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Ossifying fibroma of the occipital bone—A case report and literature review

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Abstract

Ossifying fibroma (OF) is one of the benign fibro-osseous lesions (BFOLs) affecting the craniofacial bones. Involvement of the skull bones specifically the occipital bone is especially rare. We report a case of a 49-year-old adult male with incidental finding of an ossifying fibroma arising from the right occipital bone with transverse sinus involvement.

Keywords: Ossifying fibroma; Occipital bone; Benign fibro-osseous lesions; Computed tomography; Magnetic resonance imaging; Bone scan

1. Introduction

Ossifying fibroma (OF) is one of the benign fibro-osseous lesions (BFOLs) included in a heterogeneous group of bone disorders affecting the craniofacial bones [1]. In adults, it occurs most commonly in the mandible, followed by the maxilla and rarely, the other sinonasal bones, orbit and skull bones.

A small number of case reports had been published on OF involving the calvarium. Based on Medline search, there were 19 cases of calvarial OF that had been reported to date, of which only two of these cases described OF arising in the occipital bone which occurred in young patients.

Here, we present an incidental rare case of an adult with ossifying fibroma arising from the right occipital bone. Literature review of this condition was also discussed.

2. Case report

A 49-year-old Chinese man with no prior medical illness, presented with 2-year history of progressive weakness of both hands and numbness of both fifth fingers. There were no central neurological or visual symptoms.

His neurological examination revealed weakness in gripping, wasting of hypothenar and thenar muscles and peripheral neuropathy bilaterally. The nerve conduction tests demonstrated bilateral ulnar nerve palsies.

MRI (Siemens Magnetom Vision 1.5 T) of the brain and cervical spine were initially done to exclude central cord syndrome, and a posterior fossa lesion was incidentally found. MRI of the brain showed a well-circumscribed extra-axial mass measuring 4.7 cm × 3.1 cm × 3.6 cm which appeared to be arising from the diploic space of the right occipital bone with destruction of the inner and outer tables. On the spin-echo T1-weighted (TR = 735 ms, TE = 14 ms) image, a thin hypointense rim is seen, mainly at the outer aspect of this mass, probably representing the periosteum (Fig. 1A). This lesion appears hypointense on T1-weighted images with clustered areas of signal void on T1- and T2-weighted images representing areas of calcifications or ossifications. On spin-echo T2-weighted (TR = 3800 ms, TE = 90 ms) images, hyperintensity is seen around the area of calcifications and there is loss of signal at the anterior part of the mass (Fig. 1B). This mass showed enhancement on the post-gadolinium (Magnevist) scan (Fig. 1C). The MRI of the cervical spine showed a linear focal area of low signal intensity on T1-weighted image, high signal intensity on T2-weighted image which did not enhance post-gadolinium in the spinal cord at C6 level, representing syringomyelia.

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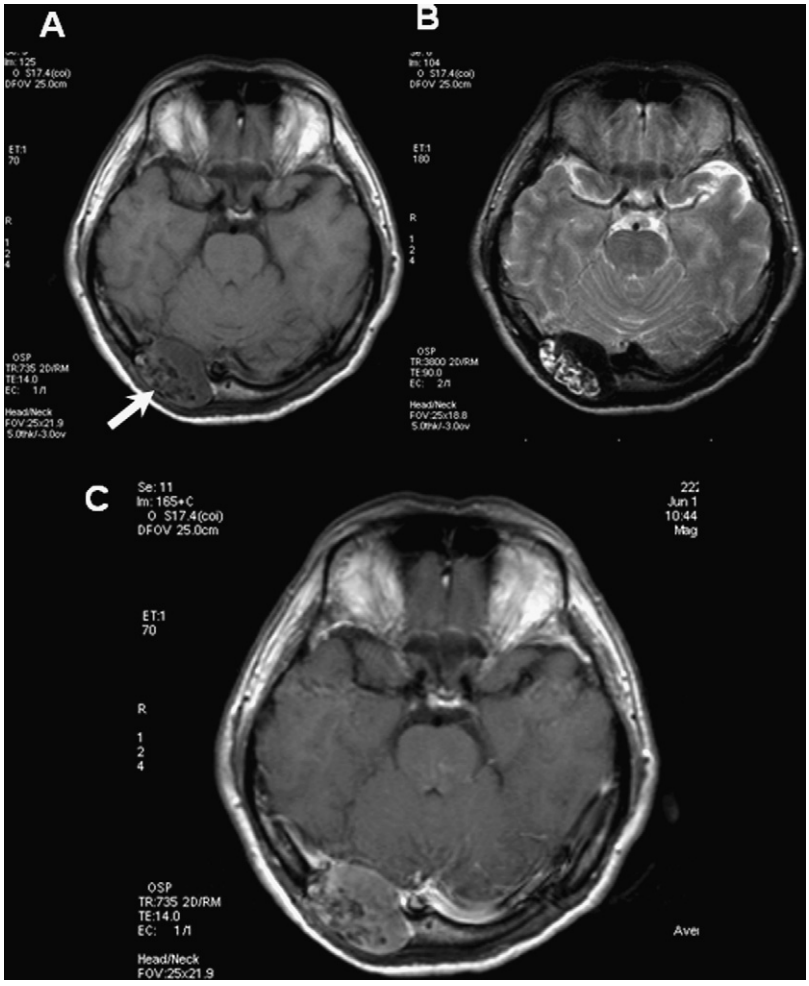

Fig. 1. MRI brain (axial T1-weighted (A), T2-weighted (B) and T1-weighted post-gadolinium (C) images). T1-weighted image showed a well-circumscribed extra-axial mass arising from the diploic space of the right occipital bone with destruction of the inner and outer tables. A thin hypointense rim (arrow) is seen, mainly at the outer aspect of this mass, probably representing the periosteum. The clustered areas of signal void seen on T1- and T2-weighted images represent areas of calcifications or ossifications. Post-gadolinium image showed heterogeneous enhancement of this mass.

A radionuclide scintigraphy bone scan demonstrated a well-circumscribed region of homogenously intense radionuclide uptake at the right occipital bone (Fig. 2). No other areas of increased radionuclide uptake noted in the skull.

A CT venography was done to assess transverse sinus involvement. The lesion appears to be located in the diploe with expansion and enhancing soft tissue component extending into the posterior fossa region. There was destruction of the inner and outer tables with a thin rim of cortex seen. There were also areas of ground glass appearance with ossifications seen within (Fig. 3). There appeared to be compression of the right transverse sinus but the involvement of the sinus could not be ascertained.

Cerebral and right external carotid angiography showed a tumour blush at the right occipital region with arterial supply from the right occipital artery and the meningeal branch of the right occipital artery. On the venous phase, there was attachment of the tumour to the right transverse sinus. The provisional diagnosis of intraosseous meningioma was made by the neurosurgical team, hence, pre-operative cerebral angiogram was arranged and embolization of the tumour was done to reduce the risk of catastrophic hemorrhage during the surgery.

He subsequently underwent right occipital craniectomy and excision of the tumour. This was followed by cranioplasty with titanium mesh to cover the cranial defect. Intra-operatively, the overlying periosteum was still intact. The tumour appeared vascular, soft, friable and yellowish in colour with no evidence of pseudo-capsule formation. The tumour was found to adhere densely to the underlying transverse sinus. Excessive bleeding was encountered during the surgery in attempting to remove this tumour. Thus, thin layer of the tumour on the transverse sinus surface was left behind. Post-operatively, he still has weakness of both hands but no other post-operative complications encountered. He was discharged well on post-operative day 3.

Histopathological examination of the bone fragments showed trabeculae of calcified osteoid with varying width. The intervening stroma consists of densely packed plump spindle-shaped cells displaying elongated basophilic nuclei. No cytological atypia or mitosis detected and no malignancy is seen (Fig. 4). These histopathological findings were of a benign tumour which was suggestive of ossifying fibroma.