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PRIMARY SYNOVIAL (OSTEO)CHONDROMATOSIS OF THE ELBOW

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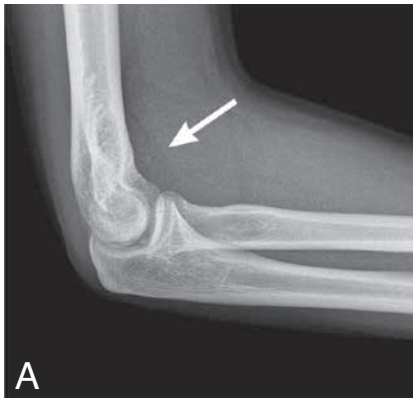
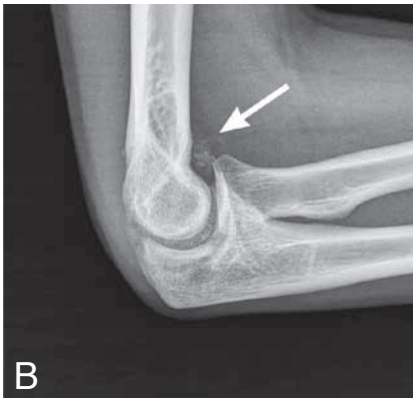
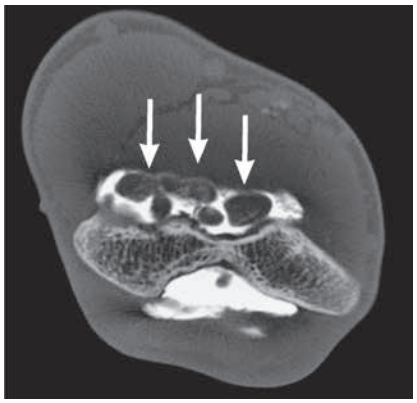
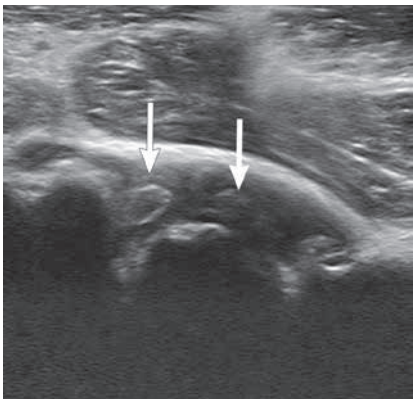
Key-word: Osteochondromatosis

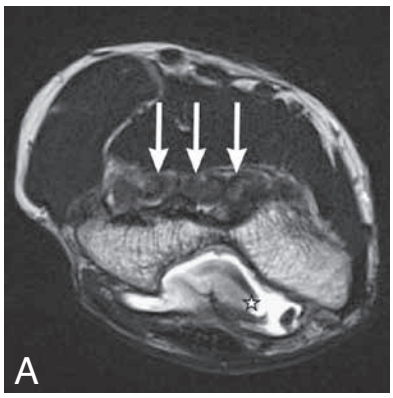
Background: A 19-year-old man was referred to the orthopedist with a history of progressive pain, swelling and limitation of movement of his right elbow.
Conventional radiographs had been taken one and a half year ago, at the occasion of trauma, and were repeated at the current consultation.
Furthermore, patient underwent CT-Arthrography of the elbow, followed by ultrasonography after the intra-articular injection and finally MRI of the right elbow.

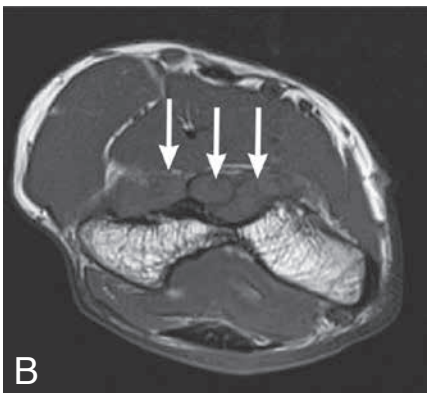












	1A	1B	
Fig.	2	3	
4A	4B	5	

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Work-up

Radiograph of the right elbow (profile views) (Fig. 1) consists of a radiograph taken one and a half year prior to the current presentation (A), to rule out a traumatic fracture which retrospectively shows a mild joint effusion along with some areas of immature ossification located at the anterior aspect of the joint (arrow) and a radiograph taken at the time of actual presentation (B) which demonstrates multiple nodular ossifications of less than 1 cm in diameter, located anteriorly to the elbow joint are seen (arrow).

On CT-arthrography (Fig. 2), on the axial slice, thirteen chondromatous bodies measuring from 2 up to 10 mm are disclosed (arrows). No chondral defect, neither osteophytosis are found.

Ultrasonography (US) carried out after the intra-articular injection (Fig. 3) demonstrates a limited joint motion due to the mobile intra-articular bodies (arrows).

MRI of the right elbow (Fig. 4), axial T2-weighted images (A) shows moderate joint effusion (star) and confirmation of the presence of multiple, high signal intensity nodular intra-articular bodies (arrows). Axial T1-weighted images (B) visualize the intra-articular bodies isointense to surrounding tissues on this sequence (arrows).

Microphotograph of one of the intra-articular bodies (Fig. 5) confirms the diagnosis of osteochondromatosis.

Radiological diagnosis

On the basis of imaging findings, the diagnosis of *primary synovial (osteo)chondromatosis of the elbow* was made and the patient underwent a synovectomy. The histopathological examination confirmed the diagnosis (Fig. 5).

Discussion

Primary synovial chondromatosis (PSC) is a benign synovial metaplasia affecting young adults in their 3rd to 5th decades with a male/female ratio of 2/4. The knee is the most frequent location accounting for 50% of all cases, followed by the elbow (30% of cases). Hip, shoulder and temporomandibular joint are less frequently affected. PSC is characterized by the presence of multiple cartilaginous intra-articular nodules. Bony metaplasia occurs in approximately 70% of the nodules.

The clinical symptoms of PSC are not specific and include soft tissue swelling, joint pain, tenderness and limitation of movement.

Radiographs demonstrate several intra-articular bodies of similar size and shape with a characteristic "ring-and-arc" chondroid mineralization.

A reactive osteophytosis can be observed in PSC, without joint narrowing. Instead, the joint space can be widened due to a cartilage hypertrophy. In some cases, bone erosions and peri-articular demineralization can be observed.

CT scan after intra-articular injection of iodinate contrast medium allows to detect of the intra-articular nodules, articular cartilage, erosions and other joint abnormalities with a better spatial resolution compared to radiographs.

The appearance of intra-articular bodies on MRI is variable, depending on the degree of bony metaplasia. Usually, intra-articular bodies have a low to intermediate signal intensity on T1-weighted images and a variable intensity on T2-weighted sequences.

On imaging, PSC must be differentiated from synovial chondromatosis secondary to osteoarthritis. Unlike in secondary synovial chondromatosis, in PSC there is no joint narrowing and subchondral bone changes. The joint space can be enlarged with reactive osteophytes. In addition, in PSC the intra-articular bodies are smaller, more numerous and more homogeneous in size than in secondary synovial chondromatosis. PSC is monoarticular. Nevertheless, rare cases of familiar inherited with polyarticular PSC have been reported.

In must be beard in mind that PSC is undistinguishable from synovial chondrosarcoma on the basis of imaging findings. When the diagnosis is doubtful even at histology, genetical analysis can help to rule out synovial chondrosarcoma.

The treatment of PSC is a surgical synovectomy with removal of the intra-articular bodies. However, the reported rate of recurrence after synovectomy is up to 25%.

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