Aneurysmal bone cyst of the mandibular condyle with condylar neck fracture

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ABSTRACT

Aneurysmal bone cyst (ABC) is relatively rare, non-neoplastic expansile lesion of bone. The case of a 15-year-old male with a ABC of the left mandibular condyle is presented. Panoramic radiograph showed a unilocular radiolucency with thinned coritces and a subcondylar fracuture which was due to the trauma. Computed tomography (CT) revealed expansile lesion which had similar attenuation soft tissue. The patient was treated surgically including iliac crestal bone graft. (***Korean J Oral Maxillofac Radiol 2009; 39 : 205-8***)

KEY WORDS : Aneurysmal bone cyst, Mandibular condyle

An aneurysmal bone cyst (ABC) is an expansile, often multilocular, osteolytic lesion, with blood-filled spaces separated by fibrous septa containing giant cells and reactive bone.[1] It has been reported to affect mainly the long bones of the skeleton and rarely the facial bones. Jaw lesions present mostly in the body-ramus area of the mandible. The lesion generally affects young persons predominantly under 20 years of age, with no sex predilection.[2]

Clinical presentations of ABCs are extremely variable, ranging from a small, indolent, asymptomatic lesion being first noticed as a radiolucency on a routine radiographic examination to a rapidly growing, expansile, destructive lesion. The term "aneurysmal" is used to define the "blow-out" distension of part of the contour of the affected bone that results in the striking radiographic appearance so often encountered. It is not aneurysmal because there is no endothelial lining of the vascular spaces, and it is certainly not a cyst.[3] The plain radiographic features of ABC of the jaw may show a unicystic, unilocular, soap-bubble, honeycomb, multilocular or moth-eaten radiolucency causing expansion, perforation or destruction of the bony cortices.[4,5]

This report describes a case of ABC of the mandibular condyle.

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Case report

A 15-year-old boy was referred with trimus and radiolucent lesion in the area of the left mandibular condyle on panoramic radiographic examination. He gave a history of trauma to the left side of his face on the day of the visit. His medical history was unremarkable. Clinical examination revealed a swelling in the left preauricular region with tenderness on palpation. The patient showed limited interincisal mouth opening (15 mm). There was no paresthesia in the area innervated by the left mandibular nerve, and no palpable nodes in the face or neck. Intraorally fractured teeth were visible.

Panoramic examination showed a unilocualr, radiolucent lesion of the left mandibular ramus with subcondylar fracture (Fig. 1).

A computed tomography scans revealed an intrabony lesion with expansion, marked thinning of the medial and lateral corticies. Discontinuity of the cortical bone was probably due to the fracture. There were no internal calcifications within the mass (Fig. 2A, B, C). Three-dimensional computed tomography reconstruction demonstrated the destruction of the mandible (Fig. 2D).

Under general nasotracheal anaesthesia, the lesion was approached via mandibular incision. The mandibular cortex was egg-shell thin and perforated in some areas.

Macroscopically, the lesion was cystic and filled with dark brownish blood. Histopathological examination showed sinusoidal spaces filled with red blood cells in a fibrous matrix.

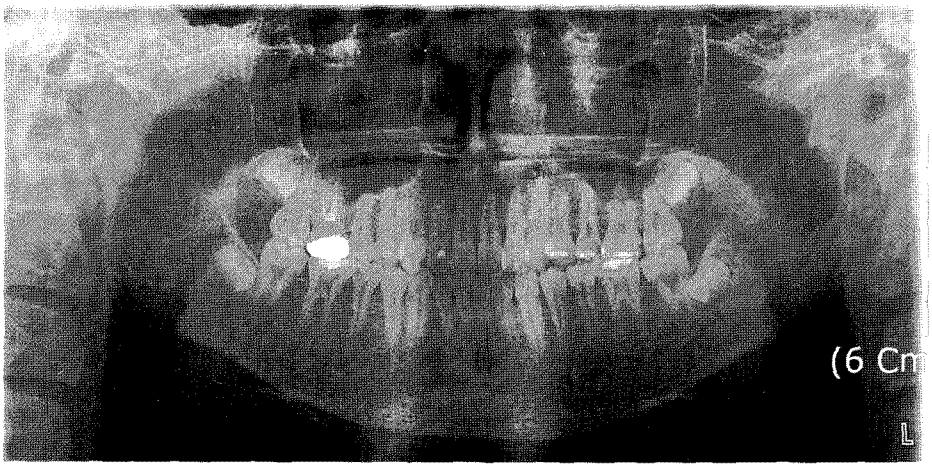

Fig. 1. Panoramic view shows a radiolucent lesion of the left subcondylar area without sclerotic margin.

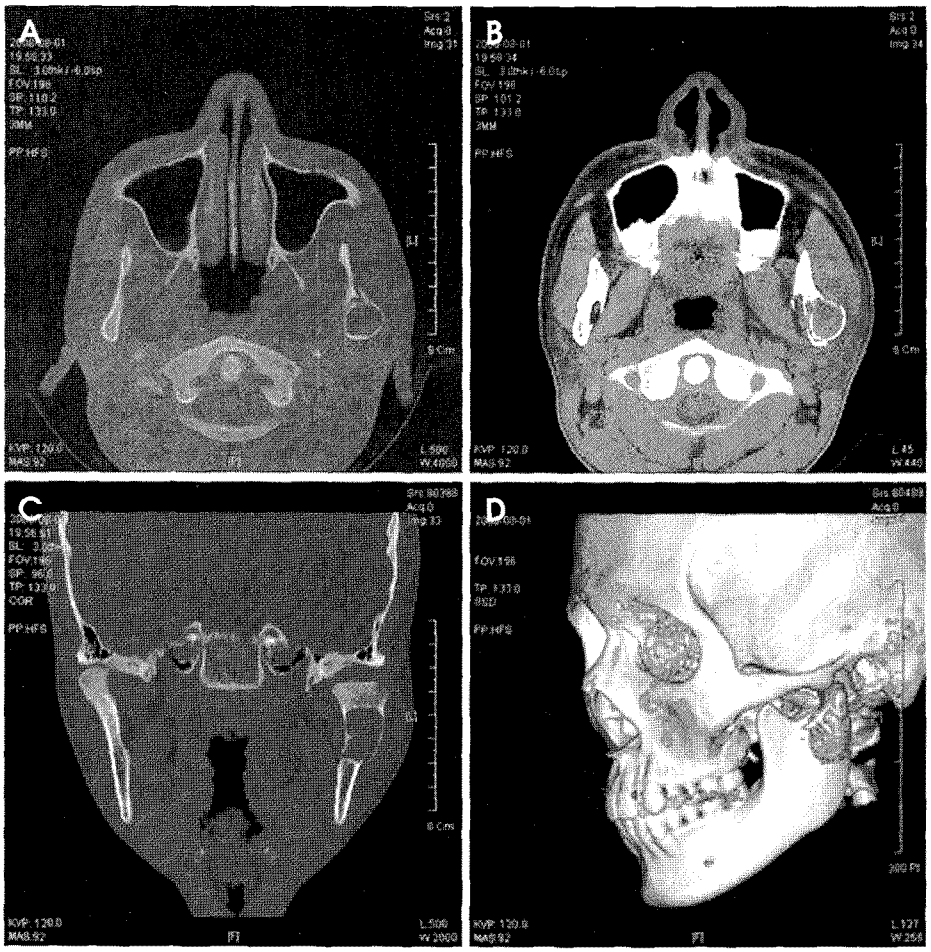

Fig. 2. Axial (A, B) and Coronal (C) CT scans show cortical expansion especially lateral side and thinning. Three-dimensional (D) CT shows fracture of subcondylar neck and displacement of bony fragment.

Hemosiderin-laden giant cells were also seen in the stroma. The lesion was diagnosed histologically as an ABC (Fig. 3).

The patient was treated surgically and the postoperative course was uneventful with no evidence of a recurrence 1 year later.

Discussion

The ABC is a benign solitary osseous lesion recognized as a distinct clinicopathologic entity by Jaffe and Lichtenstein.[6] ABC is most common in those parts of the skeleton where there is a relatively high venous pressure and high marrow

Fig. 3. Histopathological examination shows erythrocytes, fibrous connective tissue with fibroblasts and histiocytes (H & E stain, magnification × 100).

content.[7]

Clinically ABC present as a firm swelling with or without tenderness, progressively enlarging and occasionally perforating the bony cortex.

The aetiology of ABCs remains elusive. Trauma to the affected bone as a causative agent is controversial. The developmental origin of the abnormality is more likely hypothesis.

Radiographic findings of ABC vary from unicystic radiolucencies or moth-eaten radiolucencies to extensive multilocular lesions causing expansion and destruction of both cortices.[8] Goaz and White[9] suggest three stages in its development which determine its radiological features: (1) an initial stage characterized by a defined but not corticated lytic area; (2) a growth stage, showing an enlarged area of bone destruction; and (3) a mature stage, exhibiting bony expansion, cortication and faint septa coursing through the lesion in a random pattern. They also claim that the margins of the lesion are generally somewhat irregular and less distinct than those of odontogenic cysts but more distinct than those of central malignancies.

Computed tomography scan is superior to plain radiology in defining the extent and soft tissue extension of an ABC, particularly in the skull. Multiple small fluid levels are important characteristics of ABC on CT scan, which represent sedimentation of red blood cells within blood-filled cavities. Although, fluid-fluid levels haveh, en a characteristic feature of ABC, this feature was not o,served in this case. Tes. Als that do not show fluid levels on CT scan are often nonhomogeneous and resemble some giant cell tumors.[10]

The MRI findings of ABC include multiple internal septations, cysts with fluid-fluid levels of varying intensity, and an intact rim of low-intensity signal completely surrounding the lesion.[15]

Jun-ichi et al. reported that the 'meshwork' appearance on bone-targeting CT, the 'bubbly' appearance on T2W1 and the 'honeycomb' appearance on Gd-T1W1 may be the characteristic images of ABC.[11]

Bone scintigraphy with Tc-99m MCP demonstrates a ring-like or doughnut-like pattern of accumulation of radioactivity, corresponding to the expansile character of bony lesion.

Histologically the ABC consists of many sinusoidal blood-filled spaces set in a fibrous stroma. Multinucleated ginat cells are distributed in areas of old hemorrhage and there is often evidence of osteoid formation and hemosiderin is present in variable amounts.

Radiographic findings are suggestive but not diagnositic. This, in part, may be because of the various types of ABCs; the solid type being more defined and less destructive; the vascular type being less defined and more destructive. Mandibular destruction leading to the development of a pathologic fracture in the mandible has also been reported.[12]

The main differential diagnoses include ameloblastoma, myxoma, central giant cell granuloma, odontogenic cyst and venous malformation of the bone.[13] ABC may be associated with various tumors, such as chondroblastoma, giant cell tumor, or osteoblastoma.[16]

Surgery is the treatment of choice. Conservative treatment with enucleation and curettage may be preferred to mandibular resection in view of the benign nature of the lesion. Radiation therapy should not be used owing to the increased risk of developing radiation-induced sarcomas.[14] Recurrence rates of for ABC are relatively high and exceed 30%.[14] This is probably the result of inadequate removal due to technical difficulties of access and persistent inter-operative hemorrhage rather than the biological behavior of the tissue itself.

In conclusion, this case presents a rare aneurysmal bone cyst of the mandibular condyle. This lesion has been found in association with the fracture. The mandible has fractured easily because of thinned cortical bones due to the lesion.

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