A case report of secondary synovial chondromatosis of knee

Abstract

Synovial osteochondromatosis (SOC) is a monoarticular, synovial, proliferative disease. It is a rare disease presenting as multiple cartilaginous nodules in synovial joints, bursae and tendon sheaths. Synovial chondromatosis may be diagnosed using radiographs, computed tomography (CT) scan or magnetic resonance imaging (MRI), with definitive characteristics being determined by histological examination. Clinical management of the condition commonly involves either open or arthroscopic procedures to prevent further articular and peri-articular destruction and to abolish symptoms This case report describes a case of a 42 year old male patient presenting with a secondary synovial osteochondromatosis of knee managed successfully with open procedure for the removal of the loose bodies.

Keywords : Synovial osteochondromatosis , intra-articular loose bodies, benign

Introduction

Synovial osteochondromatosis (SOC) is a monoarticular, synovial, proliferative disease. It is a rare disease presenting as multiple cartilaginous nodules in synovial joints, bursae and tendon sheaths[1-3]. Although generally a primary condition, it can be secondary to osteoarthritis. This disease is more prevalent between fourth to fifth decades. Males are more commonly affected than females(1).

Synovial chondromatosis commonly presents in single large joints, including the knee, hip, elbow, shoulder, ankle, etc (4). However, it may also affect smaller joints, including the distal radioulnar, tibio-fibular, metacarpophalangeal and metatarsophalangeal joints (5-8). Patients with synovial chondromatosis may either be asymptomatic or present with pain, swelling with restriction of movement (8). The etiology of the disease is uncertain. The patient with synovial chondromatosis experiences decreased range of motion, palpable swelling, effusion, and crepitus(9). Milligram classified the disease into three phases: Early (active intra-synovial disease but no loose bodies), transitional disease(active disease and loose bodies), and late (multiple loose bodies but no intra-synovial disease)(10). Clinical management of the condition commonly involves either open or arthroscopic procedures (11) to prevent further articular and peri-articular destruction and to abolish symptoms (12). Synovial chondromatosis may be diagnosed using radiographs, computed tomography (CT) scan or

magnetic resonance imaging (MRI), with definitive characteristics being determined by histological examination(13). However, radiography is the most commonly used diagnostic method, as it can identify mineralized nodules (14).

The following report describes a case of synovial osteochondromatosis of the knee in a patient with classical symptoms.

Case report

A 42-year-old male, farmer by profession, presented to the OPD of the Department of Orthopedics, Government Medical College, Amritsar complaining of pain and swelling left knee for 1 year. The patient reported that the pain had started around 1 year earlier and had progressed from sporadic pain to become continuous, with increasing intensity. The swelling was progressive and led to restriction of movement of the knee for the last 3 months. The patient had great difficulty extending and flexing his left knee.
On physical examination, the patient presented with a diminished range of motion and diminished muscle strength.

The patient had a previous history of spinal injury 22 years back due to a fall from height, leading to bilateral lower limb weakness. This gradually led to the development of hip and knee flexion contractures of the left lower limb for which contracture release was performed on the left knee at a private hospital.

Radiographs of the knee were obtained and these showed an image of an osteoblastic mass in and around the knee joint. For better explication of the diagnosis, magnetic resonance imaging of the left knee was requested. This showed numerous similar sized intra-articular loose bodies (largest measuring 4x2.8 cm) of variable signal intensity in the knee joint, supra-patellar bursa, and popliteal fossa, with signs of osteoarthritis grade IV with secondary synovial chondromatosis.

The patient was treated surgically, with total excision of the mass, which was sent for histopathological examination. Post-operatively skin traction was applied to the limb and physiotherapy was initiated. Two weekly follow-up was done after the operation, and the patient’s range of motion in this left knee had improved.

The result from the histopathological examination was that this was a case of synovial chondromatosis.

Discussion

Synovial chondromatosis is a benign, rare mono-articular neoplasm with an unknown cause. It can originate from any joint, bursae or tendon sheath that have synovial tissue. The disease is characterized by cartilaginous nodule formation secondary to synovial metaplasia. These nodules may get calcified apart from synovial tissue. Although it is generally progressive, it can limit itself and regress[3].

The disease process of synovial chondromatosis consists of three phases. Phase 1-.Metaplasia of synovium with active synovitis and absence of loose bodies. Phase 2– Active synovitis along with the formation of loose bodies, which are still cartilaginous. Phase 3 – Loose bodies tend to calcify and the synovitis subsides[2]. Primary synovial chondromatosis is a very rare monoarticular synovial disease.[10] Secondary chondromatosis is common, where articular cartilage is shred and found as loose bodies in the joint. Extra-articular synovial chondromatosis is rare, Extra-articular diseases can be classified as bursal chondromatosis or tenosynovial chondromatosis depending on the origin[15].

The radiologic features of disease vary according to the stage. In the first stage, there is swelling only around the involved joint [16]. The most common radiologic finding, radiopaque free bodies with varying sizes, can be seen at any place in the joint cavity [17]. Calcification occurs at the last stage and may not be observed in every patient [18]. Matsumoto et al [19] reported that MRI is much more helpful than CT. Loose bodies exhibit a low signal on T1-weighted images and a high signal on T2-weighted images, although there may a be low signal intensity on all images where there is extensive calcification of the loose bodies. (21) Ultrasound also is a useful diagnostic tool that can show numerous echogenic bodies, effusion, and synovial hypertrophy. (21)

The differential diagnosis associated with Synovial Chondromatosis include synovial hemangioma, synovial cyst, , pigmented villonodular synovitis, lipoma arborescence, and malignancies, such as synovial sarcoma or synovial chondrosarcoma(19). Patients typically present with insidious gradual mechanical symptoms, such as pain (> 85% of cases), swelling (42%-58%), and decreased motion (38%-55%) in the affected joint.(20,21,22)

Arthroscopy has gradually replaced traditional incision surgery, as it only requires a small incision and causes little pain; patients exhibit fast post-operative recovery and arthroscopy is a more effective treatment than loose body removal alone (23,24). Urbach *et al* (25) reported that loose body removal, combined with localized synovectomy, was able to eliminate abnormal synovial tissue and prevent a recurrence.

Conclusion

In conclusion, Synovial chondromatosis with monoarticular involvement is a very rare disease. The clinical diagnosis is quite difficult. Consistency of clinical, radiological, and histological findings should be sought in every case. After the diagnosis synovial excision, as complete as possible, extraction of free bodies, and a close follow-up are warranted.

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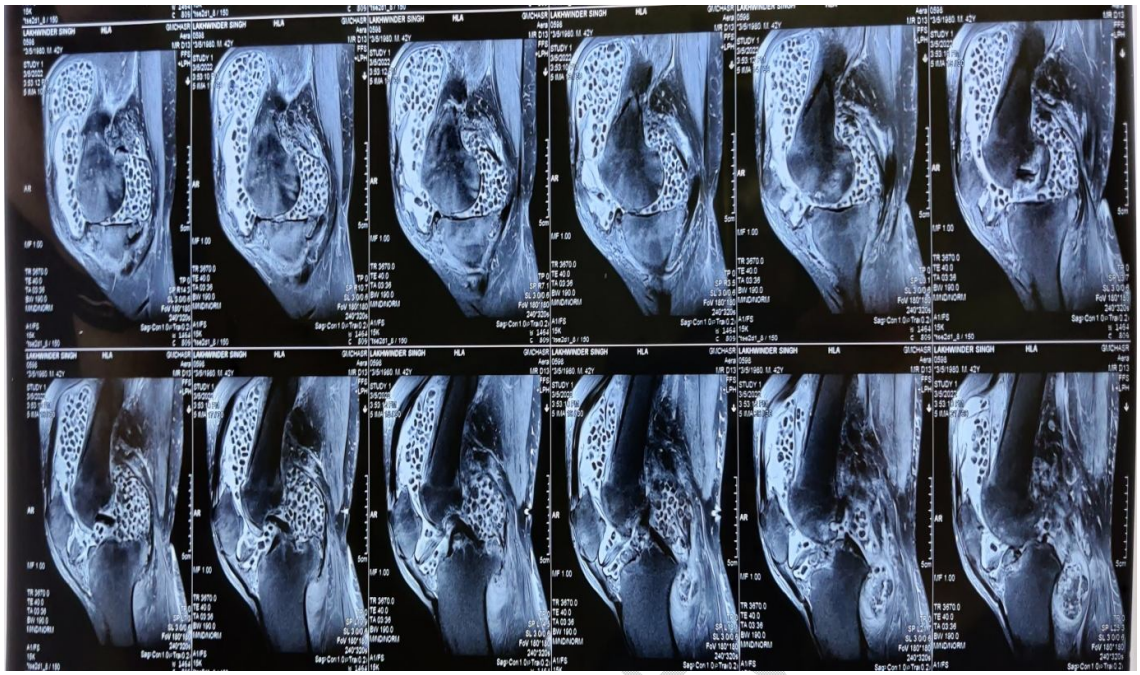
Figures

Fig 1: Pre operative X-Ray

Fig 2: Pre operative MRI showing multiple loose bodies in and around the knee joint.



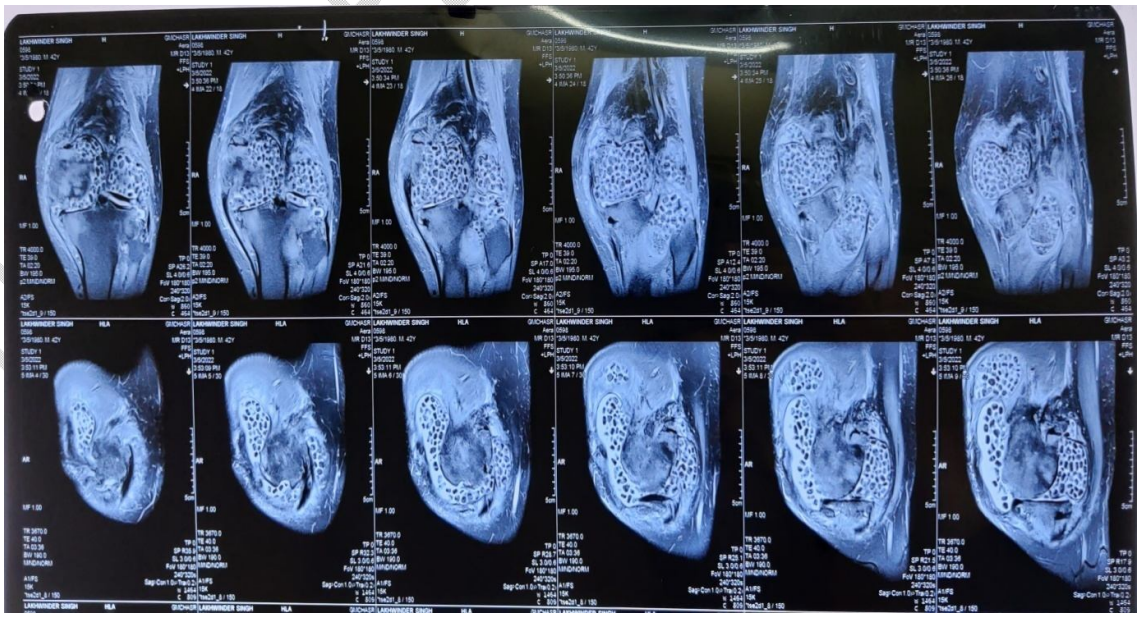


Fig 3: Intra operative pictures showing multiple loose bodies.