Case 3330

Eurorad

Primary synovial chondromatosis of the elbow: MRI findings

Published on 03.09.2007

DOI: 10.1594/EURORAD/CASE.3330
ISSN: 1563-4086
Section: Musculoskeletal system
Case Type: Clinical Cases
Authors: Console D, Maschio V, Tamburrini S, Zizzi N
Patient: 50 years, male

Clinical History:

A 50-year-old male patient presented with tumefaction on the posterior-medial side of his left elbow, which spread pain in all his articulations, causing a functional limitation and an early onset of hypoesthesia on the palm side of the fifth finger of his hand. This symptomatology had been present for some years.

Imaging Findings:

The patient showed tumefaction on the posterior-medial side of the left elbow, which spread pain in all his articulations, causing a functional limitation and an early onset of hypoethesia on the palm side of the fifth finger of his hand. This symptomatology had been present for some years, and it had been treated with the use of NSAID. He did not have a history of any traumatic event in the articulations. On a radiographic examination, the presence of several nodules, which were partly calcified and partly ossified, was seen on the anterior-medial side of the elbow. The MRI examinations, which were performed on a trasmit-receive extremity coil on a 0.5 T system, confirmed the presence of loose bodies and their level of calcification/ossification and also highlighted a synovial reaction which occurred with the distension of the articular recessions.

Discussion:

The synovial chondromatosis (SC) has a non-neoplastic pathology, characterized by the metaplastic proliferation of cartilage nodules in the synovial membrane, with the formation of endoarticular loose bodies. It has two forms, a primitive or idiopathic one and the other a secondary form. The primitive form does not have a known etiology, while the secondary form has been correlated to luxation of the articulation, and the occurrence of osteoarthritic phenomena. According to some authors, the metaplasia is a secondary process occurring at the release of chondrocytes in the synovial liquid, by the articular cartilage, with following synovial implantation and development of the cartilage nodules. This hypothesis explains partly the physiopathological mechanism of the secondary SC, more than the primitive SC. The pathology involves people between 20 and 50 years of age, and about twice as many males as females. The articulations that are more involved are those of the knee, while involvement of the articulations of the hand, wrist and elbow more rare. Any articulation can be involved, and rarely in a bilateral way. In medical literature, two classifications are detailed (Kramer and Milgram). Milgram's classification is the one used more, and combining the histological and radiographical characteristics, it describes three different stages. The early stage or Type 1, which relates to the presence of synovial-based masses without intra-articular loose bodies; the intermediate stage or Type 2, where there are synovial-based masses and free intra-articular bodies present; and finally, late stage or Type 3, with multiple free osteochondral loose bodies present, but without demonstrable synovial disease. The dimensions of the metaplastic nodules vary from a few millimetres to some centimetres (generally >5 mm), as the grade of mineralization varies (ossification/calcification).The symptomatology is charatecterized by chronic pain, articular tumefaction, functional limitation, articular blocks and syndromes of nervous compression. The radiographic exam identifies the presence of loose bodies, their level of calcification and

eventual osteoartritic phenomena. The echographic exam lets us evaluate the presence of endoarticular pouring and shows the loose bodies as hyperechogenic nodules with a back shadow cone. The MRI exam permits a complete spatial study of the articulation, underlining with precision the location of the loose bodies that appear isointense at the bone marrow, if they are ossifying, or showing a signal void in all the sequences if they are calcified; besides, it permits the evaluation of the synovial reaction and of the osteoarthritic phenomena if present. The differential diagnosis of the idiopathic SC is seen with the pigmented villonodular synovitis (PVNS), synovial sarcoma and secondary synovial osteochondromatosis. The last is characterized by the presence of osteoarthritic phenomena. The SC can, even if sporadic, evolve in to a synovial sarcoma. The treatment of this pathology essentially involves surgery, and it consists in removing the loose bodies. It can be recidivated in about 11% of the cases, and necessitates the total synovectomy of the articulation.
Differential Diagnosis List: Primary synovial osteochondromatosis.

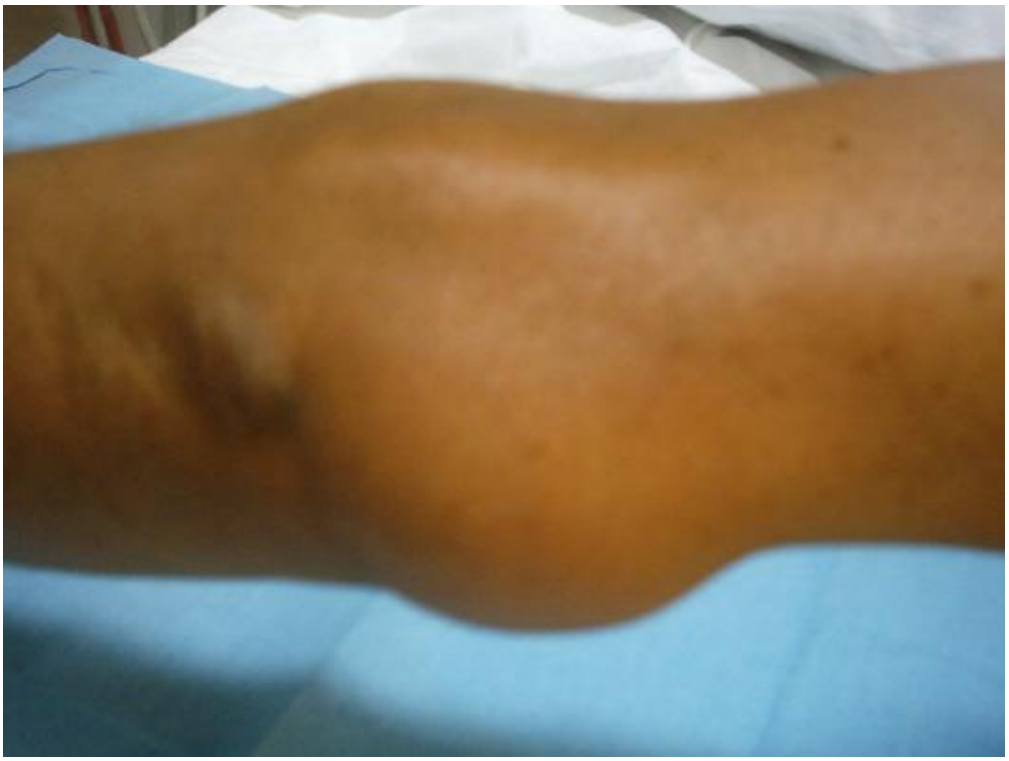
Final Diagnosis: Primary synovial osteochondromatosis.

References:

Milgram JW.
Synovial chondromatosis.
J Bone Joint Surg. 1977; 59A: 792-801. (PMID: 908703)
Kramer J, Recht M, Deely DM, Schweitzer M, Pathria MN, Gentili A, Greenway G, Resnick D.
MR appearance of idiopathic synovial chondromatosis.
J Comput Assist Tomogr. 1993; 17: 772-776. (PMID: 8370833)
Wittkop B, Davies AM, Mangham DC.
Primary synovial chondromatosis and synovial chondrosarcoma.
Eur Radiol. 2002; 12: 2112-2119. (PMID: 12136332)
Mueller T, Barthel T, Cramer A, Werner A, Gohlke F.
Primary synovial chondromatosis of the elbow.
J Shoulder Elbow Surg. 2000; 9(4): 319-322. (PMID: 10979529)
De Smet L.
Synovial chondromatosis of the elbow presenting as a soft tissue tumour.
Clin Rheumatol. 2002; 21(5): 403-404. (PMID: 12223991)

Figure 1

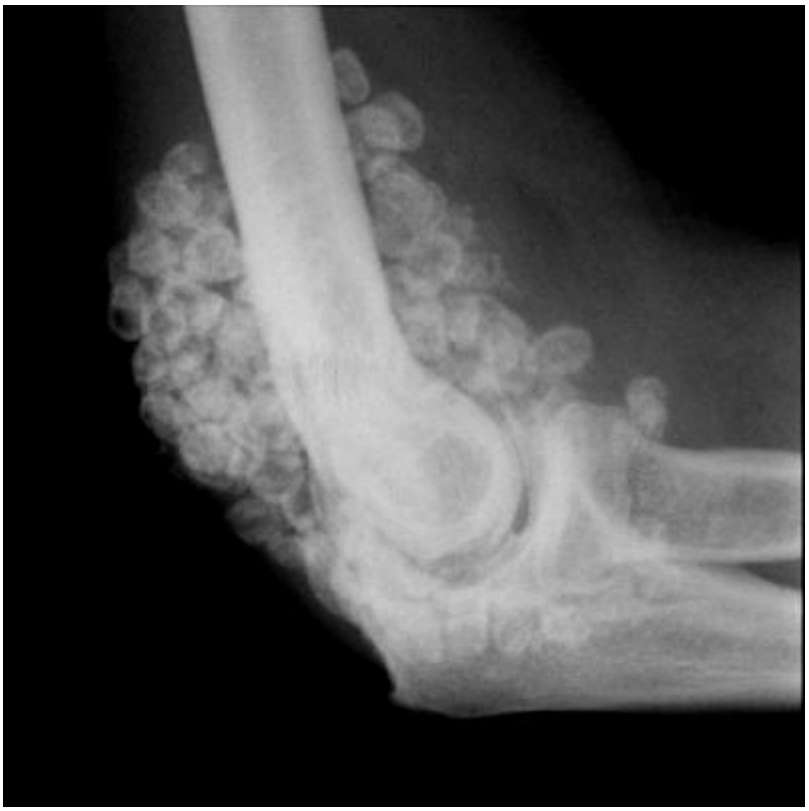
a



Description: An image showing, on the posterior-medial side of the elbow, the presence of a huge articular tumefaction. **Origin:**

Figure 2

a



Description: A radiographic image of the anatomical part, showing the presence of several osteochondral bodies which are partly calcified and partly ossified. **Origin:**