Case Report

Huge Dural Chondroma
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Abstract
Chondroma is a benign cartilagenous tumor that can be found at several sites of the body. Intracranial chondroma originating from the dural convexity is quite exceptional. We describe a case of a patient with a huge dural chondroma who was successfully treated at our institution. Clinical, radiological and surgical aspects of this tumor are reviewed and surgical nuances are emphasized in the light of the literature.

Keywords: Chondroma, dura mater, surgery

INTRODUCTION
Intracranial chondromas are rare tumors that usually arise from the skull base synchondrosis. Exceptionally, they may originate from dural convexity or the falx. They are benign tumors. They can be solitary or a component of Ollier disease or Mafucci syndrome(1,2).

The aim of this report is to describe an additional case and review the literature concerning dural chondromas.

CASE PRESENTATION
A 37-year old man presented with 1 year history of headache and seizures. His physical and neurological examinations were normal. Plain X-ray of the skull demonstrated 10x10 cm irregular shell-like calcification in the right frontal area (Figure 1). Computed tomography (CT) showed giant extraaxial space-occupying mass with a hypodens center in the right frontal region (Figure 2). Magnetic resonance imaging showed the lesion to have a heterogenous signal with intermediate to low intensity on T1 weighted images and mixed intensity on T2 weighted images. A little enhancement appeared after administration of contrast medium (Figure 3).
angiography revealed no tumor stain or pathological vascularization.

The patient underwent surgery. A right fronto-parietal craniotomy was performed. The tumor was firm, white grayish, avascular and too difficult to aspirate with an ultrasound aspirator, so it was carefully resected in several pieces. It was completely removed along with its attachment to the convexity dura. The postoperative course was uneventful. He was discharged on the 5th postoperative day.

Macroscopically, the tumor appeared as a smooth firm cartilaginous mass. Histological examination revealed a well-differentiated hyaline matrix with binucleated chondrocytes, surrounded by a fine fibrous capsule (Figure 4). Follow-up MRI scans demonstrated no residua or recurrence.

Figure 1: Plain radiograph showing irregular shell-like calcification in the anterior cranial fossa.

Figure 2: CT scan showing an inhomogenously calcified, well circumscribed, hyperdense mass with a hypodense center in the right frontal region.

Figure 3: MRI showing a hypointense lesion with little contrast enhancement on T1-weighted images and central hyperintensity on T2-weighted images.
DISCUSSION

Intracranial chondromas are rare intracranial tumors with an estimated incidence of 0.3% of all intracranial neoplasms. Approximately 15% of these tumors originate from duramater\(^{(1,3,6,7)}\). It was first reported by Hirschfield in 1851\(^{(1,3,6)}\).

The etiology of these tumors are controversial. Cartilaginous metaplasia of meningeal fibroblasts, ectopic embryologic rests of cartilage cells, metaplasia of perivascular mesenchymal tissue or traumatic displacement of cartilaginous elements have been proposed to explain the histogenesis of dural chondromas\(^{(3,6)}\).

Clinically, patients often present with a long-standing history of signs and symptoms, because of the slow growing nature of these tumors. They are characterized by their large size at presentation. Seizure and symptoms of raised intracranial pressure are the frequent manifestations. Malignant degeneration has been reported in subtotally resected tumors\(^{(4,5)}\).

The radiological features of dural chondromas are not characteristic. CT scan imaging shows a mass of variable density appearance due to different degrees of calcification with minimum to moderate contrast enhancement's. The centre of the tumor may have low-density, reflecting necrosis or cystic degeneration. MRI studies show a well circumscribed lesion without surrounding tissue edema, that exhibit heterogeneous signal with intermediate to low intensity on T1-weighted images and mixed intensity on T2-weighted images. Contrast enhanced MRI usually shows annular peripheral enhancement. Cerebral angiography reveals completely avascular extracerebral space-occupying lesion. This feature is a diagnostic clue for the differentiation from meningiomas\(^{(2,6,7)}\).

Complete surgical resection with dural attachment is recommended. These tumors are well demarcated and do not invade surrounding structures. Huge and firm chondromas should be sharply resected, piece by piece to avoid the damage that occurs when retraction is used. Radiation therapy is currently not recommended for residual tumors or inoperable patients since chondromas do not respond to irradiation and it may induce malignant degeneration\(^{(2)}\).

Long-term prognosis is favorable and no recurrences should be expected after complete removal.

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