Introduction

Primary tumors of the temporal bones are uncommon. We present two cases of the relatively rare giant-cell tumor of the skull base along with their CT features and differential diagnosis.

Case reports

Case 1

A 45-year-old man presented with a 3 month history of left conductive hearing loss. CT on admission showed a lytic, expansile mass measuring 6 cm × 4 cm × 8 cm involving the squamous, mastoid and petrous portions of the left temporal bone and extending into the infratemporal fossa. It perforated through the bony cortex laterally (Fig. 1a) and expanded medially. The mass extended into the left temporal lobe with no apparent mass effect or edema (Fig. 1b). The tumor eroded through the middle ear cavity but the ossicles were intact. It was of soft-tissue density and contained multiple dense areas which probably represented bone debris or calcification. On physical examination, there was an area of fullness along the temporal region above the left ear. Biopsy was consistent with a giant-cell tumor.

At surgery, a left sub- and transtemporal craniotomy was performed, with dissection of the facial nerve. The mass was seen in the attic, surrounding the ossicles and bulging through the squamous portion of the temporal bone, with an egg-shell layer of overlying bone. The ossicles, round and oval windows were intact. Large portions of the dura mater were involved by the tumor which also extended into the infratemporal fossa. Pathological examination showed giant cells with areas of fibrosis and old hemorrhage consistent with the prior biopsy.

Case 2

A 60-year-old woman presented with pain in the area of the left temporomandibular joint and difficulty chewing. CT showed a 2-cm lytic and expansile mass in the squamous portion of the temporal bone, extending to the articular surface of the temporomandibular joint (Fig. 2a). The mass demonstrated intense contrast enhancement (Fig. 2b). It was resected and the pathology examination showed a giant-cell tumor.

Discussion

Giant-cell tumors are generally considered benign, although some can exhibit very aggressive behavior. A tendency toward local recurrence and late malignant change with metastases have been reported [1]. The recurrence rates are as high as 50% if curettage or any other treatment short of complete removal is employed and the tumor usually recurs within 4 years of treatment.
Malignant transformation is usually seen only after radiation therapy [2].

Giant-cell tumors are quite rare. They comprised 4% of primary bone tumors in one series at the Mayo Clinic (195 of 3987) [3]. Three quarters were found primarily in the long bones and a quarter were in the sacrum, carpals, patella, vertebrae, and skull. Only three cases of giant-cell tumor were found in the skull. They are usually in the maxilla and mandible [4] and are only rarely encountered in the sphenoid and temporal bones.

Our giant-cell tumors arising in the temporal bone were of different size. In the first case, a large, expansile lesion was seen extending into the middle cranial and infratemporal fossae. In contrast, a small 2 cm lesion was seen, confined to the squamous temporal bone, in case 2.

The major radiological differential diagnosis includes giant-cell reparative granuloma and brown tumors of hyperparathyroidism [5–7]. The plain film characteristics of giant-cell tumors are indistinguishable from other radiolucent lesions of the skull. In giant-cell re-

Fig. 1 a CT shows a mass expanding the squamous, mastoid and petrous portions of the left temporal bone. Note the intact ossicles (arrowhead). b A more cephalad section shows the temporal bone mass to be of soft-tissue density with central areas of calcification or bone debris. There was no evidence of parenchymal edema or invasion.

Fig. 2 a CT shows a soft-tissue mass expanding the squamous temporal bone (arrow). b A contrast-enhanced image shows intense enhancement.