incidence of osteonecrosis of the femoral head after traumatic, anterior dislocation is 8%,[10] but only 2 out of 43 patients with traumatic anterior hip dislocation reduced by closed methods within 3 hours, developed radiologic signs of osteonecrosis after an average follow-up of 8 years . It has also been suggested that operative dislocation of the hip is less traumatic and limits further possible ischaemic damage to the femoral head.[11] The recurrence rate after surgery is reported to be as high as 15%, possibly due to inadequate removal of loose bodies and synovium at the time of initial surgery.[3]

Fig. 5: A: Clinical preoperative; **B:** Clinical postoperative

5. Clinical Message

Synovial chondromatosis although a rare diagnosis should be kept as a differential for chronic hip pain to avoid the need of secondary arthritis.

6. Source of Funding

None

7. Conflict of Interest

The authors declare nothing to disclose.

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