

Chondroma of the Cerebellopontine Angle: A Case Report

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Abstract

A 41 year old nondiabetic, non hypertensive male was admitted in AHD through neurosurgery OPD with the complaints of left eye watering and left sided weakness for 1 month. MRI examination revealed a mass / lesion in the left prepontine cistern, left CP angle with extension to left middle cranial fossa which was histologically found to be chondroma, an extremely rare tumour in the above mentioned location.

Introduction

The (Cerebellopontine Angle) CPA is a triangular area bounded by the temporal bone anterolaterally, pons medially, cerebellar hemisphere posteriorly, tentorium cerebelli superiorly and lower cranial nerves inferiorly. Its contents include the anterior inferior cerebellar artery (AICA) and 7th and 8th cranial nerves. These nerves emerge from junction of pons and midbrain and course, through the CPA to reach the internal acoustic meatus (IAM). Cerebellopontine angle (CPA) tumours can be divided into extra-axial tumours, intraaxial tumours, extradural tumours and petrous apex lesions. Extra-axial tumours can be divided into those common and rare. Acoustic tumours or more precisely vestibular schwannomas (VS) are by far the most common extra-axial tumour. Other common extra-axial tumours include meningiomas and cysts of the posterior fossa (epidermoid, arachnoid, etc.). Rare extra-axial tumours include other cranial nerve neuromas (V, VII, IX, X, XI, XII) and vascular malformations (aneurysms, A-V malformations). Intra-axial tumours include

parenchymal lesions such as astrocytomas, ependymomas, papillomas, haemangioblastomas and metastases. Extradural tumours include glomus tumours and bone lesions. Petrous apex lesions include cholesterol granulomas, epidermoid cysts, mucocoeles and aneurysms of the carotid artery.¹ Among all these lesions, intracranial chondromas are rare, comprising roughly 01% to 02% percent of the intracranial tumours in several large series studies^{2,3,4} and are most common in the second through fifth decades with a female predominance.⁴ They arise in bones formed by enchondral ossification. Since the bones of the vault are formed by membranous ossification, these tumours are rarely found there. More common sites for these tumours are the skull base and the paranasal sinuses. Rarely they occur below the tentorium in the cerebellopontine angle.⁵ Only very few cases of CPA chondroma have been reported. We present a new case of cerebellopontine angle chondroma and report the histological, CT and MRI appearance of the tumour.

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Case History

A 41 year old nondiabetic, non hypertensive male was admitted in AHD hospital through neurosurgery OPD with the complaints of double vision for 10-15 years, occasional headache for 2-3 months, left eye watering with inability to open left eye, left sided weakness with disorientation for 1 month with no history of loss of consciousness (LOC), vomiting or convulsion. On examination, he was conscious with GCS of 15/15 both pupil equally reactive to light, bilateral planter reflex, pulse (100/min), BP-160/110, SPO2-99%, left eye watering and left sided weakness 3+/5. Left sided 5th motor cranial nerve weakness with bilateral Hoffman sign positive and exaggerated DTRs (Deep tendon reflex). His ophthalmology examination reveals, Visual acuity (B/E)-6/6, anterior segment (B/E): normal, Fundus (B/E): right eye-normal, left eye-hyperaemic disc. Schirmer's test (B/E): O MM, IOP-12, perimetry- not significant.

Neuroradiological Findings

MRI shows a mass lesion occupying prepontine cistern, left CP angle with extension to left middle cranial fossa. Lesion was T1 hypo, T2 and FLAIR hyper intense (Fig. 1 and 2). The lesion was not restricted in diffusion weighted sequence and did not demonstrate susceptibility artifacts. There was no enhancement of the lesion in post contrast CT (Fig. 4) or MRI done outside. Nerve sheath tumour was unlikely. MRI in AHD showed the lesion was separate from Meckel's cave. CT demonstrated erosion of left petrous apex and greater wing of sphenoid bone (Fig.3) MRI Spectroscopy showed no evidence of

neuronal element.

Provisional diagnosis was epidermoid vs neuro enteric cyst.

Patient underwent left retromastoid sub-occipital craniotomy and removal of tumour was done.

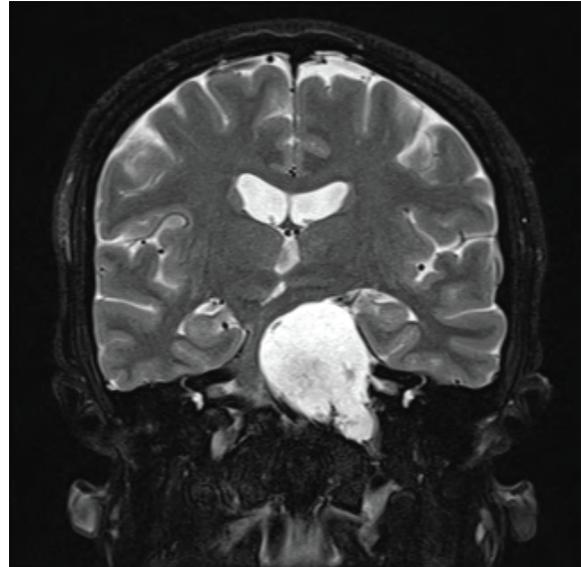


Fig. 1: MRI coronal view (T2). A large hyperintense mass

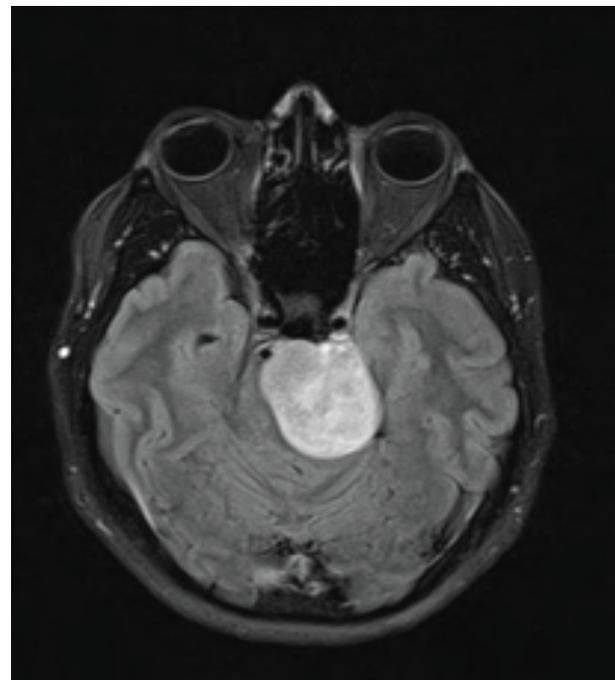


Fig. 2: MRI axial FLAIR reveal hyperintense mass

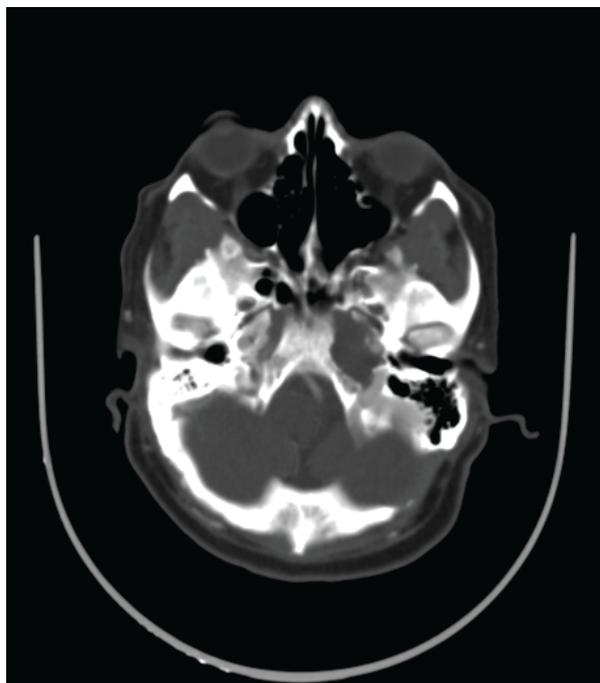


Fig. 3: CT scan shows erosion of left petrous apex and greater wing of sphenoid bone

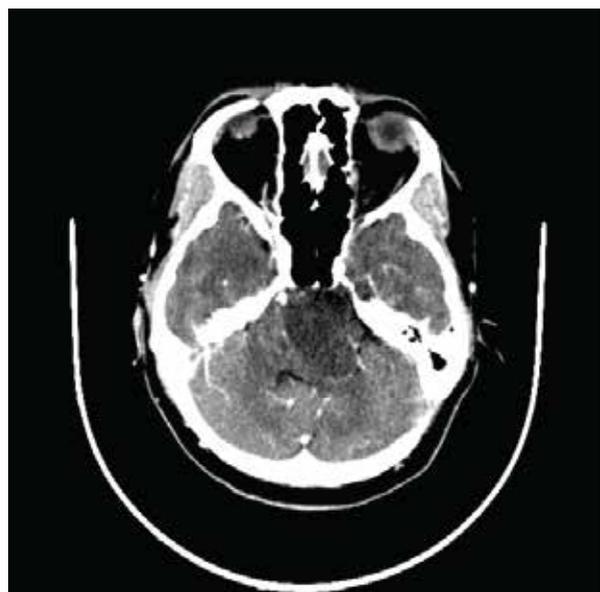


Fig. 4: Non Enhancement of the mass in post contrast CT

Operation note

After craniotomy, dura was incised to 'K' shape. After CSF drainage from cerebello-medullary cistern, tumour was found anterior to 7th & 8th

nerve complex, above 9th, 10th & 11th nerve complex. Tumour was epidermoid with vessel incised. Tumour partially excised, after haemostasis, duroplasty done and closed in layers.

Tumour tissue was sent for histopathology. Grossly, the specimen composed of multiple small grey white pieces of tissue. Microscopically, it reveal lobulated clusters of regular chondrocytes which was strongly immunoreactive for S-100 (4+) and non-immunoreactive for EMA (Fig.5). Based on both histomorphologically and immuno histochemistry a diagnosis of CP angle chondroma was made.

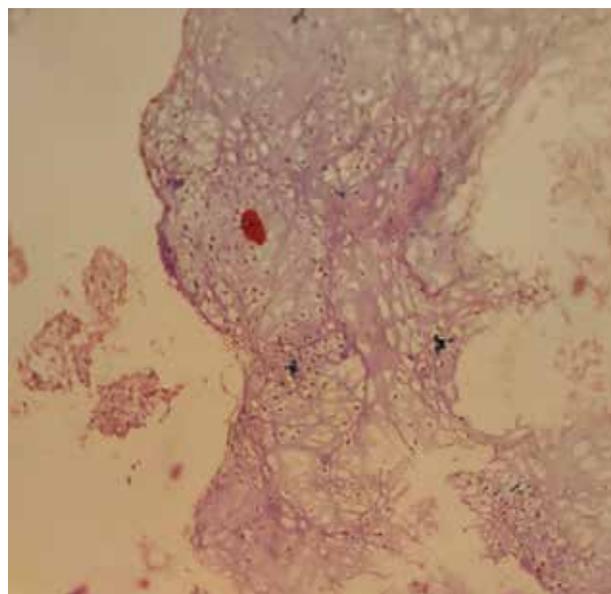


Fig. 5: Lobulated clusters of regular chondrocytes in the cerebellopontine angle

Discussion

Intracranial chondromas usually arise at the skull base from embryonic chondrocytic cell remnants or from meninges from metaplastic meningeal fibroblasts.^{6,7} Less commonly they originate from the cerebral parenchyma.⁸ Only a few reports describe a chondroma at the CP angle.^{5,9}

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Histogenesis of these lesions at the CP angle or within the brain parenchyma is not clear. Possible theories include cartilaginous metaplasia of mesenchymal perivascular cells, heterotopic chondrocytes, and cartilaginous displacement by trauma.^{7,10} Intracranial chondromas may be solitary or multiple, as a component of Ollier's disease and Maffucci's syndrome.¹⁰

Our case possibly originated in the petrous bone and involved the CP – angle by direct extension. Neuroimaging reveals typical, but not characteristic features. In many cases calcification within the tumour is demonstrable. However calcification is rarely seen in cerebellopontine angle chondromas. Erosion and destruction of surrounding bone, hyperostosis of the inner table of the skull, cystic change, variable tumour density and patchy, delayed contrast enhancement are other features.^{11,12} The main differential diagnosis for CP angle chondroma is schwannoma. The other differential diagnoses include chordoma or meningioma with chondroid metaplasia and epidermoid cyst.

The total surgical removal of the tumour is the treatment of choice.

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