Case 13176

Eurorad

Case report: Primary synovial chondromatosis of the right TMJ.

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Section: Head & neck imaging
Area of Interest: Head and neck
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: MR
Special Focus: Arthritides Case Type: Clinical Cases
Authors: F. GuffensM. DomF.M. Vanhoenacker
Patient: 59 years, female

Clinical History:

A 59-year-old woman was referred to the Otorhinolaryngology Department with a painless swelling in the right preauricular area. No history of trauma or limitation of mandibular movement was reported. No intracapsular sounds on jaw opening. The patient had no relevant medical history.

Imaging Findings:

CT showed widening of the right temporomandibular joint (TMJ) containing multiple small round cartilaginous nodules of uniform size. The joint surface was well-delineated, with absence of irregularity or sclerosis of the glenoid fossa or the mandibular condyle.
MRI of the TMJ was subsequently performed. Techniques included pre-contrast axial and coronal fat saturated T2-weighted sequences and sagittal fat saturated T1 spin-echo sequence before and after gadolinium contrast administration.
MRI revealed an hour-glass like soft-tissue lesion at the right TMJ. On T2W, multiple low signal intensity foci were present within the joint surrounded by fluid. On post-contrast images there was subtle enhancement of the slightly thickened synovium.
Based on the imaging findings, the diagnosis of primary synovial chrondromatosis was made. An arthrotomy with subsequent histopathological examination showed subsynovial cartilage metaplasia, and the presence of multiple similar-sized round cartilaginous nodules, thus confirming our diagnosis.

Discussion:

Synovial chondromatosis (SC) is a rare, benign, chronic condition characterized by progressive metaplasia in which hyaline cartilage is formed in the synovial membranes of joints, which can become detached producing loose bodies in the joint space.
The knee is the most frequently affected articulation. Other commonly involved joints are the hip, elbow, shoulder, and ankle. The temporomandibular joint (TMJ) is less commonly involved with only about 150 cases described to date [1-3].
The mean age of patients with SC of the TMJ is 46.3 years. Females are affected almost three times more than males.
Two forms of SC are described in the literature. Primary SC is defined by subsynovial cartilage metaplasia, synovial hyperplasia, and production of similar-sized round cartilaginous nodules [5]. The secondary form occurs as part of a pre-existing joint disease, such as arthritis or trauma. In the secondary form, formation of nodules in the joint space

is caused by the dislodgement of bony or cartilaginous tissue. These loose bodies undergo concentric layering of synovial cells, by which nourishment is provided. These nodules are more irregular and are often larger compared to nodules of primary origin [1-4].
A staging system [5], proposed by Milgram for the subacromial bursa, consists of three stages:
1) Initial stage: intrasynovial active disease without loose bodies;
2) Transitional stage: both intrasynovial active disease and the formation of loose bodies;
3) Advanced stage: only detached particles varying from 1 mm to 10 mm are present in the joint space, with burned-out intrasynovial disease.
The three primary symptoms of SC of the TMJ are pain in the preauricular area, swelling and facial asymmetry and joint deformity. Less frequent symptoms consist of occlusal changes, joint sounds, trismus, headache and facial nerve palsy, caused by intracranial extension [3].
Radiological diagnosis of SC in TMJ can be made by panoramic radiography, CT or MRI. Radiographic features of primary SC in the TMJ are widening of the joint space, limitation of motion, irregularity of the joint surface and the presence of calcified loose nodules of uniform size [6]. In secondary SC, there is typically narrowing of the joint space with nodules of different size.
CT imaging is superior for detailed evaluation of the joint margins and local extent of calcified SC [7].
MRI is useful in demonstrating synovial origin, depicting the nodules in the early stages of formation before ossification, internal derangement of TMJ and more precise assessment of the lesion's extent [8].
Differential Diagnosis List: Primary synovial chondromatosis of the right TMJ., Osteoarthritis, Chondrocalcinosis, Osteochondroma, Pigmented villonodular synovitis, Osteochrondritis dissecans

Final Diagnosis: Primary synovial chondromatosis of the right TMJ.

References:

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Figure 1

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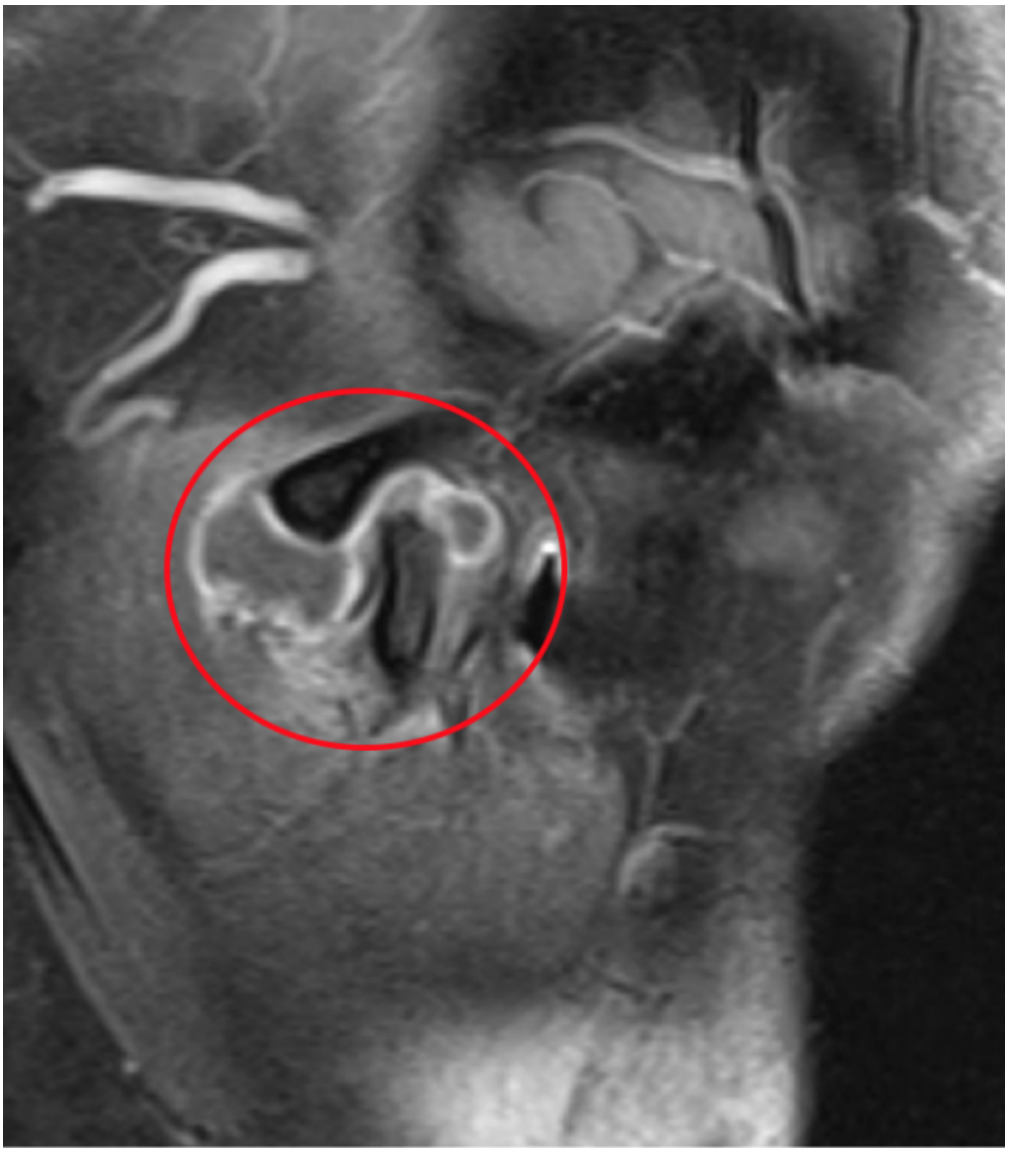

Description: Sagittal post contrast T1W images of the right TMJ show peripheral wall enhancement representing slightly thickened synovium(red circle). **Origin:** Vanhoenacker F.M., Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 2

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Description: Axial CT (soft tissue window) shows multiple soft tissue calcifications (red circle) at the right TMJ. **Origin:** Vanhoenacker F.M., Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 3

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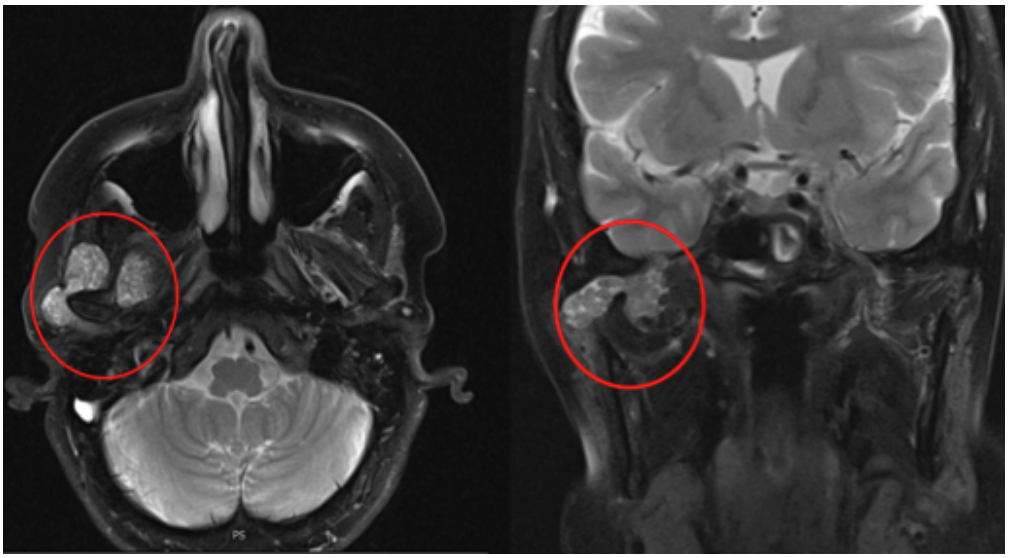

Description: MRI revealed an hour-glass like soft-tissue lesion. Axial and coronal fatsuppressed T2 weighted images show multiple loose bodies in the joint, most of which are of low signal intensity (red circle). **Origin:** Vanhoenacker F.M., Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 4

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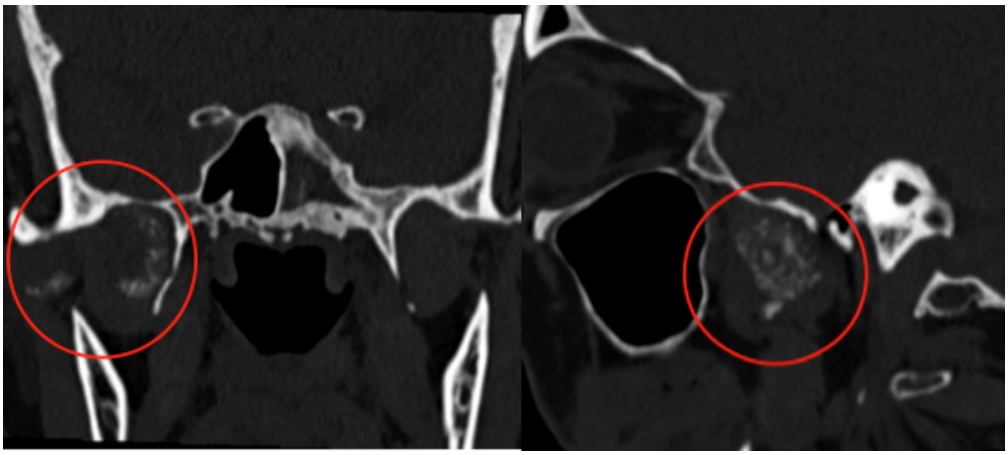

Description: Coronal and sagittal CT (bone window) show multiple calcified loose bodies of uniform size and widening of the right TMJ (red circle). **Origin:** Vanhoenacker F.M., Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium