Radiol Oncol 2003; 37(3): 155-9.

Unexpected diagnosis for preauricular swelling - two case reports

Goran Roić[1], Vesna Posarić[1], Ante Marušić[1], Igor Borić[1], Tomislav Vlahović[2], Kristina Vrliček[3]

[1] Department of Paediatric Radiology, Children's Hospital Zagreb, School of Medicine University of Zagreb; [2] Department of Paediatric Surgery, Children's Hospital Zagreb, School of Medicine University of Zagreb; [3]Pediatric Clinic, Zagreb Clinic Center, School of Medicine University of Zagreb, Zagreb, Croatia

Background. *Preauricular swelling in children may be associated with a wide range of pathology. The history, clinical presentation and imaging features of such swellings may be non-specific. Sometimes it can be caused by underlying bone lesion.*

Case reports. *We report about two children who were admitted to the hospital with swelling in the preauricular region and an unexpected final diagnosis. We found aneurismal bone cyst and central giant cell granuloma, respectively.*

Conclusions. *Awareness of such lesions is important to avoid diagnostic errors and a potential mismanagement. These lesions are often difficult to differentiate on the basis of their radiographic features alone. A high-resolution US enables an accurate analysis of soft tissue and helps in the differential diagnosis. It also enables an accurate location of the lesion, which helps to avoid a wrong interpretation based on the clinical finding only. The CT-scan performed afterwards provides necessary information for the assessment of location, structure and size of the lesion.*

Key words: bone cysts, aneurismal - ultrasonography; granuloma, giant cell; tomography, X ray computed

Received 7 July 2003
Accepted 10 August 2003

Correspondence to: Goran Roić, M.D., Department of Paediatric Radiology, Children's Hospital Zagreb, School of Medicine University of Zagreb, Klaićeva 16, 10 000 Zagreb, Croatia; Phone: +385 1 4600 231; Fax: +385 1 4826053 / +385 1 4600169; e-mail: goran.roic@zg.hinet.hr

Introduction

The aneurismal bone cyst (ABC) and central giant cell granuloma (CGCG) of the jaws are usually seen involving the posterior mandible.[1-3] Due to their preauricular location they can be confused with other lesions presented as preauricular swelling such as lymphadenitis or parotitis. The imaging features, both the ultrasound (US) and comput-

ed tomography (CT), of these mandibular lesions are helpful in establishing a differential diagnosis, although microscopic tissue evaluation is generally necessary to accurately identify the lesion.

Case 1

An 11-year old male child was admitted with signs of the swollen right preauricular region with light pain and leukocytosis. It was treated as parotitis or lymphadenitis and antibiotics were prescribed.

After the therapy, the swollen area was still obvious; a fine needle aspiration biopsy (FNAB) was performed and it showed a mass of old and new erythrocytes, phagocytes, cytophages and some multinuclear histiocytes - the differential diagnosis was cavernous haemangioma or hemorrhagic cyst of the parotid gland. FNAB was repeated two more times and each time the same findings were found.

Two months later, when the swollen area showed no signs of the retreat, US and CT were preformed.

US showed a complex mass containing anechoic areas separated by fibrous tissue (Figure 1).

Precontrast CT (GE Sytec 3000) showed the expansive cystic mass of the processus condylaris of the mandible with multiple fluid-fluid levels, suggesting the diagnosis of *ABC*. Contrast CT scans showed the enhancement of the septa, which helped to delineate them from the fluid they contain (Figure 2). The segmental resection of the jaw was followed by the orthodontic treatment.

Case 2

A 9-year old boy complained of the pain and swelling of the right preauricular region, one week after a slap to the face.

US examination showed the expansive soft-tissue mass of the *processus condylaris of the mandible* (Figure 3).

Laboratory tests showed normal calcium, phosphorus, and alkaline phosphatase levels, a normal parathyroid hormone level (PTH), and no circulating PTH-related peptide (PTH-rP).

Figure 1. Aneurismal bone cyst. Transverse sonogram of the processus condylaris of the mandible shows an expansive thin-walled cystic mass with thick septations.

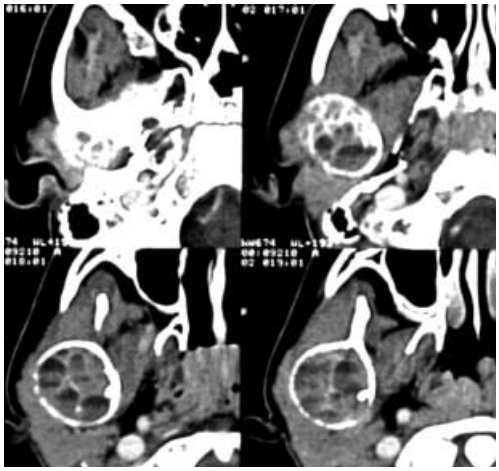

Figure 2. Aneurismal bone cyst. Contrast-enhanced CT shows expansive mass in the processus condylaris of the mandible with multiple fluid-fluid levels. The cortex is thinned but intact.

Figure 3. Central giant-cell granuloma. Longitudinal US scans of the processus condylaris of the mandible shows soft-tissue mass replacing bone.

Contrast-enhanced CT scans confirmed the presence of expanding soft-tissue mass replacing *processus condylaris of the mandible* with cortical expansion and thinning (Figure 4).

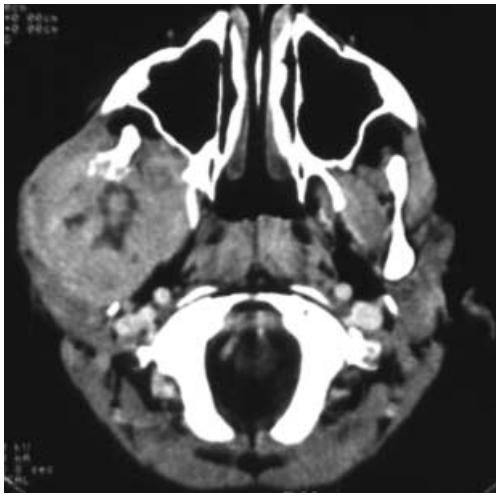

Figure 4. Central giant-cell granuloma. Contrast-enhanced CT scan confirms destruction of the processus condylaris of the mandible and associated soft-tissue mass replacing bone.

A biopsy of the lesion confirmed the typical histological appearance of a *CGCG* of the *processus condylaris of the mandible*. Although the parents of the child were familiar with the destructive nature of the tumour, they refused the operation, so the calcitonin treatment was commenced (100 IU or 0.5 mg of subcutaneous human calcitonin per day). Thirteen months after ceasing treatment there was no evidence of further growth. The lesion was filled with a soft, gritty bone.

Discussion

ABC is an erosive lesion of the bone, most commonly located in metaphysic of long bones and vertebral column in patients under the age of 30. Those that occur in jaws are rare, mostly involving the posterior part of mandible.[2,3] The cause of ABC is not fully settled. The aetiology is thought to be secondary to the increased venous pressure with haemorrhage that causes osteolysis. More often they are a reactive process, secondary to trauma or vascular lesion, caused by tumour or vascular malformation. Also ABC may represent a primary bone abnormality.[2]

Patients often have a history of pain and swelling, usually of less than six months duration.[2] CT scanning will define the lesion and is especially valuable for those lesions located in areas in which bony anatomy is complex, and which are not adequately evaluated by plain films.[5-7]

On the pathologic examination the underlying bone is replaced by cavities of various size filled with blood or/and proteinaceous material. ABC can heal spontaneously after curettage and bone grafting, surgical removal or after selective arterial embolization.[8-10] The removal of extensive mandibular and maxillary tumours is associated with the need of surgical tissue repair and prosthetic rehabilitation, and in young patients the surgical treatment must be followed by the orthodontic one.[11,12]

CGCG is a benign destructive bone lesion of the unknown ethiology. It represents 7% of benign lesions of joins, mostly involves parts of mandible and maxilla. It is of variable size and rate of progression, therefore some authors think that there is a spectrum of lesions that vary from the relatively benign CGCG of the jaws to the giant cell tumour of long bones, which may represent a low-grade sarcoma.[13]

The histological similarity of the CGCG to the »brown tumour« of hyperparathyroidism suggests the presence of an unidentified, circulating, PTH-like hormone. Microscopically, the lesion shows a collagenous stroma containing spindle cells and numerous multinucleated giant cells. An identical histological appearance can occur in the »brown tumour« of hyperparathyroidism, ABC and in cherubism. Due to the marked polymorphism a histological diagnosis of odontogenic tumours is often difficult, therefore, the correlation between clinician, radiologist and pathologist is especially important. A number of the lesions did stabilize or decrease in size and, if they were explored, a fibrous tissue scar was found in many cases.[14] However, it is generally thought that most CGCG are not reparative and are in fact destructive and will progress if not treated. The treatment of the CGCG lesion is generally surgical and consists of curettage or resection, which may be associated with the loss of teeth and, by younger patients, the loss of dental germ.[14] A resection is done by recurrent or more aggressive variants. Based on histological similarity between the CGCG and the »brown tumour« of hyperparathyroidism, Harris suggested that the CGCG might respond to calcitonin, even though there was no biochemical evidence of parathyroid disease.[15,16]

Although most commonly caused by parotitis or lymphadenitis, the swelling in the preauricular region in children may be a result of mandibular lesion (posterior area of the mandible) as it was a case in our patients. It is our opinion that, to establish an early diagnosis and begin with the treatment on time, an US examination of the preauricular swelling in all patients seems not only reasonable, but also necessary. A high-resolution US enables an accurate analysis of soft tissue and helps in the differential diagnosis. It also enables an accurate location of the lesion, which helps to avoid a wrong interpretation based on the clinical finding only. The CT-scan performed afterwards provides necessary information for the assessment of location, structure and size of the lesion. These lesions are often difficult to differentiate on the basis of their radiographic features alone.

References

1. Kaffe I, Ardekian L, Taicher S, Littner MM, Buchner A. Radiologic features of central giant cell granuloma of the jaws. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996; **81(6):** 720-6.

2. Laor T, Jaramillo D, Oestrich AE. *Musculoskeletal system in practical paediatric imaging.* Philadelphia: Lippincott-Raven; 1998.

3. Stavropoulos F, Katz J. Central giant cell granulomas: a systemic review of the radiografic characteristics with the addition of 20 new cases. *Dentomaxillofac Radiol* 2002; **31:** 213-7.

4. Onerci M, Ergin NT. Aneurysmal bone cyst of the mandible. *Laryngorhinootologie* 1996; **75(5):** 306-8.

5. Kransdorf MJ, Sweet DE. Aneurysmal bone cyst: concept, controversy, clinical presentation and imaging. *Am J Roentgenol* 1995; 164(3): 573-80.

6. Scholl RJ, Kellett HM, Neumann DP, Lurie AG. Cysts and cystic lesions of the mandible: clinical and radiologic-histopathologic review. *Radiographics* 1999; **19(5):** 1107-24.

7. Matsura S, Tahara T, Ro T, Masumi T, Kasuya H, Yokota T. Aneurysmal bone cyst of the coronoid process of the mandible. *Dentomaxillofac Radiol* 1999; **28:** 167-72.

8. Freiberg AA, Loder RT, Heidelberger KP, Hensinger RN. Aneurysmal bone cyst in young children. *J Pediatr Orthop* 1994; 14:86-91.

9. De Cristofaro R, Biagini R, Boriani S, Ricci S, Ruggieri P, Rossi G, et al. Selective arterial em-

bolization in the treatment of aneurysmal bone cyst and angioma of the bone. *Skeletal Radiol* 1992; **21(8):** 523-7.

10. Sheikh BY. Cranial aneurysmal bone cyst »with special emphasis on endovascular management«. *Acta Neurochir* 1999; **141(6):** 601-11.

11. Stypulkowska J. Odontogenic tumors and neoplastic-like changes of the jaw bone. Clinical study and evaluation of treatment results. *Folia Med Cracov* 1998; **39(1-2):** 35-141.

12. Martin JP, Unkel JH, Fordjour I. Preservation of the dentition following removal of a central cell granuloma: a case presentation. *J Clin Pediatr Dent* 1999; **24(1):** 35-7.

13. Stern M, Eisenbud L. Management of giant cell lesions of the jaws. *Oral Maxillofac Surg Clin North Am* 1991; **3:** 165-7.

14. De Lange J, Rosenberg AJ, van den Akker HP, Koole R, Wirds JJ, van den Berg H. Treatment of central giant cell granuloma of the jaw with calcitonin. *Int J Oral Maxillofac* Surg 1999; **28(5):** 372-6.

15. Harris M. Central giant cell granuloma of the jaws regress with calcitonin therapy. *GBr J Iral Maxillofac Surg* 1993; **31:** 89-94.

16. Porgel MA, Regezi JA, Harris ST, Goldring SR. Calcitonin treatment for central giant cell granulomas of the mandible: report of two cases. *J Oral Maxillofac Surg* 1999; **57:** 848-53.