A case of synovial chondromatosis of the temporomandibular joint followed for 17 years

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The patient was a 52-year-old woman who visited our hospital for the chief complaint of a strange sensation in the left temporomandibular joint region on February 22, 1992. On the first examination, crepitus was heard, but no disturbance of mouth opening was noted. On panoramic radiography, radiopaque bodies were present in the left temporomandibular joint region, diagnosed as synovial chondromatosis. Course observation without active treatment was selected. Calcified bodies were noted on the lateral side directly below the left temporomandibular articular tubercle on the first computed tomography image performed in December 1998. Reportedly, this lesion grows slowly, but the lesions started to enlarge at a specific time point during the 17-year follow-up in this patient, showing the necessity of long-term follow-up by imaging even though no quality-of-life reduction or subjective symptom is observed. (Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;112:e35-e39)

Synovial chondromatosis (SC) frequently develops in the apophysis of long bones, such as those in the knee, elbow, and hip joints,1-3 but rarely arises in the temporomandibular joint (TMJ). Regarding clinical symptoms of SC of the TMJ, temporomandibular arthralgia during mouth opening, joint noises, limitation of mouth opening, preauricular swelling and tenderness, abnormal jaw movement, and deviation of the mandible toward the affected side during mouth opening occur in many cases, and these are likely to be misdiagnosed as temporomandibular disorders (TMD) on the first diagnosis.

Surgical treatment is selected when some clinical symptoms are present and are interfered with by the reduction of mouth opening, but course observation may be selected when subjective symptoms and interference are absent. Although there have been many reports on the course of this disease after surgical treatment,4-6 long-term follow-up of the natural course without surgical treatment has not been frequently reported.

Herein, we report imaging findings in a patient we followed long term without surgical treatment.

CASE REPORT

The patient visited our hospital for the chief complaint of a strange sensation in the left TMJ region on February 22, 1992. On the first examination, the mouth-opening distance was 48 mm, and left temporomandibular arthralgia and myalgia were absent during mouth opening. Crepitus was heard, but no limitation of mouth opening was noted. On panoramic radiography, several radiopaque loose bodies were present in the left TMJ region, diagnosed as SC (Fig. 1). No bone changes were noted in the bilateral condyles, and no subjective symptom or limitation of mouth opening was present. The patient was informed about surgical treatment as the initial treatment. However, she elected to accept a wait-and-see policy to avoid the risk associated with a surgical operation. Therefore, the lesion was periodically followed without active treatment. Panoramic radiography, computed tomography (CT), and magnetic resonance imaging (MRI) were performed 16, 4, and 3 times between the first examination in February 1992 and July 2009, respectively. The first MRI was performed in 1992: anterior displacement without reduction of the bilateral articular disks was observed and mottled low-intensity lesions were present in the superior articular cavity of the left TMJ on T1-weighted imaging (Fig. 2). On panoramic radiography, the lesion did not enlarge from the first examination in February 1992 through February 1997, but it showed enlargement in April 1998, compared with the size in February 1997, and the size slowly increased until December 2003 (Fig. 1).

Multiple radiopaque bodies of various sizes were present on the lateral side directly below the left temporomandibular articular tubercle in the sagittal plane on CT in October 1998.
Anteriorly, several radiopaque bodies that were observed directly below the articular tubercle in October 1998 had fused in December 2001. The lesion size increased in December 2003, compared with that on CT in December 2001, but no change was noted between December 2003 and July 2009 (Fig. 3). On follow-up in July 2009, the mouth-opening distance was 41 mm (Fig. 4), showing a slight decrease, but, clinically, no arthralgia or limitation of mouth opening was noted.

**DISCUSSION**

Clinical symptoms of SC include pain of the TMJ region during mouth opening, articular noises, limitation of mouth opening, preauricular swelling and tenderness, abnormal jaw movement, and deviation of the mandible toward the affected side during mouth opening. Many cases are diagnosed by MRI performed while suspecting TMD on the initial examination. Guarda-Nardini et al. reviewed literature about SC of the TMJ and described 155 cases in 103 publications.

![Panoramic radiography showed at the initial examination several radiopaque loose bodies in the left TMJ region. This finding prompted us to diagnose as SC of the left TMJ. In February 1992, 5 years after the initial examination, the tumor showed no tendency to enlarge in comparison with that on the initial examination image. A tendency toward lesion enlargement was noted, but the lesions started to enlarge at a specific time point during the 17-year follow-up in this patient.](image-url)
In this review, they described restricted mouth opening, pain, and swelling as the classical triad of signs and symptoms of SC of the TMJ in the order of frequency. In this case, crepitus was the only symptom, with none of the triad signs being observed. The duration of illness often appears to be 2 years or longer, but it is unclear in this patient.

Surgical treatment is selected when the patient strongly requests it, even though no temporomandibular arthralgia reducing the quality of life or symptoms interfering with daily living activities are present. Course observation may be selected in other cases. In many reported cases, surgical treatment was selected for some reasons and the postoperative course was followed over time. However, there has been no report on the long-term clinical observation of the natural course without active treatment, such as surgery. Thus, we reported this case, in which the course was followed without active treatment for a prolonged period.

SC is a benign lesion: loose bone and cartilage formed in the synovial membrane float in the articular cavity, and it rarely develops in the TMJ. A radiographic characteristic of SC of the TMJ is that widening of the articular space, limitation of motion, roughness of the articular surface, presence of loose calcified bodies, and hardening of the glenoid cavity and mandibular head are clearly observed. In this patient, a diagnosis of SC was made because panoramic radiography at the initial examination showed radiopaque loose bodies in the left TMJ region.

Fig. 3. Introduction of CT into our hospital in 1998 enabled our precise investigation of this tendency. In July 2001, the so far separated dotlike lesions began to fuse. The lesion tended to grow from 2001 to 2003, no obvious change was noted from 2003 to 2009.
Other diseases characterized by the formation of radiopaque calcified bodies in the TMJ region include osteochondroma, osteoma, chondroma, and chondrocytoma, but histopathological differentiation from other diseases that present similar images could not be made because no surgical treatment was performed.

In this patient, the lesion size did not change for 5 years after the first examination, but enlargement directly below the temporomandibular articular tubercle started after 6 years, in April 1998, and it continued for 5 years until December 2003, although the growth was slow. These changes were observed as a slow fusion of the anteriorly multiple radiopaque loose bodies directly below the left temporomandibular articular tubercle on panoramic radiography. The overall lesion size also increased, and could be sufficiently observed by panoramic radiography. Enomoto et al. followed this disease for 5 years before treatment, and observed the fusion of loose bodies as lesion growth. The fusion of loose bodies in this case was consistent with their findings.

There was no lesion enlargement over the last 5 years. The first CT was performed in 1998 because the lesions tended to enlarge, and nontransparent lesions were noted in the sagittal plane of CT at sites consistent with those on panoramic radiography. The fusion of multiple calcified loose bodies was also noted in the sagittal and coronal planes in December 2001 and December 2003, confirming enlargement.

There are reports on the histopathological and radiographic classification of SC. Milgram classified the developmental process of the disease into 3 phases: (1) active intrasynovial disease only, with no loose bodies; (2) transitional lesions with both active intrasynovial proliferation and free loose bodies; and (3) multiple free osteochondral bodies with no demonstrable intrasynovial disease.

Yu et al. classified CT features into 3 types: type 1 with soft tissue swelling and no loose calcified bodies; type 2 with both soft tissue swelling and loose calcified bodies; and type 3 with loose calcified bodies around the TMJ but no soft tissue swelling. They also considered that histopathological findings and CT features are not always directly related but that CT features are useful to stage the disease according to Milgram’s 3 phases.

The diagnosis of SC of the TMJ is suggested by CT and subsequently confirmed by the pathologic examination of biopsy or surgical samples. Loose calcified bodies and abnormal soft tissue thickening or swelling are considered to be distinct characteristics of SC of the TMJ. SC in this patient is considered to have been in Milgram’s phase 3 and type 3 of Yu et al.

Reportedly, this is a slow-growing benign lesion. However, the lesion started to enlarge at a specific time point during the 17-year course observation, suggesting that course observation by imaging is necessary even though no quality-of-life reduction or subjective symptoms are observed. Lesion enlargement can be observed by panoramic radiography to some extent, but CT may be useful to confirm changes. Murphy et al. and Saotome et al. reported that nutrient supply by the synovial fluid continues and maintains the enlargement of chondrified loose bodies, which influences clinical symptoms upon changes. In the present case, although no arthralgia or lesion occurred during the 17-year course observation, observation should be continued. When neither subjective symptoms nor quality-of-life reductions are present, as in this case, SC may not be discovered unless imaging is performed.

Therefore, examination by imaging and course observation are necessary even though quality-of-life reduction and subjective symptoms are absent. Lesion enlargement can be observed by panoramic radiography, but CT may be useful to confirm changes.

REFERENCES

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