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Aneurysmal bone cyst of the zygomatic arch: a case report

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ABSTRACT

We describe a case of an aneurysmal bone cyst originating from the zygomatic arch, which, according to the literature, is an extremely rare location. In the preoperative diagnosis the characteristic radiological signs of the high-quality computed tomography and magnetic resonance examinations were the cornerstones. Treatment was successful total excision. Careful diagnostic workup and multidisciplinary approach (head and neck surgeon, radiologist, and pathologist) should be utilized to successfully diagnose and to treat this rare pathology.

1. Introduction

Aneurysmal bone cyst (ABC) was first described in the literature in 1942 by Jaffe and Lichtenstein [1]. It is an osteolytic expansive lesion typically surrounded by thin cortical wall, containing cystic cavities filled with blood [2,3]. The term *aneurysmal* derives from its radiological appearance. ABC makes up 1–2% of all primary bone tumors, and around 15–20% of spine tumors [4,5]. A slightly higher number of female patients are affected than male ones, and it is most commonly observed among patients younger than 20 years of age [6,7]. The frequent sites affected are the metaphysis of the long bones. Ten to thirty percent of ABC involve the spine, mostly the lumbar, and the thoracic region. The head and neck region is usually a rare site of origin, within which the mandible is most typically involved. The zygomatic arch is an atypical location in particular. In 1999, Sheikh et al. published a review of previous literature about the sites affected by ABC in the head and neck region, among which only two of the cases were reported in the zygomatic area [8]. Since this article was issued, as far as we know, only a few cases of ABC involving the zygomatic bone have been described in the literature so far [9–15].

In this paper we intend to present a new case of ABC found in our institute, with the extreme rare location of origin, the zygomatic arch.

2. Case

An 18-year-old male, previously healthy, presented with a slowly growing facial mass (for 1 year) on the left side of the face, in the left zygomatic arch. The mass was only painful when hardly pressed. There was no previous history of trauma known, and there were neither other symptoms, nor complaints. On physical examination, a bony-hard mass, measuring around 6 centimeters, extending distally from the left zygomatic arch was present (Fig. 1) Computed tomography (CT) and magnetic resonance imaging (MRI) examinations were performed. On CT scan it was also a well circumscribed mass, surrounded by a clearly visible thin sclerotic border. Its proximal–medial part reached the maxillary suture, and its proximal-dorsal part has reached the temporal suture. Thus, it was clearly indicated that this mass originated from the zygomatic arch (Figs. 1 and 2).

On the MR scan, a complex structured mass originating from the zygomatic arch with a size of 4.5 cm craniocaudal, 2.5 cm

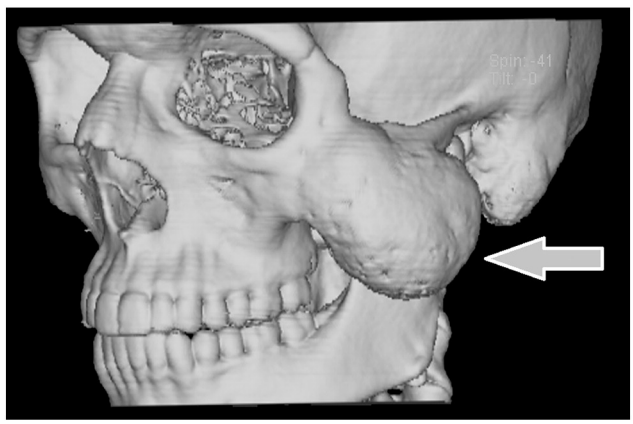

Fig. 1. CT 3D reconstruction shows the extent of the lesion (arrow).

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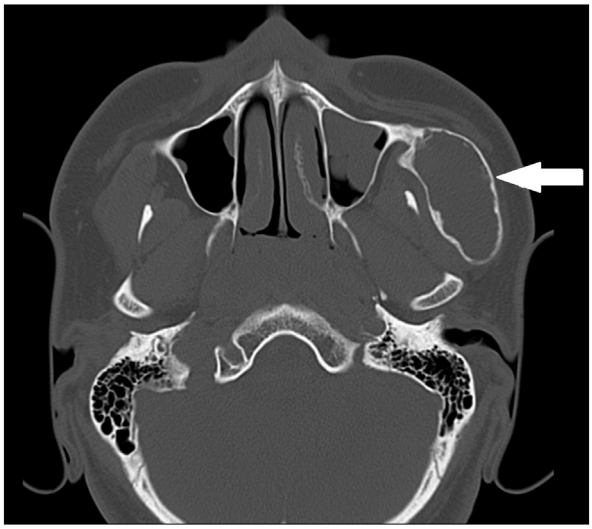

Fig. 2. Axial CT scan shows the thin bone border of the lesion (arrow).

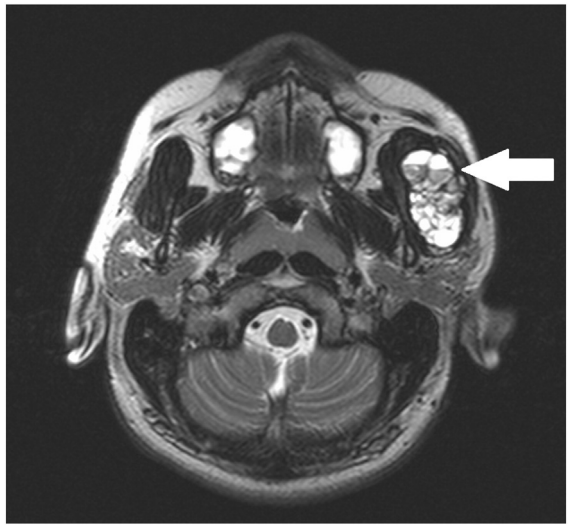

Fig. 4. Axial T2 weighted (T2W) MR scan. The fluid-fluid levels are clearly visible, due to blood sedimentation (arrow). High signal intensities inside the lesion indicate the cystic fluid component.

mediolateral, and 4 cm anteroposterior could be detected. The mass was sharply circumscribed, having a border without almost any signal, which is suggestive of the characteristic sclerotic bone rim of ABC. The lesion was compressing the masseter muscle as well. The mass was multilobulated, lined with thin septa, contained multiple cysts of different signal intensity with fluid–fluid levels due to different stages of blood sedimentation. Inside the cystic cavities on T1-weighted images moderate to high signal (Fig. 3) and on T2 weighted and also on STIR images mainly high signal intensity could be observed (Figs. 4 and 5). After gadolinium contrast injection in the early phase the mass showed septal enhancement (due to the granulation tissue forming the septa), but in the late phase, after 12 minutes, it showed diffuse contrast enhancement (Figs. 6 and 7).

The preoperative diagnosis was based on the CT and MRI findings; the reports strongly suggested ABC. The surgeons, based on the radiological report, decided to operate the lesion because it was a major lesion, and causing serious cosmetic problems to the patient. Preoperative biopsy was not taken. Surgery followed the CT/MRI examination; total extirpation was carried out. No further treatment was performed. After transnasal intubation, incision was performed from the second upper incisor to the retromolar region. The soft tissues were moved away from the bony wall of the maxilla, backward to the zygomatic arch. The masseter muscle was moved from the jagged, eggshell-like surfaced lesion, the muscle adhesion was on the zygomatic process of the maxilla and on the edge of the first third of the zygomatic arch. The bony wall was cracked, and a septated lesion was found containing small amount of bloody fluid. First, the liberated bony wall fragments were taken out, after that the lower and the dorsal bony walls of the lesion were removed. Macroscopically the

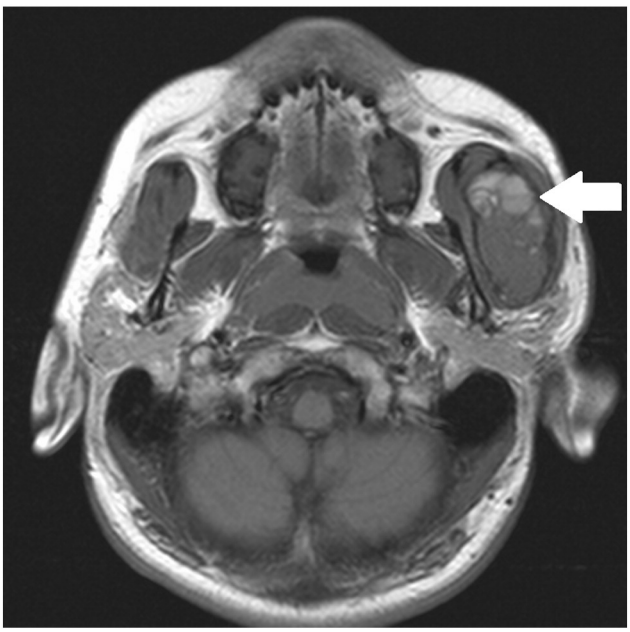

Fig. 3. Axial T1 weighted (T1W) MR scan image. The high signal in the upper parts of the lesion is suggestive of blood products. Around the lesion, there is no signal, according to the thin bone border on the CT (arrow).

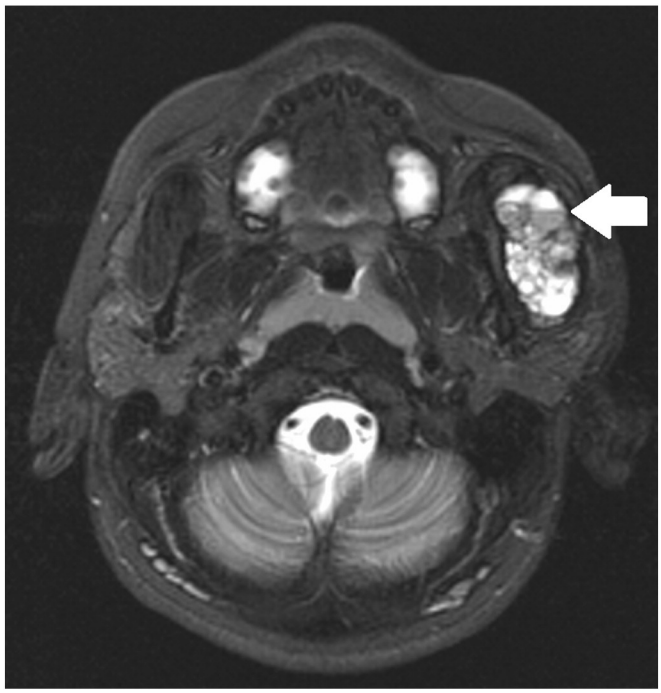

Fig. 5. Axial short-tau inversion recovery (STIR) MR image. The fluid-fluid levels are clearly visible, due to blood sedimentation (arrow). High signal intensities inside the lesion indicate the cystic fluid component.