

Intraosseous Lesion in Mandibular Condyle Mimicking Temporomandibular Disorders: Report of 3 Cases

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Pain and dysfunction in the temporomandibular joint (TMJ) region represent a diagnostic challenge. Temporomandibular disorders (TMD) are usually diagnosed by means of a thorough patient history and comprehensive clinical examination. However, additional diagnostic tests, such as imaging of the TMJ area, are necessary in cases where the signs do not explain the symptoms. Neoplasms and pseudotumors of the TMJ are quite uncommon, but their early recognition is necessary in order prevent the delay of correct treatment. This report describes 3 cases of different intraosseous lesions of the mandibular condyle in which the patient was erroneously first treated for a TMD.

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Neoplasms and pseudotumors of the temporomandibular joint (TMJ) are quite uncommon,^{1,2} but their early recognition is necessary in order to delivery prompt treatment, which could have a dramatic impact on the patient's life. Rare TMJ lesions include synovial chondromatosis, osteochondroma, osteoma, osteoblastoma, pigmented villonodular synovitis, ganglion, synovial cyst, simple bone cyst, aneurysmal bone cyst, epidermal inclusion cyst, hemangioma, nonossifying fibroma, Langerhans cell histiocytosis, plasma cell myeloma, and sarcoma.³

Bone or cartilage-forming tumors or hyperplasia of the hard tissues, such as osteoblastoma or condylar hyperplasias, are the most common pathologies of the mandibular condyle. They are easily diagnosed because they lead to facial asymmetry and malocclusion.⁴ On the contrary, intraosseous condylar lesions are difficult to diagnose because their symptoms (painful or painless swelling, dull pain in the preauricular region, joint noise, and discomfort during mastication) are similar to those reported by patients with temporomandibular disorders (TMD). Therefore, these pathologies are often initially overlooked, while patients are treated conservatively in TMD pain clinics as if they had a TMD.

This report describes 3 different intraosseous lesions of the mandibular condyle referred to the authors between 1996 and 2005 from other departments because of lack of improvement in the patient's condition after conservative therapy.

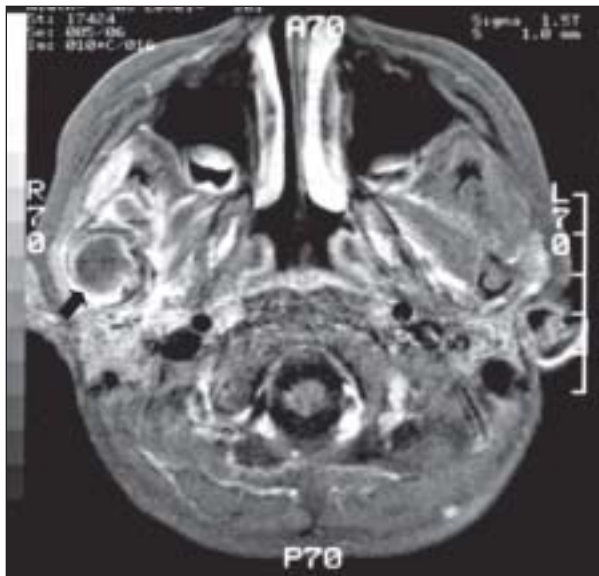


Fig 1 MRI scan showing osteolytic soft tissue mass on the right mandibular condyle and neck.

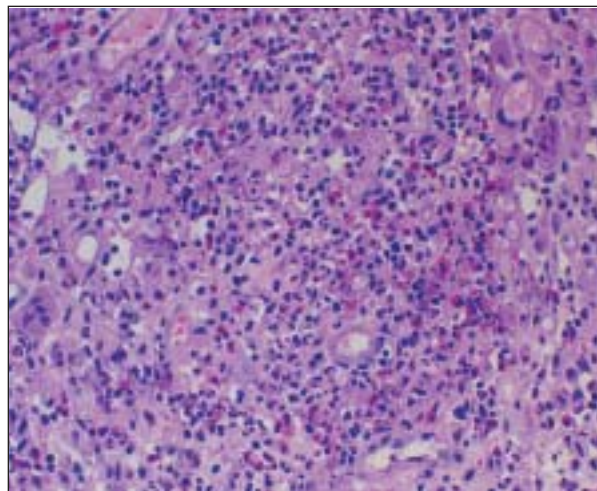


Fig 2 Histologic examination revealed a diffuse proliferation of large histiocytes with eosinophilic cytoplasm and a focal abundant concentration of eosinophils. Occasional multinucleated cells were also observed (hematoxylin-eosin, original magnification $\times 200$).



Fig 3 Postoperative panoramic radiograph obtained 6 months postoperatively showing good bone healing.

Case Presentation

Case 1

A 7-year-old boy was referred in June 1996 for the management of right TMJ swelling and pain from the Department of Occlusion where he had been treated conservatively for 6 weeks with hot packs, medications, and physical therapy, but without improvement. The symptoms had started 8 weeks earlier. He reported a trauma on the chin area 10 weeks earlier but not open lock and/or TMJ clicking.

The clinical examination showed a slight facial swelling of the right preauricular area without any signs of inflammation. Maximum mouth opening was 35 mm without deviation or deflection during mandibular movements.

The panoramic radiograph showed a well-demarcated osteolytic lesion within the right mandibular condyle. The osteolytic lesion was also

apparent in computerized tomography (CT) and magnetic resonance imaging (MRI) scans (Fig 1). Under general anesthesia, the mass was excised. The histologic diagnosis was Langerhans cell histiocytosis (Fig 2). The postoperative course was uneventful. The panoramic radiograph obtained 6 months after surgery shows bony bulging in the previous lesion area, but the bone had healed completely (Fig 3). No recurrence occurred during the 9-year postoperative follow-up period.

Case 2

A 14-year-old boy was referred from the Department of Oral Medicine in March 2001. He complained of right TMJ swelling and pain and reported a history of an open lock, which had occurred a few years before, and an abnormal sensation when eating tough food. He also reported a history of trauma at the age of 5. There was no history of TMJ noise. The



Fig 4 Panoramic radiograph showing radiolucent lesion involving the mandibular subcondyle and sigmoid notch.



Fig 5 CT image of a radiolucency in the ascending ramus.



Fig 6 Postoperative panoramic radiograph. There is no evidence of recurrence.

Fig 7 Panoramic radiograph showing unilocular radiolucent lesion at the right mandibular condyle and neck.



first provisional diagnosis was anterior disc displacement with reduction. Three weeks after the first provisional diagnosis, a serial CT scan showed a condylar lesion, so he was referred to the Department of Oral and Maxillofacial Surgery.

Except for the presence of a right TMJ clicking, the clinical examination revealed no abnormalities. There was no facial swelling or tenderness to palpation of the stomatognathic structures. The mandibular movements were normal, without any deviation or deflection.

The panoramic radiograph (Fig 4) and the CT image (Fig 5) showed a radiolucent intraosseous lesion of the mandibular condyle and neck. An empty bone cavity was found during surgery, suggesting a traumatic bone cyst. The healing process was good, and there has been no recurrence over 4 years (Fig 6).

Case 3

A 17-year-old girl complained of a limited mouth opening and a right TMJ clicking. Initially, she visited the Department of Orthodontics for an open bite. She was referred to the TMJ clinic for treatment prior to the orthodontic treatment. The MRI examination showed a condylar cystic lesion, so she was referred to the Department of Oral and Maxillofacial Surgery. She presented with open lock and clicking but had no memory of facial trauma.

The clinical examination revealed a right TMJ clicking and a mouth opening of approximately 53 mm. The right preauricular area was slightly swollen and tender to palpation. Imaging revealed a 2 × 2-cm cystic lesion in the right mandibular condyle (Fig 7). The lesion was enucleated via the intraoral approach, and the histologic diagnosis was aneurysmal bone cyst. The symptoms completely resolved after surgery, and the postoperative sequence was uneventful. There has been no recurrence during the 7-year follow-up period.

Discussion

Intraosseous lesions of the TMJ are rare, and their diagnosis is quite difficult without careful imaging.^{2,3} The radiologic findings often show an osteolytic lesion within the mandibular condyle and/or neck that may be caused by (1) primary bone cysts and tumors, (2) metastatic lesions of bone, (3) degenerative changes, and (4) metabolic lesions.⁵ Odontogenic cysts and tumors such as odontogenic keratocysts or ameloblastomas may involve these areas, but they are often associated with an impacted tooth and are usually located in the mandibular angle or body from where they may expand into the mandibular condyle.⁶

Primary Bone Cysts and Tumors

Traumatic bone cysts, aneurysmal bone cysts, giant cell lesions of the bone, Langerhans cell histiocytosis, and nonossifying fibroma are primary bone cysts and tumors. All show similar radiologic findings so that the final diagnosis can be made only by means of histologic examination.

Traumatic bone cysts usually involve the long bones, primarily the humerus and femur. In the mandible, they are most often located in the body or symphysis of young patients^{7,8} and very seldom in the condyle, with 10 cases being reported.^{7,9-16} The pathogenesis is unclear, although it is believed that, as a result of trauma, hemorrhage occurs in the jawbone, which leads to an empty cavity when the hematoma has resolved. Therefore, it is not a true cyst.

It is very difficult to distinguish a central giant-cell granuloma (CGCG) from an aneurysmal bone cyst. To the best of the authors' knowledge, only 4 cases have been reported.¹⁷⁻²⁰ CGCGs are classified as either aggressive or nonaggressive. The aggressive type has a higher growth rate associated with bone expansion and a tendency to recur. The nonaggressive type is usually accompanied by an asymptomatic painless swelling with slow growth.²¹ All reported CGCG cases of the TMJ have been of the nonaggressive type. The aneurysmal bone cyst occurs in people younger than 20 years of age, with a mean age of 14.3 years for reported cases.²² A history of trauma often precedes the lesion.^{23,24} Only 6 cases of condylar aneurysmal bone cyst have been reported.²⁵⁻³⁰

Langerhans cell histiocytosis is based on the similarity between the histopathologic findings that reveal histiocytic and eosinophilic proliferation.^{31,32} The cause and pathogenesis are unclear. The most commonly affected sites of the mandible

are the body and angle.³³ To date, 11 cases of eosinophilic granuloma in the mandibular condyle have been reported.^{32,34-41} All patients had a painful TMJ, limited mouth opening, preauricular swelling, and TMJ noise. Langerhans cell histiocytosis granuloma is treated by surgical curettage, excision, radiation therapy, and intralesional steroids.^{42,43} Irrespective of the treatment, the recurrence rate is quite low.

Metastatic Lesions of Bone

Primary malignancies of the kidney, lung, breast, colon, and prostate commonly metastasize to the facial bone. In childhood, Wilm's tumor, neuroblastoma, and central nervous system tumors can also metastasize to the bone. In all these diseases, the primary malignant tumor precedes the TMJ metastasis.⁴⁴⁻⁴⁶

Degenerative Changes

Degenerative changes, mainly osteoarthritis, may show osteolytic condylar lesions. This entity is extremely rare in children, and there is little correlation with a history of trauma. The radiographic findings are joint narrowing, cortical sclerosis, and a flattening of the mandibular condyle. One case of a simple bone cyst with osteoarthritis has been reported.⁴⁷

Metabolic Lesions

The so-called brown tumor is a typical form of a metabolic disease and is most often found in adults. Other radiographic findings associated with hyperparathyroidism, such as a loss of the lamina dura and alterations in the bony trabecular patterns, may be found in hyperparathyroidism patients. Estimation of serum calcium, phosphorus, and alkaline phosphatase is mandatory to exclude the brown tumor.

Conclusions

Most of the patients who have benign lesions of the mandibular condyle have symptoms similar to those of TMD patients. Thus, basing the diagnostic process on the criteria used in the Research Diagnostic Criteria for Temporomandibular Disorders (Axis I)⁴⁸ may lead to a misdiagnosis, especially if the clinician is inexperienced. Cimino et al⁴ proposed a flowchart to be used in cases in which the signs do not explain the symptoms, but the flowchart does

not include benign condylar cysts or tumors; it is limited to patients who complain of an asymmetric mandible. The 3 patients presented in this paper were young, and 2 of them had a history of trauma. Young age and a history of trauma appear to be of diagnostic relevance and should lead to the inclusion of benign condylar intraosseous lesions in the differential diagnostic process and therefore prompt the clinician to perform a TMJ imaging evaluation.

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