

## Case Report

# Large Ossified Rathke's Cleft Cyst -A Case Report and Review of the Literature-

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We report a rare case of symptomatic Rathke's cleft cyst with thick calcified wall. Brain CT scans revealed a large cystic mass with round thick calcified wall. In this case, we selected the pterional approach instead of transsphenoidal approach due to the possibility of cystic craniopharyngioma. Histopathologically, it was calcified Rathke's cleft cyst with focal epithelial metaplasia. This case illustrates that calcification of the suprasellar cyst does not always suggest craniopharyngioma and the calcification pattern of Rathke's cleft cyst is different from that of the craniopharyngioma.

**KEY WORDS :** Rathke's cleft cyst · Calcification.

## INTRODUCTION

Rathke's cleft cyst is a nonneoplastic epithelial-lined cyst developing around the sella turcica derived from the remnant of the Rathke's cleft in the intermediate lobe of the pituitary gland<sup>1)</sup>. Around the sella turcica, several cystic lesions have been documented. Those cystic lesions included Rathke's cleft cyst, epithelial cyst, dermoid cyst, epidermoid cyst, and craniopharyngioma, which were sometimes indistinguishable pathologically as well as radiologically in spite of their defined clinicopathological entities<sup>1,2,10)</sup>. We present a rare case of Rathke's cleft cyst with round thick calcified wall.

## CASE REPORT

A 42-year-old man was referred to our department due to progressive headache and vomiting for one month with a large suprasellar and sellar calcification in the skull radiograph (Fig. 1A). The patient didn't have endocrinological problem but he complained of left temporal hemianopsia. Brain CT scans demonstrated a cystic sellar and suprasellar mass with thick irregular round calcification in the wall

(Fig. 1B). Brain MR images showed a variable mixed signal cystic mass with subtle enhancement (Fig. 1C, D). We preoperatively considered the lesion as cystic craniopharyngioma or rare calcified Rathke's cleft cyst. We selected the transcranial pterional approach, because the lesion might be a cystic calcified craniopharyngioma and calcified wall could not be removed easily by the transsphenoidal approach. In operation field, the cystic mass was well demarcated from surrounding brain parenchyme. The calcified wall was so hard that it had to be removed by drilling and rongueing. The contour of cystic wall was not shrunken at the end of mass removal. The content of cyst was yellowish muddy-like material with some fluid (Fig. 2). The cystic mass with calcified wall was totally removed piece by piece in the meticulous microsurgical fashion. Postoperative brain CT scans showed total removal of cystic mass.

Histopathologic examination revealed calcified Rathke's cleft cyst with focal epithelial metaplasia, which was lined by a layer of columnar ciliated epithelium with a plate of mature bone and focal stratified squamous epithelial wall with fibrous stroma (Fig. 3A, B). The clinical course of patient has been unevenful postoperatively without pituitary symptoms and signs. No recurrence has been observed for 2 years.

## DISCUSSION

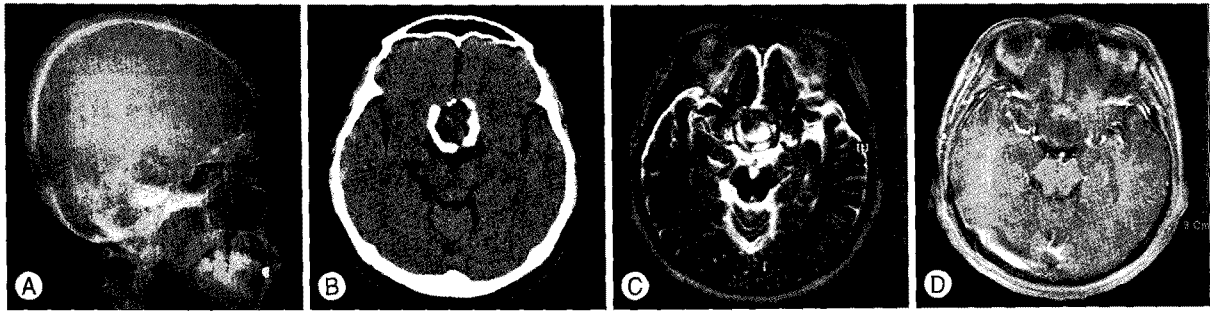
The incidence of the Rathke's cleft cyst has not been clear

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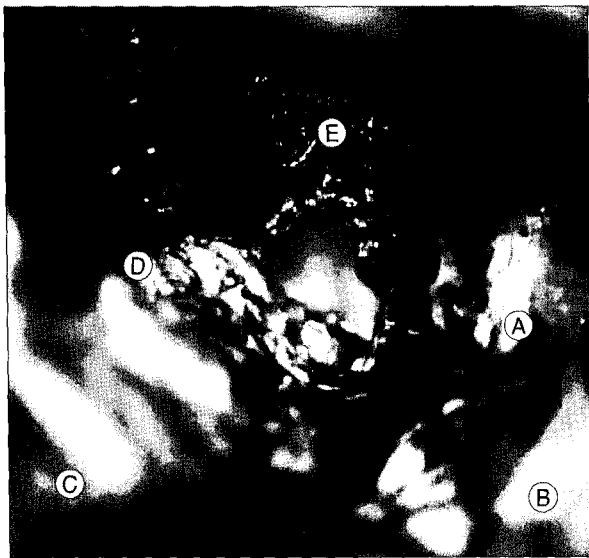
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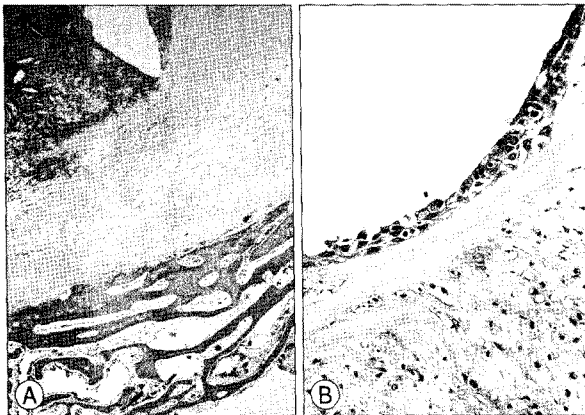
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**Fig. 1.** A : Large irregular calcified sellar suprasellar mass is well identified in the skull lateral film. B : Preoperative axial computed tomography (CT) scan shows irregular thick calcification in the wall of cystic mass. C : Preoperative axial magnetic resonance (MR) image showing an sellar and suprasellar cystic mass with enhancement at cystic wall. MR T2 axial. D : Preoperative axial magnetic resonance (MR) image showing an sellar and suprasellar cystic mass with enhancement at cystic wall. MR T1 axial enhanced.



**Fig. 2.** The photograph demonstrates operative finding according to left pterional approach. Surgical microscopic view shows the calcified wall with the surgical opening and yellowish muddy contents that have come out in front of the calcified cyst. A : left optic nerve, B : frontal lobe, C : temporal lobe, D : content of cyst, E : calcified wall with surgical hole.



**Fig. 3.** A : Lower magnification of the cyst wall shows a plate of mature bone, fibrocollagenous tissue, and blood clots (Hematoxylin-Eosin,  $\times 20$ ). B : The lining cells are focally remaining and consisting of columnar or cuboidal epithelium mixed with ciliated cells and mucin-containing goblet cells (Hematoxylin-Eosin,  $\times 400$ ).

because most of Rathke's cleft cyst is to be silent during the life time of the patients<sup>3,4</sup>. The incidence and the number of surgical cases have increased recently due to the advent of MR imaging<sup>5,6</sup>. The histological picture of Rathke's cleft cyst and craniopharyngioma differs greatly, even though they might have common origin. Histologically, Rathke's cleft cysts consist of a single or pseudostratified epithelium with an underlying layer of connective tissue. The epithelium may contain ciliated, goblet, and squamous cells, whereas craniopharyngioma has either adamantinomatous or squamous epithelium invading surrounding brain parenchyme, nodular formation, keratin formation, calcium deposit, chronic inflammation and hyaline granule layer<sup>2</sup>.

The origin and the development of Rathke's cleft cyst has been still in doubt<sup>1,5</sup>. In the therapeutic point of view, preoperative differential diagnosis is crucial because the appropriate treatment for these lesions differs according to pathologic diagnosis. In spite of arguments, nowadays Rathke's cleft cysts are commonly operated on by transsphenoidal route in order to avoid the frequent postoperative pituitary injury due to radical removal. However, in the case of Rathke's cleft cysts with squamous metaplasia, some recurrences have been reported<sup>8</sup>. In our case, we totally removed without necessity of adjunctive treatments because of open pterional approach and well identified calcified wall-arachnoid plane.

Radiologically, both of them do not have characteristic differential features except the craniopharyngioma often has some calcification<sup>7</sup>.

Calcification is considered as an important clue to differentiate craniopharyngiomas from other cystic lesions. Though Rathke's cleft cysts are long-standing benign cysts, they rarely present with histologic findings of calcification or bone formation. In the literature review, the calcification of the Rathke's cleft cysts of all reported cases showed exclusively thin, curvilinear and partially surrounded in shape<sup>9,10</sup>. But, in our case, the calcification of the wall of cyst was thick, irregular, wholly surrounding around the

wall. This unique radiologic feature has not been reported. The calcification of the craniopharyngioma has been reported to be speckled or floccular in shape<sup>7-9</sup>. Therefore, the morphology of calcification is also important in the differentiation between Rathke's cleft cyst and craniopharyngioma.

## CONCLUSION

This case illustrates that calcification of suprasellar lesion does not always suggest craniopharyngioma. Radiologic features of suprasellar cyst with thin curvilinear calcified wall which is favored to Rathke's cleft cyst may help to differentiate from the craniopharyngioma. Also, it is important finding to select operative approach.

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