CASE REPORT

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Sellar Chondroma Misdiagnosed as Craniopharyngioma: A Case Report

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ABSTRACT

Tumors in the saddle area comprise a wide range of benign and malignant entities, with chondroma accounting for only a small fraction. There are only few reported cases in the literature. Sellar chondroma needs to be distinguished from pituitary adenoma, meningioma, craniopharyngioma, and chordoma, which is sometimes difficult to diagnose due to its rarity and overlap with other imaging findings. Moreover, it is easy to be misdiagnosed on imaging alone. Definitive diagnosis should depend on pathological findings. Despite being a benign tumor, saddle area chondroma poses a significant surgical challenge and is prone to complications due to its unique location, warranting attention from clinicians.

Keywords: Headache, sellar chondroma, misdiagnosed, craniopharyngioma

INTRODUCTION

Chondroma is a benign bone tumor, most commonly observed in the short bones of the hands and feet, and rarely occurs intracranially. The majority of intracranial chondromas originate from the skull base cartilage, with a minority occurring in the convexity dura mater, cerebral falx, and other locations [1], leading to potential misdiagnosis in imaging studies. We present a case of a sellar chondroma initially misdiagnosed as a craniopharyngioma.

CASE PRESENTATION

A 61-year-old female patient with a 6-month history of headaches that occurred intermittently and lasted 20 minutes to 2 hours each time; symptoms do not relieve during rest, and there were no aggravating or alleviating factors. She has no symptoms of nausea, vomiting, limb weakness, visual decline, blurred vision, visual field defects, or polyuria; and has never undergone relevant treatment. The patient had a 5-year history of hypertension, with a fluctuating systolic blood pressure ranging from approximately 105 to 155 mmHg, and she did not adhere to regular medication. Furthermore, she denied having diabetes. Head computed tomography (CT) revealed a circular mass in the sellar region, approximately 3.0x2.4 cm in size, with uneven density and arcuate calcifications at the margin (Figure 1A). The physical examination of the patient revealed no abnormalities. Hematological examination revealed normal levels of plasma cortisol (16.15 ug/dL), testosterone (16.60 ng/dL), progesterone (0.42 ng/mL), estradiol (18.90 pg/mL), triiodothyronine (1.2 ng/mL), thyroxine (6.41 ug/dL), thyroid-stimulating hormone (0.32 uIU/mL), adrenocorticotropic hormone (25.50 pg/mL), follicle-stimulating hormone (37.78 mIU/mL), luteinizing hormone (9.41 mIU/mL), and prolactin (13.16 ng/mL). The patient underwent further cranial magnetic resonance imaging (MRI) plain scan + enhancement, revealing a mixed-signal mass in the sellar region with clear boundaries; T1-weighted imaging (T1WI) showed low signal (Figure 1B), T2-weighted imaging (T2WI) showed high signal (Figure 1C), and the enhancement scan showed uneven enhancement (Figure 1D), with compression of the pituitary causing flattening. Radiological diagnosis suggests the possibility of craniopharyngioma. Head computed tomography angiography (CTA) revealed a mass close to the bilateral internal carotid arteries, terminal branches of the basilar artery, and posterior cerebral arteries on both sides (Figure 2A).

The patient underwent surgical treatment via a left frontal subtemporal approach; intraoperatively, the mass had abundant blood supply, was closely adherent to surrounding vessels, and most of the mass was excised, achieving complete hemostasis. Postoperative pathological examination confirmed

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the diagnosis of a chondroma (Figure 2B). On the second day after surgery, the patient experienced severe headaches, bilateral pupils lost light reflex, and bilateral Babinski signs were positive. Head CT revealed a new-onset left frontal lobe intracranial hemorrhage, prompting emergency evacuation of the hematoma and decompression surgery with bone flap removal on the left frontal lobe. Postoperatively, the patient received fluid resuscitation, dehydration for intracranial pressure reduction, nutritional support for brain function, and electrolyte supplementation as symptomatic supportive treatment. Postoperative re-evaluation of pituitary hormones showed normal results, and the patient improved and was discharged on the 22nd day after admission.

DISCUSSION

Although chondromas are common benign bone tumors, they are rarely found in the sellar region, accounting for less than 1% of all intracranial tumors [2]; their clinical manifestations are highly diverse, including headaches, visual problems, and hormonal imbalances, among others [3].

Sellar chondromas have clear margins and may exhibit varying degrees of calcification or ossification, which is one of their characteristic features; on MRI, they typically present low signal intensity on T1WI and high signal intensity on T2WI, consistent with the nature of cartilaginous tissue [4]; MRI can also clarify the relationship between the tumor and the pituitary. CT bone window imaging provides a clear view of the bone structure of the sella turcica, aiding in the assessment of the tumor's impact on surrounding bone quality. Multiplanar reconstruction of CTA is crucial for elucidating the relationship between the tumor and surrounding structures, especially the pituitary gland, optic nerves, and major blood vessels.

Sellar chondromas should be differentiated from many other sellar tumors. Although chondromas do not have specific radiological manifestations, the literature reports that 60%-90% of chondromas have irregular and patchy calcification, which is an important

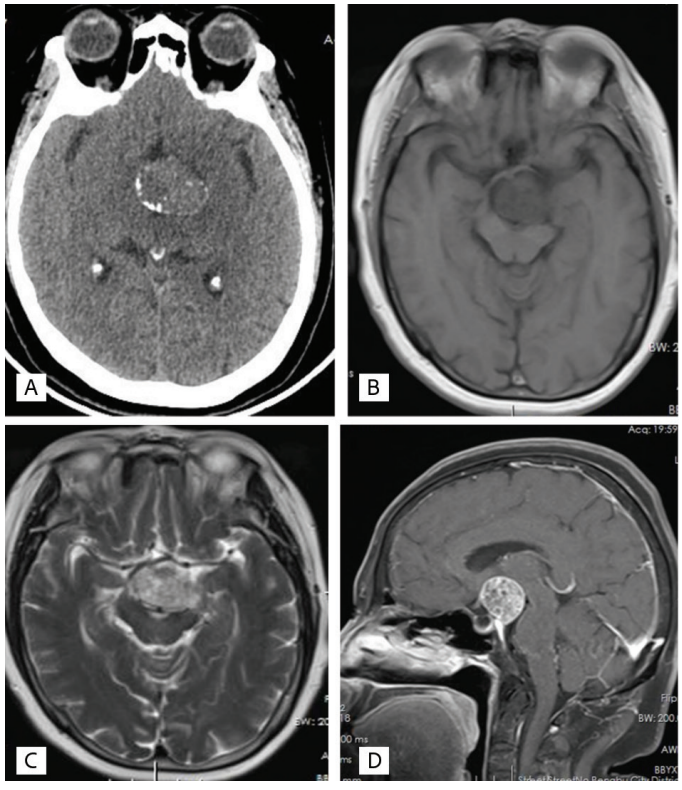

Figure 1. CT and MRI findings. (A) An axial CT image of the head shows a sellar mass with marginal calcification. (B) Axial T1-weighted image showing hypointensity. (C) Axial T2-weighted image showing hyperintensity. (D) Sagittal postcontrast T1 fat-saturated image showing uneven enhancement

CT: Computed tomography, MRI: Magnetic resonance imaging

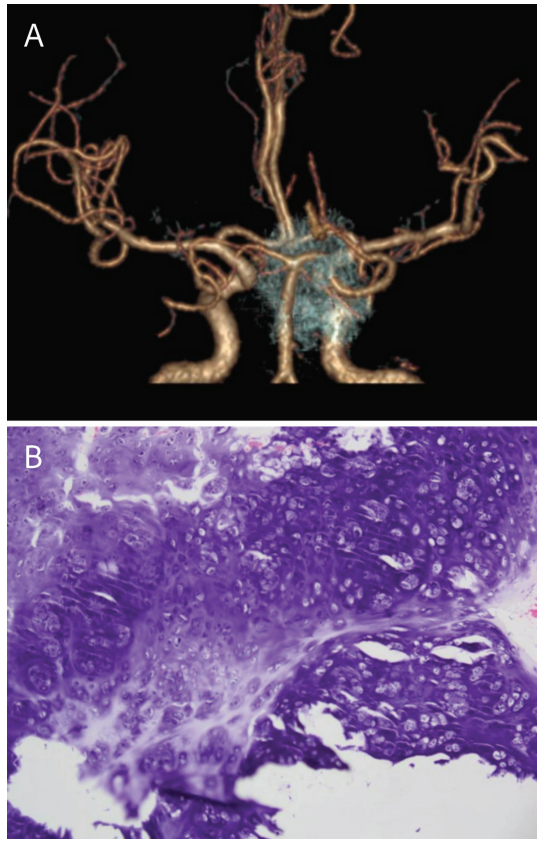

Figure 2. CTA and pathological findings. (A) A cerebral vascular virtual reality reconstruction image showing a close relationship between the mass and adjacent blood vessels. (B) Hematoxylin and eosin-stained image of the mass showing diffuse cartilaginous cells

CTA: Computed tomography angiography

basis for diagnosing chondromas [5-7]. Pituitary adenomas are common in the sellar region, but generally have less calcification and gonadotropin-secreting effects [6]. It is not difficult to differentiate the tumor from the chondroma by observing the relationship between the tumor and pituitary gland on imaging. Calcification is the manifestation of adamantinomatous craniopharyngiomas, which usually present as "eggshell"-like calcification at the edges [8]. The calcification of chondromas is mostly internal, and craniopharyngiomas are cystic and solid, and the signal is more complex than that of chondromas. Similarly, meningiomas in the sellar region may contain sand bodies but generally present with fewer calcifications. Most meningiomas are adjacent to the skull, with a wide base. The enhanced scan shows obvious and uniform enhancement, with an enhanced "dural tail", which is different from the manifestations of chondromas [7]. In addition, chordoma is an important differential diagnosis. Chordoma commonly occurs in the central occipital clivus, with unclear margins and extensive osteolytic bone destruction. In contrast, chondromas are usually located on one side of the midline. Chondromas cause less damage to bone and usually absorb adjacent bone under pressure; at the same time, some chondromas turn into chondrosarcomas [7]. It is difficult to distinguish a chordoma when the tumor is rapidly growing or when bone destruction is aggravated. In such cases, a definitive diagnosis relies on pathological and immunohistochemical analysis, and chordoma usually present with positive staining for creatine kinase, epithelial membrane antigen, and S-100 proteins [9].

Surgical excision is typically the preferred treatment for sellar chondromas, particularly for symptomatic tumors [2,3]. Surgical treatment of sellar chondromas poses some specific challenges because of the proximity of the sella turcica to the optic chiasm and pituitary gland; postoperative complications may include visual impairment or hormonal dysfunction. In addition, the sellar region contains many important vascular structures, and thus, surgery may pose a significant risk of bleeding. In our case, acute intracranial hemorrhage occurred on the second postoperative day, and timely surgery saved her life.

Sellar chondromas are generally benign, and the treatment outcome may depend on the size, location of the tumor, and the patient's underlying condition. For patients undergoing surgery, postoperative follow-up is crucial to monitor any potential recurrence or complications.

Ethics

Informed Consent: The patient's verbal consent was obtained and waived the written informed consent.

Footnotes

Authorship Contributions

Concept: C.H., W.Y., Data Collection or Processing: W.Y., Literature Search: C.H., W.Y., Writing: C.H., W.Y.

Conflict of Interest: No conflict of interest was declared by the authors.

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