CASE REPORT

Mastoid osteoma: Report of a rare case

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Abstract Mastoid osteoma is a rare tumour with incidence of 0.1–1% of all benign head and neck tumours. It usually presents as a slow growing, hard and painless posterior auricular swelling in which medical attention is sought most commonly on cosmetic grounds. This report discusses our finding of such a rare case that was managed in our department and from its presentation, clinical findings, differential diagnosis, and treatment aspects.

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1. Introduction

Osteomas are osteoblastic mesenchymal tumours which are more common in frontal and ethmoid sinuses.1,2,4 Mastoid osteoma is rare with about 137 cases having been reported in the literature.4–6 Asymptomatic in most cases, patients may present with unacceptable disfigurement or symptoms of external auditory obstruction.5,10 Computer tomography is the gold standard for diagnosis.3,6 Surgical excision is the treatment of choice depending on its extension in the temporal bone and related structures.11,12

2. Case report

A 24 year old lady presented with the complaint of right posterior auricular swelling for 5 years. The swelling was painless with a gradual increase in size. There was no history of trauma, symptoms of inflammation or occlusion of the ear canal. Treatment was sought on cosmetic grounds. Examination revealed a 2 × 2 cm swelling over the right mastoid region. It was hard, non-tender with no overlying skin changes (Fig. 1). Tympanometry and Pure Tone Audiometry done prior to operation were normal.

Plain CT brain done reported a bony protuberance arising from the right mastoid bone posteriorly measuring 1.3 × 1.9 × 2.2 cm (Fig. 2). There was no evidence of bony destruction or infiltration into the mastoid air cells. Both middle ear cavities and external ears were normal. The visualized sinuses and mastoid air were clear. A diagnosis of benign right mastoid osteoma was made based on history, examination and radiological findings. This was confirmed by a histopathological report. We proceeded with excision of the mastoid osteoma.
Intraoperatively, the osteoma measured $2.5 \times 2.5$ cm and was located 1 cm superior to the mastoid process (Fig. 3). It had a wide based peduncle in which there was only a small slit separating the lesion and the mastoid cortex. The base of the osteoma was chiselled. The mastoid cortex was then drilled until normal air cells were seen. Patient was observed overnight and discharged well. During her postoperative visits, she had no facial asymmetry or ear complaints and her wound healed with good cosmetic results. Histopathological studies revealed a circumscribed bony lesion comprised of dense, mature, predominantly lamellar bone. Lesion was reported as a right mastoid osteoma.

3. Discussion

Osteomas are essentially benign osteoblastic tumours of mesenchymal origin. Osteomas of the skull base are commonly found in the frontal and ethmoidal sinuses. Other occurrences include the sphenoid and maxillary sinuses, area of the mandible and rarely the temporal bone. Temporal bone osteomas are in fact exceptionally rare that only 137 cases have been reported in the literature. Within the temporal bone, osteomas are most commonly reported in the external auditory meatus, middle ear, along the auditory canal, styloid process, temporomandibular joint, apex of the petrous temporal bone, internal auditory canal and rarely in the mastoid. Mastoid osteoma as discussed in this case has the incidence of 0.1–1% of all head and neck benign tumours. As in our case of a 24 year old lady, mastoid osteoma has a higher incidence in females between the ages 20 to 30 years old.

While its aetiology remains indefinite, its occurrence may be divided into syndromic and nonsyndromic. Gardner’s syndrome for example comprises of multiple intestinal polyps, mesentery and skin fibromas, epidermoid inclusion cysts and osteomas with a predilection for membranous bones such as maxilla and mandible. Osteomas which are of nonsyndromic origin have several possible contributing factors to its pathogenesis which include trauma, inflammation, metaplasia, surgery, irradiation, chronic infection, pituitary dysfunction and genetics.

Histologically, there are three types of osteoma: Compact, cancellous and mixed. The types are difficult to distinguish on clinical grounds due to parallel symptoms and objective signs. Compact osteomas are slow growing with a wide base as opposed to cancellous osteomas which grow rapidly in peduncles. Osteomas are chiefly mature bone. Macroscopically, it can be seen as a zone of distinct homogeneous hyperostosis with features of dense lamellar bone growing centrifugally without any mass effect. Microscopically, a sclerotic, dense lamellar bone with organized Harvesian canals.
can be seen. Osteoblasts, fibroblasts and giant cells with no hematopoietic cells make up the intratrabecular stroma.

Mastoid osteomas are usually asymptomatic and stable over many years. Their size when diagnosed are usually less than 3 cm. Generally, their growth progresses extra cranially which can be seen as a smooth swelling, bony hard in consistency. Large swellings are unsightly and may cause difficulty to spectacle wearers. Overlying skin mostly appears to be normal. Rarely osteomas may cause pain or inflammation. Pain occurs when the osteoma breaches the inner table of the temporal bone and maybe confined to the ear, tympanic membrane or neck. In the neck region, pain maybe caused by irritation of great auricular or small occipital nerves. There are cases in which conducting hearing loss develops due to pushing forward of the posterior wall by the osteoma. Occlusions of the external ear canal may cause recurrent ear infection. Fortunately for our patient, her hearing assessment was normal.

Non contrast computer tomography is superior to magnetic resonance imaging and is considered as the modality of choice. On the CT scan, osteoma can be seen as a rounded bone lesion on the mastoid outer cortex, distinctive margins with sessile or pedunculated base. Mastoid air cells remain aerated in superficial lesions. Rarely, osteomas may extend into the petrous part of the temporal bone adjacent to the horizontal semicircular canal, ossicles and facial nerve. In such cases, imaging is indispensable to define relations to these structures prior to resection.

Differential diagnosis of mastoid osteoma includes osteoblastic metastasis, osteosarcoma, ossifying fibroma, isolated eosinophilic granuloma, Paget's disease, giant cell tumour, osteoid osteoma, calcified meningioma, hemangioma, and monostotic fibrous dysplasia. These lesions however are less demarcated in comparison to mastoid osteoma and usually distinguished by radiological and anatomical pathology study. Heterogenous, poorly delineated lesions with rapid growth suggest malignancy.

Asymptomatic patients can be followed up with observation and monitored with regular imaging. When symptoms such as conductive hearing loss, recurrent ear infection due to auditory canal occlusion or intolerable disfigurement are present, surgical resection is the treatment of choice. Mastoid and squamous superficial lesions are excised and drilled until normal underlying bone is exposed. During this excision, periosteal covering and safe margin of the mastoid cortex are removed. If it is close to important structures such as the facial nerve canal or bony labyrinth, a subtotal excision is adopted to preserve function. Complete excision of mass and surrounding mastoids results in excellent outcome and rare recurrence. Malignant transformation is yet to be reported.

Complications from surgery are rare. However, patients with extensive tumour or one with middle ear extensions may develop sensorineural hearing loss due to the drilling of the temporal bone. Patient is also at risk of ophthalmologic complications such as reduced vision and papilloedema due to sigmoid sinus damage when removing a tumour which has extended towards the posterior cranial fossa. In such cases, aggressive postoperative medical therapy including steroids and intravenous antibiotics can achieve good recovery. In our case, the surgery was uneventful, devoid of postoperative complications and the patient achieved good cosmetic outcome.

4. Conclusion

Mastoid osteoma is a rare slow growing benign tumour of the head and neck. Usually asymptomatic with unsightly disfigurement, it may also present with symptoms of ear occlusion. Computer tomography is the investigation of choice. If indicated, surgical excision is carried according to its extension. Overall, with complete resection, recurrence is rare and patient achieves good cosmetic results.

Conflict of interest

We have no conflict of interest to declare.

References