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Case Report

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Synovial Chondromatosis of the Temporomandibular Joint Misdiagnosed as Avulsion Fracture of Condylar Process of the Mandible: A Case Report

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Abstract

Synovial chondromatosis (SC) is a benign nodular cartilaginous proliferation that mainly occurs in large joints. The temporomandibular joint (TMJ) is rarely affected. We present a case of a woman with concerns of swelling and post-traumatic pain in her right pre-auricular region. She presented an ultrasound exam performed in another institution that showed a suspected mandibular avulsion fracture. After clinical examination and computed tomography analyses, she diagnosed with SC of the TMJ misdiagnosed as an avulsion fracture of the condylar process of the mandible.

Keywords

Synovial chondromatosis, Temporomandibular joint, Ultrasound misdiagnosis, Computed tomography, Case report

Abbreviations

SC: Synovial Chondromatosis; TMJ: Temporomandibular Joint; CT: Computed Tomography; MRI: Magnetic Resonance Imaging; US: Ultrasound

Introduction

Synovial chondromatosis (SC) is an uncommon articular disorder characterised by synovial metaplasia with intra-articular proliferation of cartilaginous nodules originating from the synovial membrane or tendon sheath [1, 2]. These nodules can vary in shape and form, may be pedunculated, present as single or multiple instances, and may be free or attached to the joint space [3]. The etiology is still unknown, but various theories have been considered. Primary chondromatosis is due to the permanence of multipotent, undifferentiated cells which undergo a metaplastic process; the secondary form occurs after preexisting joint diseases such as arthritis, trauma, infection, or articular disease [4]. SC usually affects large diarthrodial joints predominantly of the axial skeleton, typically the knee (35%), elbow (22%), wrist (11%), and hip (4%), and is very rarely observed in the temporomandibular joint (TMJ) [5]. Typical signs and symptoms of SC are preauricular swelling, pain, crepitation, clicking, and limited mandibular movement [5]. SC is easily confused with other diseases in the TMJ region. Therefore, radiological examinations play an important role in the diagnosis of SC. To our knowledge, the majority of cases were evaluated based on magnetic resonance imaging (MRI) or computed tomography (CT)-few studies have reported findings from all imaging modalities [3, 6].

We report a case of a post-traumatic exacerbation of preauricular swelling in a highly probable synovial chondromatosis of the TMJ, misdiagnosed by ultrasound examination (US) as avulsion fracture of the condylar process of the mandible. To our knowledge, this case represents the first such misdiagnosis.

Case Report

A 54-year-old woman with no prior relevant medical history presented to our hospital with swelling and mild pain on the right TMJ region that was exacerbated for 2 months following a traumatic event. She presented to our team with a previous US exam showing a suspected diagnosis of a mandibular avulsion fracture (Figure 1). On extra-oral examination, we noted mild facial asymmetry on the right aspect of the face with a swelling in the preauricular region. The surface over the swelling appeared normal, and palpation revealed a hard, non-tender mass. The patient showed mild limitation of mouth opening.

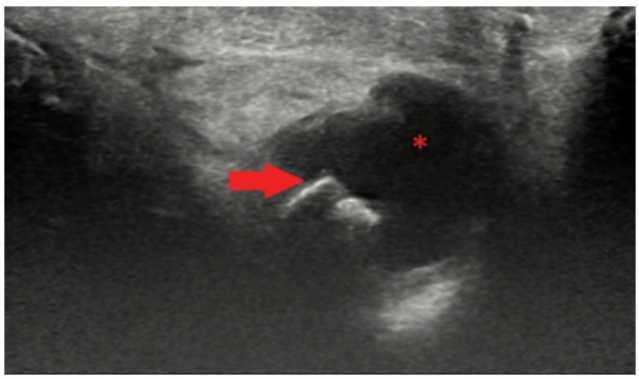


Figure 1: Ultrasound image showing fluid effusion (asterisk) and calcified-bone bodies (arrow).

Suspecting a fracture, we conducted a CT scan which showed erosion of the right glenoid fossa and temporal bone associated with sclerotic changes and minimal scalloping of the mandibular condyle (Figure 2). The images also showed abundant loose irregularly shaped calcified bodies within the joint together associated with effusion and widening of the TMJ space. Given these findings, the diagnosis of SC was made (Figure 3).

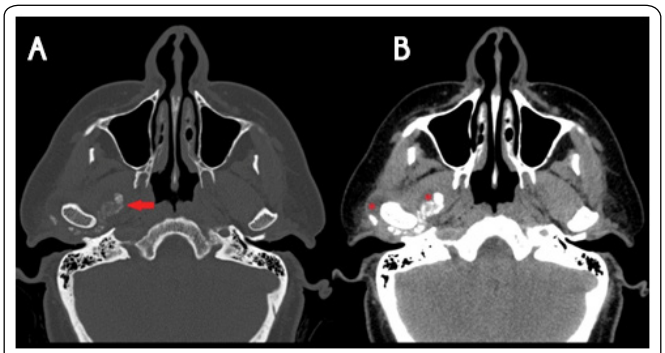


Figure 2: (**A**) Axial CT image with bone window showing multifocal calcified loose bodies (arrow) surrounding the right mandibular condyle, without signs of mandibular fracture. (**B**) Axial CT image with soft tissue window showing loose bodies and fluid effusion (asterisk) within the right TMJ.

The patient, given her mild symptoms, refused treatment. A clinical follow-up 2 years later showed slight improvement in her mouth opening ability.

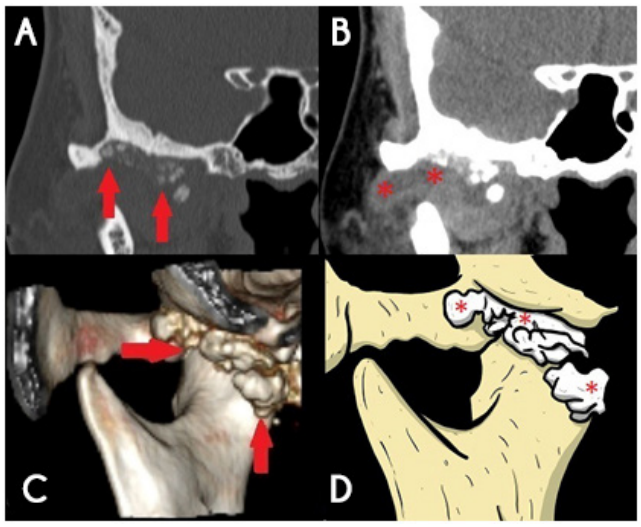


Figure 3: (**A, B**) Coronal CT view showing sclerosis and erosion of the right glenoid fossa and multiple calcified loose bodies (arrows) and fluid effusion (asterisks) within the right TMJ. (**C**) 3D elaboration of volumetric CT image showing multiple calcified loose bodies (arrows) surrounding the right mandibular condyle. (**D**) Illustration of synovial chondromatosis of the temporomandibular joint with evidence of loose bodies (asterisks).

Discussion

The knee, the shoulder and wider joints in general, are more likely to be affected by SC. Otherwise, globally, there is a very low prevalence of TMJ SC and accurate diagnosis is difficult to be assessed by clinicians due to lack of reports in scientific literature. In most of the cases SC of the TMJ is a unilateral disorder and women between 39 and 55 years of age are mainly affected [7, 8], a confirmed trend in our patient.

There are some clinical symptoms that are present both on SC and degenerative joint disease of the TMJ: malocclusion, joint sounds, discomfort and masticatory muscle pain [7, 8]. Consequently, radiological imaging is the key to differentiate between these two different conditions. SC more often occurs in superior articulation cavity, generally involves rounder loose bodies and usually shows regular configuration of mandibular condyle associated with expansion and effusion of the joint cavity [9]. Degenerative joint disease, instead, usually occurs in inferior articulation cavity, involves angular loose bodies and generally presents evident degenerative modifications of the mandibular condyle, frequently associated with osteophytes [9].

Post-traumatic fracture could be another differential diagnosis of SC and degenerative joint disease, as in our case, but should be associated with a stronger clinical link. In this report, the first imaging examination was via US, which is not the best investigation choice after a traumatic event [10]. The overall advantages of US consist in the rapid imaging examination procedure, with a relatively modest cost and does not require usage of ionizing radiation. This diagnostic approach is notably helpful in trauma patients, patients too

unstable for a CT scan, and in pregnant patients because of the absence of ionizing radiation exposure. Nonetheless, US provides only to a partial identification and quantification of fracture because of there are limited views with low spatial detail [10]. The first procedure in the analysis of the TMJ diseases is usually x-ray imaging, although some relevant findings could not be visible if the cartilaginous nodules are not calcified. However, an x-ray image may show irregularities of joint surfaces and widening of joint space [11]. CT is more reliable than an ordinary x-ray and US to identify the disorder and define the proper diagnosis; in fact, it can easily show soft tissues swelling, ossified body, osseous erosion or fracture [10, 11]. In our case, the CT evaluation showed an intact mandibular condyle, with no obvious signs of bone detachments. Moreover, the loose bodies had rounded margins, not the acute angle contours typical of bone fractures (Figures 2 and 3). Therefore, the diagnosis of SC was made.

Treatment

Medical treatment of this pathology shall depend on symptoms described by the patient, affected structures, x-ray evidences and the progression of the lesion. The appropriate SC disease management consists in surgical treatment to remove calcifications, associated to total or partial synovectomy [5]. Nonetheless, our patient declined surgical treatment and a 2-years clinical follow-up evaluation has revealed no extension and nature alterations of the lesion.

Conclusion

SC of the TMJ is rarely reported worldwide and is likely an overlooked condition. Many imaging features of SC have been reported. However, to our knowledge, no reports have described SC of the TMJ misdiagnosed on US as an avulsion fracture of the condylar process of the mandible. Clinicians should acknowledge the capacities and appropriateness of various imaging modalities to choose the optimal diagnostic tool in every clinical scenario to provide an accurate diagnosis, which, in turn, allows for adequate treatment.

Conflict of Interest

The authors declare no conflict of interest.

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Consent for Publication

Informed consent for publication was obtained from the patient.

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