Case Report

# Petro-cavernous chondroma

## *CT and MRI features*

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## ABSTRACT

The authors report an unusual location of a benign chondroma of the petro-sphenoidal synchondrosis extending into the cavernous sinus. Computerized tomography and magnetic resonance image features were characteristic of chondroid tumor. However, pathologic verification is mandatory in order to distinguish chondroma from chondroblastoma or chondroid chordoma.

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Chondromatous tumors of the skull base are uncommon. We report a case of a benign chondroma located in the petro-cavernous region showing typical computerized tomography (CT) and magnetic resonance image (MRI) appearance.

**Case Report.** An 18-year-old girl presented with a 4-month history of left oculomotor weakness and diplopia. Physical examination revealed a III and VI cranial nerve paresis with preserved ophthalmic nerve function. The results of visual acuity and fundoscopy were normal. Brain and petrous bone CT scan (**Figure 1**) showed a mixed density mass measuring 15 mm located in the left petro-sphenoidal synchondrosis extending into the cavernous sinus. The mass displayed central calcifications and lobulated outlines. Magnetic resonance examination carried out in thoracic 2 weighted image (T2WI) (**Figure 2**) and in T1WI before (**Figure 3**) and after (**Figure 4**) gadolinium intra-venous injection, demonstrated a round shaped well defined mass, displaying an intense homogeneous signal intensity on T2WI. On T1WI, the mass showed low signal intensity relative to the gray matter, with central heterogenous contrast enhancement. The CT and MR characteristics were highly suggestive of chondroid tumor with a benign appearance. Due to the risk of microscopic malignancy, the mass was removed through a supra-petrous surgical approach. Histological study revealed microscopic features of benign chondroma.

**Discussion.** Chondromatous tumors are uncommon, arising mainly from the long bones epiphyses. Temporal bone locations are extremely rare, as only a few cases have been reported in the literature.[1] These tumors constitute paramedian space occupying lesions of the skull base, involving the parasellar posterior area[2] and arising from the cartilaginous residues of the spheno-petrous suture.[3,4] The clinical presentation depends on the tumoral size and extension. Small tumors are usually discovered in front of cranial nerve deficits, involving the VIth nerve and the ophthalmic branch of the Vth cranial nerve.[2] Large tumors may extend beyond the petrous apex limits, bulging in the cerebellopontine angle and compressing the cranial nerves and the brain stem. The jugular foramen may be invaded.

On CT scan, the tumor appears as a solid low-density mass with lobulated outlines. The CT appearance is

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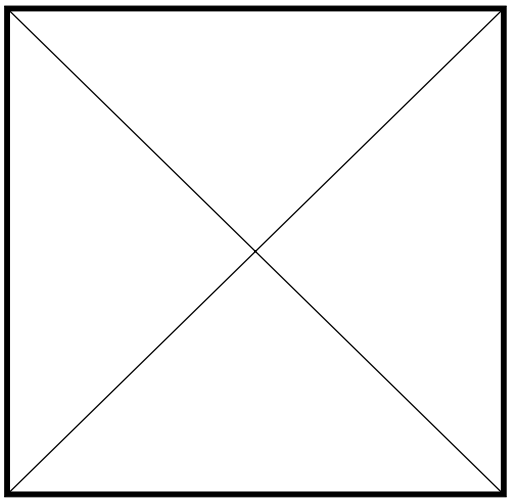

**Figure 1 -** Petrous bone transverse CT scan. Left sided round shaped solid mass effacing the Meckel's cavum and eroding the adjacent petro-sphenoidal margin extending into the cavernous sinus and displaying central tiny calcifications.

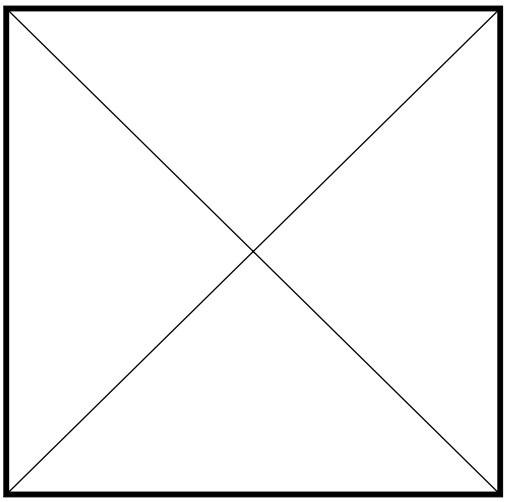

**Figure 2 -** T2WI transverse scan. The mass shows homogenous high signal intensity and lobulated outlines.

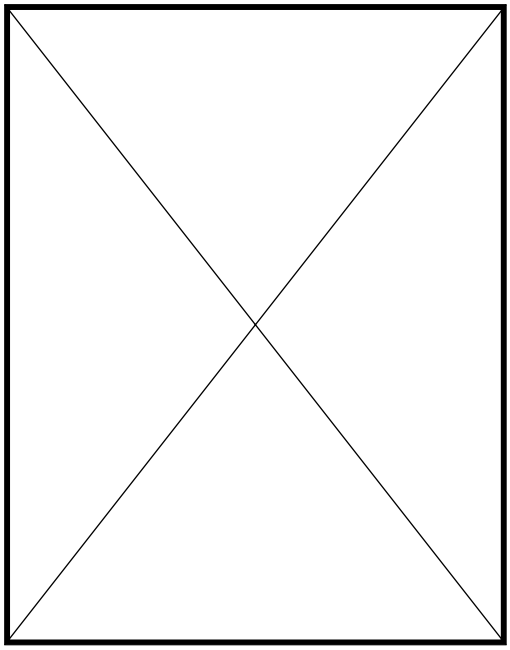

**Figure 3 -** T1WI transverse scan before gadolinium intra-venous injection.

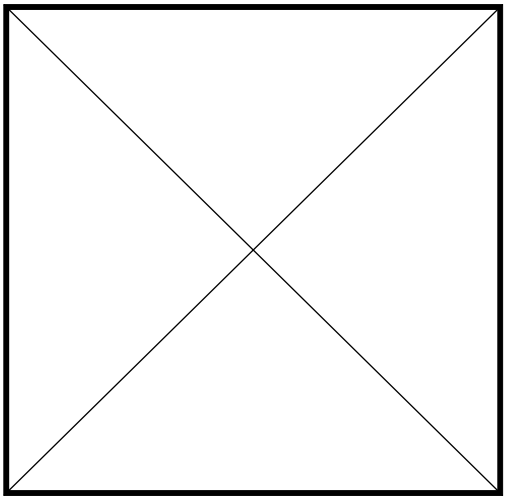

**Figure 4 -** T1WI transverse scan after gadolinium intra-venous injection. The mass shows spontaneous low signal intensity and heterogenous enhancing pattern.

characteristic in the presence of intra-tumoral spotty central calcifications, as was shown in our case and 3 cases of Bourgouin's series.[3] The chondroid mass appears mainly isodense with the brain, and not significantly enhancing. Magnetic resonance appearance did not show any characteristic findings in Bourgouin's series. Indeed, all tumors in this series showed low signal intensity on T1WI and high signal intensity on T2WI, apart from signal void areas consistent with calcifications.[3] Our case showed uniform high signal intensity on T2WI in spite of the presence of obvious intra-tumoral calcifications observed on CT scan. Furthermore, the tumor demonstrated central heterogenous enhancement. Computerized tomography is useful for evaluating the calcified matrix and the osseous structure at the margins of the lesions while MR is superior for evaluating the soft tissue characteristics, the extent of the lesion and the involvement of the vital skull base structure.

The differential diagnosis includes chordoma and especially chondroid chordoma which, displays very close CT and MR features. However, chordoma usually arises from the midline area. Other expansive lesions originating near to the petro-sphenoidal synchondrosis should be included in the differential diagnosis; such as, neurinoma of the Vth cranial nerve, meningioma, metastasis and incidentally benign osseous tumors.[1] Chondroma and chondrosarcoma usually display very close imaging features. As chondrosarcoma is more common than chondroma, differentiation between the 2 is based on immunohistochemical analysis

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