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Case Report

An Intraventricular Type of Chondroma: A Case Report

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ABSTRACT

Intracranial chondromas are unusual benign tumors. They commonly occur at the base of the skull, whereas an intraventricular type is very rare.

We present the case of a 19-year-old female patient with a giant intraventricular chondroma detected incidentally by imaging after a car accident. The spiral head CT scan and MRI findings revealed a large solid mass with a lobular border and coarse calcified components. A wide craniotomy was performed, and a very firm tumor was observed with no internal debulking capacity. The tumor was completely removed in one piece.

Differentiation of an intraventricular chondroma from other intraventricular lesions, such as choroid plexus carcinoma, meningioma, and cavernoma, is of great importance in neuroimaging and surgical planning.

KEYWORDS: Brain tumors, Craniotomy, Intraventricular, Chondroma

INTRODUCTION

Chondromas are described as benign cartilaginous tumors (3). They can be found in any part of the body with cartilaginous bones, but often occur in short tubular bones, especially metacarpals and phalanges (9). The occurrence of intracranial chondroma is rare, accounting for about 0.2-0.3% of all primary tumors in the skull (11). They usually originate from the skull base synchondrosis and are commonly found in the middle cranial fossa (1).

There are few reports of giant intracranial chondroma with characteristic imaging in the literature; nevertheless, no intraventricular type has been reported yet. Intracranial chondromas can be easily misdiagnosed, as their abundance is very low and their clinical symptoms and radiographic appearance are usually non-specific, affecting treatment and prognosis. In this paper, we first describe a case of giant intraventricular chondroma and then discuss its characteristics.

CASE REPORT

A 19-year-old female patient was admitted to our hospital after a car accident. Upon admission, her Glasgow coma score was 15 and her vital signs were stable. Her past medical history was not remarkable. Non-contrast brain CT scan was carried out, which revealed a solid-cystic mass with a lobular border and coarse calcified components, including a solid component (approximate dimension, 60×64 mm) and a cystic component (approximate dimension, 40×61 mm) with an intraventricular position in the left occipital horn (Figure 1). Afterwards, brain MRI was performed, which demonstrated a large space-occupying lesion in the left occipital horn, along with signs of early-stage transtentorial herniation (Figures 2A, B). The lesion showed slight patchy enhancement after contrast medium administration.

The patient underwent surgery with suspicion of a giant intraventricular tumor. A wide parietooccipital craniotomy was performed for effortless tumor resection. Using a transcortical transventricular approach, a large calcified mass was detected with no internal debulking capacity. Although we used different

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rongeurs, the mass was very hard and stone-like. We decided to remove the whole tumor in one piece (Figure 3). The tumor did not show any parenchymal involvement and only had an intraventricular origin. After tumor resection, it was sent to a pathological laboratory for further examination.

The macroscopic and microscopic examinations of the specimen showed that the tumor was firm, irregular, and creamy gray with mild hypercellular hyaline cartilage tissues and some binucleation, without mitosis or necrosis in the microscopic section. The pathological and immunohistochemical studies confirmed that it was an atypical chondroma (Figure 4). The patient was discharged after surgery, showing good recovery and no neurological deficits. Also, no tumor recurrence was reported in the six-month follow-up.

■ DISCUSSION

The majority of intracranial chondromas occur at the base of the skull, originating from the sphenopetrosal, sphenooccipital, or petrooccipital synchondrosis (5). Clinical manifestations, including seizures and symptoms of increased intracranial pressure, are observed after tumor enlargement; however, due to the slowgrowth of these tumors, the patient may remain asymptomatic for years (6). In the present case, the tumor caused no clinical symptoms.

In this case report, we presented the first intraventricular type of intracranial chondroma. The CT scan showed that these tumors are well-circumscribed extraaxial lesions with diffuse or ball-shaped calcification (2). The significance of this case report lies in the detection of an intraventricular solid-cystic mass with a lobular border and coarse calcified components. On the other hand, in previous case reports of intracranial chondroma, only a few similar cases were under the age of 20 years, and the youngest patient was 16 years old (1).

In pathological examination, hypercellularity, cytologic atypia, mitotic activity, and presence of more than one nucleus perlacuna distinguish chondrosarcomas from chondromas (8). Intracranial chondromas may occur as single lesions or as part of the Ollier's disease (multiple polysystemic enchondromatosis) or Maffucci's syndrome (multiple enchondromatosis associated with soft tissue angiomas). Chondromas in these syndromes may posea greater degree of cellularity and cytologic atypia and may be difficult to differentiate from chondrosarcomas (4). The present case did not show any signs of Ollier's disease (e.g., abnormal bone development and limb deformities) or Maffucci's syndrome (e.g., blue vascular lesions and fractures).

Chondromas show variable densities due to differences in the degree of calcification. Complete surgical excision is the

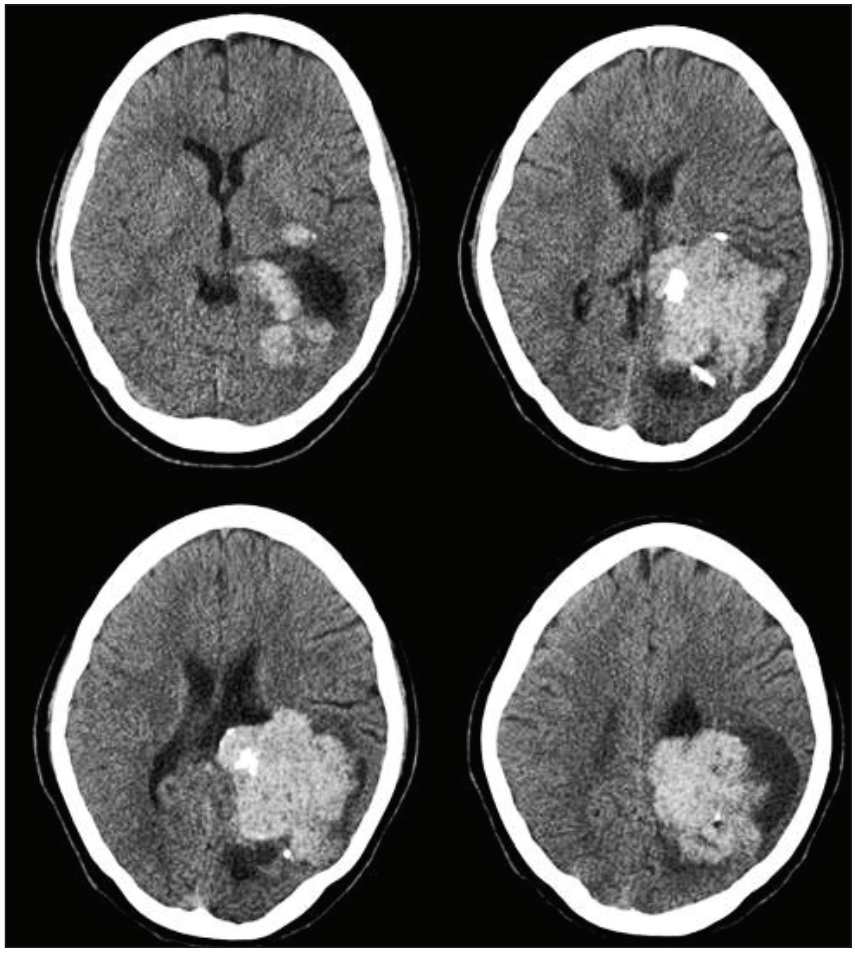

Figure 1: Axial views of head CT scan.

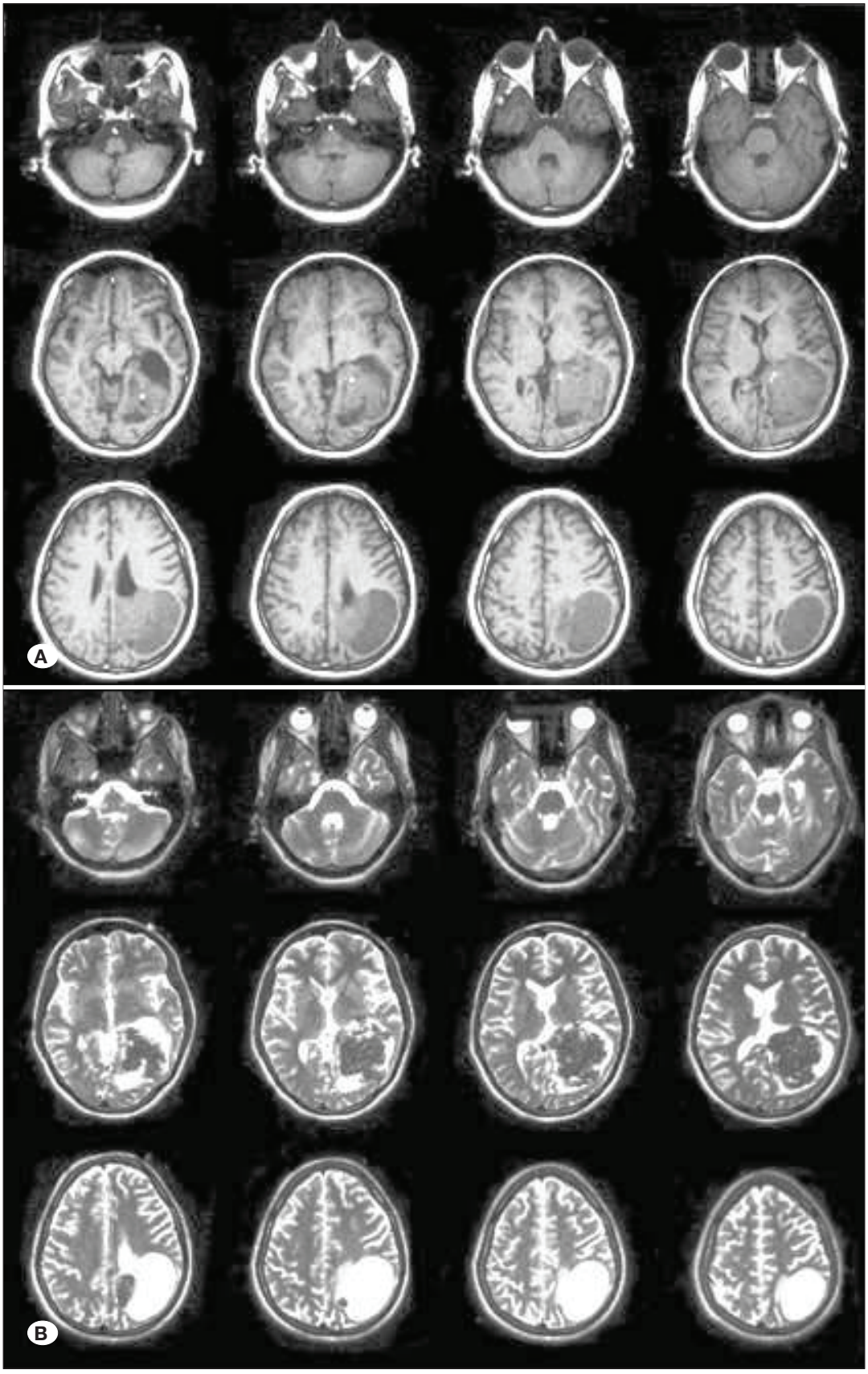

Figure 2: Axial views of T1 **(A)** and T2 **(B)** weighted MR images.

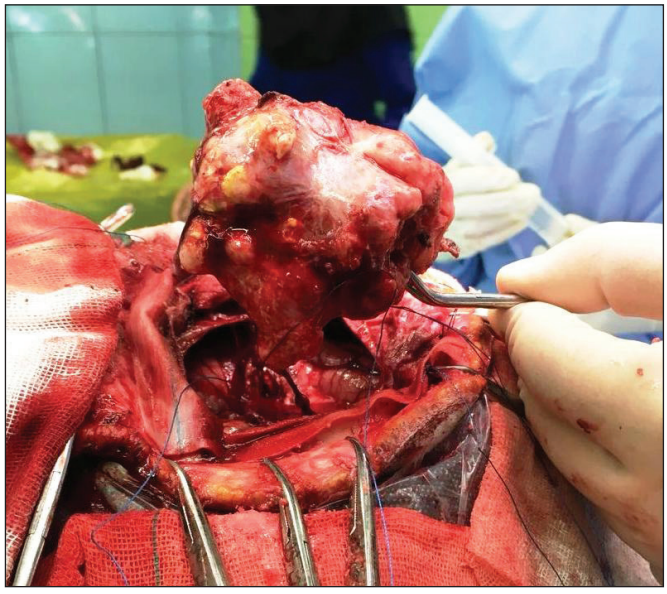

Figure 3: Tumor resection during surgery.

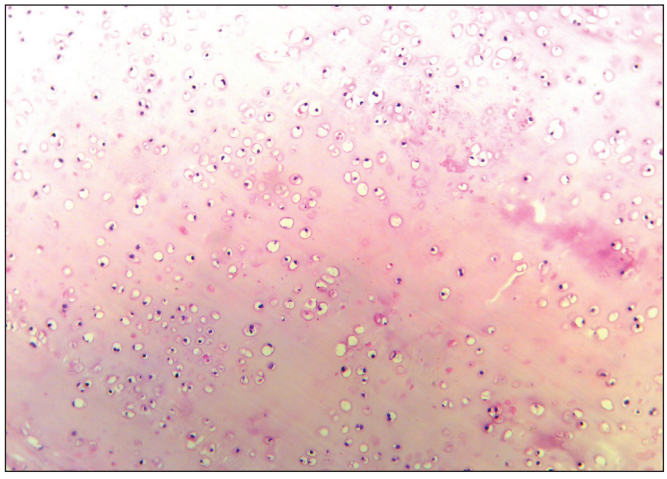

Figure 4: Histopathologic view of tumor after hematoxylin and eosin staining with x100 magnification.

best treatment strategy for these tumors with good long-term prognosis. A wide craniotomy is required when removal of a giant calcified mass, such as chondroma, is suspected. Heo and Cho reported a case of giant skull base chondroma and concluded that intracapsular debulking, followed by the complete removal of tumor capsule, is a safe strategy for large tumors (7).

The tumor in the present case did not show any intracapsular debulking capacity. Therefore, careful handling and wide craniotomy were necessary for excision. In 2017, Raju et al. reported a case of giant convexity chondroma with dural involvement (10). Chondromas usually arise at the base of the skull from embryonic chondrocyte cell remnants, although they may also originate from the falx and convexity dura (7,9). Our patient did not show any dural or bony attachment, and only an intraventricular origin was detected. It should be noted that most reported cases, similar to our case, had a good postoperative course with no complications or recurrence.

CONCLUSION

Differentiation of intraventricular chondroma from other intraventricular lesions, such as choroid plexus carcinoma, meningioma, and cavernoma, is important in neuroimaging and surgical planning. When a firm tumor is suspected, craniotomy should be large enough to provide surgical access and facilitate the control of intracranial components.

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