

Revisiting The Synovial Chondromatosis with A Short Review of The Literature.

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Abstract

Synovial chondromatosis is a benign neoplastic process representing hyaline cartilage nodules formed in a joint. In adult males, the knee joint is the most commonly affected in the Indian population. The hyaline cartilage nodules may detach from the synovium and may present as enlarged free nodules in the subsynovial tissue of joint, tendon sheath or bursa. In primary changes of synovial chondromatosis plain radiograph is not able to assess the free hyaline cartilage nodules. For further workup, magnetic resonance imaging is the essential imaging investigation to evaluate the cartilage and for the surgical planning. The extension of synovial disease, especially peripheral soft tissue involvement and lobular growth, are demonstrated more precisely on MRI. The treatment of choice in the case of primary synovial chondromatosis is surgical resection, either intraarticular or extraarticular; however, the recurrence is higher in extraarticular synovial chondromatosis. Along with the synovectomy surgical resection or removal of the hyaline cartilage nodules is also necessary. This case report discusses a 45-old female patient having synovial chondromatosis along with a short literature review.

Keywords: Obesity, Diaphragm, Mobilization, Respiratory Functions

Description

Synovial chondromatosis (SC) is a rare genetic synovial joint arthropathy characterised by cartilaginous nodules in the synovium [1-3]. These cartilaginous nodules gradually detach and become loose bodies inside the joint and may undergo secondary calcification and proliferation [4]. The pathological appearance in the primary synovial chondromatosis includes hyperplastic synovium covering bluish-white, multilobulated, and nodular projections of hyaline cartilage. These hyaline nodules give a cobblestone appearance to the synovium. Magnetic resonance imaging (MRI) is essential to evaluate amendments of synovium, interpret the staging (Milgram's classification), lesion extension, bone erosion, and marrow invasion. The cartilaginous nodules appear hypo to iso-intense on T1-weighted images, and hyperintense on T2-weighted images and may show with thin peripheral post-contrast enhancement. The signal intensity of these nodules depends upon joint effusion and degree of mineralization/ ossification [5]. SC on MRI appearance is variable owing to the extent of mineralization and ossification of the chondral bodies, although the extent of involvement is exquisitely depicted. On T2 weighted image hyperintensity appearance of the noncalcified regions of hyaline cartilage neoplasia because of the high-water content. In this im-

age, the clinical features, pathologic characteristics and spectrum of radiologic appearances was discussed and illustrated. Miligram introduced a three-stage classification of SC in 1977, based on the cartilaginous loose bodies and nodular pathological findings. In phase I, there is metaplasia of the synovial intima, active synovitis and formation of cartilaginous nodules without any calcification, also described as the early or florid stage [6]. In phase II there is ongoing active intra-synovial proliferation or calcification of the cartilaginous nodules and formation of free loose bodies, also referred to as the transitional stage. Phase III is described as the presence of loose bodies without synovial metaplasia, also known as the late or quiescent stage. SC on MRI appearance is variable owing to the extent of mineralization and ossification of the chondral bodies, although the extent of involvement is exquisitely depicted. On T2 weighted image hyperintensity appearance of the noncalcified regions of hyaline cartilage neoplasia because of the high-water content. In this image, the clinical features, pathologic characteristics and spectrum of radiologic appearances was discussed and illustrated [7].

Here we discuss a 45-year-old female who came to our hospital with complaints of pain, stiffness and catching sensation in her left knee for one year. On clinical examination, quadriceps wasting,

peri-articular swelling and tenderness with a medium range of motion were present. The patient was treated with non-steroidal anti-inflammatory medications and icing previously. The patient had X-ray film outside, but it was of poor quality and difficult to interpret. MRI scan the knee was advised for further workup, which revealed severe osteoarthritis with numerous almost similar-sized intra-articular loose bodies of variable signal intensities. [Figure 1A, 1B, 1C & 1D] Few of these showed intermediate to a high T2

signal intensity representing cartilaginous tissue, while the others had low signal intensity at the periphery, representing calcification. The diagnosis was suggestive of SC. The patient was planned for arthroscopic surgery, where many tiny loose bodies were removed. The sample was sent to the histo-pathological assessment which revealed synovial chondrosarcoma, confirming the diagnosis of SC. The patient was discharged and kept on regular follow-up. The patient is walking normally and doing his regular activities.

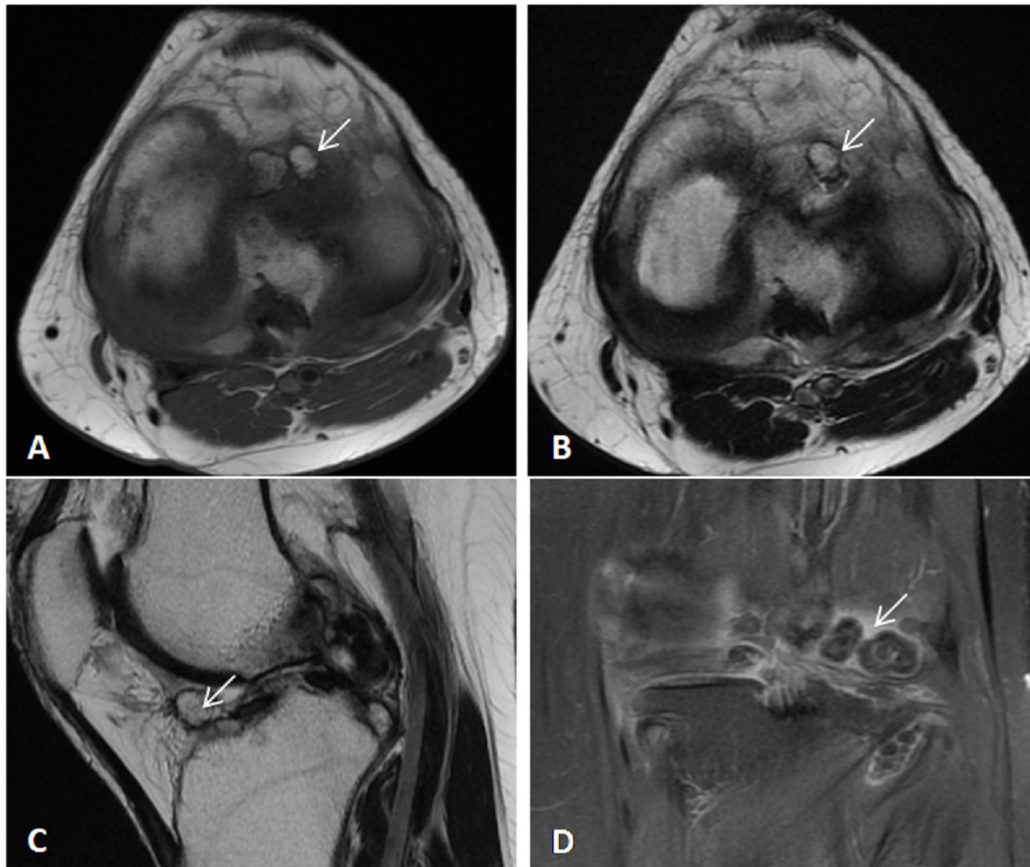


Figure 1: Synovial chondromatosis (A) Axial T1 and (B) T2 weighted images demonstrating multiple loose bodies [White arrow] showing isointense signal with bone. (C) Sagittal T2 weighted image shows intra-articular loose bodies [White arrow] associated with osteoarthritic changes of the knee joint in the form of denudation of articular surfaces and marginal osteophyte. (D) Coronal proton density fat-suppressed sequence demonstrates multiple loose bodies [White arrow] posterior to the knee joint.

Learning Points/Take Home Messages

1. Primary and secondary synovial chondromatosis characterized by the proliferation of variable shape and size loose bodies and a lesser amount intra-articular loose bodies showing the concentric ring of calcification.
2. MRI is the imaging modality to confirm synovial chondromatosis characterize as benign neoplastic process with hyaline cartilage nodules in the subsynovial tissue of a joint, tendon sheath, or bursa.

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