Spontaneous Rupture of Intrasellar Cyst Demonstrated by CT and MR Imaging

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Abstract

Spontaneous rupture of intracranial dermoid or epidermoid and its radiologic findings including computed tomography (CT) and magnetic resonance (MR) imaging have been described, but, to our knowledge, there has been no report of spontaneously ruptured intrasellar cyst demonstrated by CT and MR in the literature. We report a peculiar case of intrasellar cyst with spontaneous rupture into subarachnoid space demonstrated by CT and MR imaging, with discussion of the differential diagnosis.

Case Report

A 24 year-old-man presented the sole complaint of headache. Physical and neurological examination was not remarkable and hormonal study was within normal limits. Plain radiograph of skull showed double contoured sellar floor with upper normal size of the sellae. The first sellar CT scan taken 1 week after the onset of the symptom revealed an expansile cystic lesion with upward convexity of upper margin, occupying nearly entire sella turcica (Fig. 1).

It was sharply delineated low density lesion compressing normal pituitary tissue anteriorly.
Transsphenoidal surgery was recommended but he refused it. Four months later, patient’s symptom had improved. At that time, MR imaging was performed using 2.0T superconducting system(SPECTRO-20000, GoldStar, Seoul) with 5 mm thickness and 1 mm gap. The coronal and sagittal T1-weighted images (T1-WI)(SE 500/30) revealed a scaphoid area of high signal intensity with upward concavity of upper margin within the posterior two thirds of sella turcica. In remaining anterior portion of sella, anterior lobe of pituitary gland with isointense signal was seen. Multiple variable sized spots of high signal intensity were scattered throughout the subarachnoid space along the convexity of cerebral hemisphere and cisterns, which suggested rupture of hyperintense cystic contents into free subarachnoid space and eventual volume reduction of the cyst. On the coronal T2-weighted images(T2-WI)(SE 3000/30 and SE 3000/80), the signal intensity of the cyst was as low as fatty marrow of sphenoid bone(Fig. 2).

During the period between the first CT scan and MR imaging, the patient had not suffered from any meningeal irritation symptoms. On follow-up sellar CT, taken 1 month later, the cystic lesion of low density disappeared and upper margin of pituitary gland showed upward concavity, representing partial empty sellae(Fig. 3). Four days later, the second MR imaging was performed, showing the same findings as the first (Fig. 4). The patient did not have any surgical intervention or further histologic investigation thereafter and has got along without any symptom.

Discussion

Intrasellar cystic lesion has a variety of patologic entities. Among these, cystic pituitary adenomas and nonneoplastic cysts such as Rathke’s cleft cysts are the most common. Purely intrasellar cranioopharyngiomas, which are responsible for about a fifth of the whole craniopharyngiomas, are the most common intrasellar tumor after pituitary adenoma. Rarely arachnoid cyst and dermoid or epidermoid may be entirely intrasellar in location. Differentiation among these lesions by high resolution CT and MR imaging is sometimes possible, but often difficult before surgery. In present case, considering the location, CT density, and MR signal intensities, the most probable diagnosis is Rathke’s cleft or dermoid cyst which has mucoid or lipid component, even though not confirmed. But the possibility of cystic cranioopharyngioma could not be completely excluded. The Rathke’s cleft cyst may have serous, mucoid or cholesterol contents. On CT, it usually appears as small low density lesions in or near the pars intermedia.

However, there was considerable variation in the MR intensity patterns. Three patterns of MR intensity have been reported, one of which has intensity pattern that is similar to arachnoid cyst(intensity equal to CSF on both T1-WI and T2-WI), the other of which has high intensity on both sequences. The third pattern is that of high signal intensity on T1-WI and low signal intensity on T2-WI like the present case. This pattern of signal intensity is also characteristic of lipid.
containing dermoid cyst\(^6,7\) The signal intensity of the craniopharyngioma may be variable depending on the cyst contents. On T1-WI, it may reveal low, iso-, or high signal intensity. On T2-WI, however, it usually appears as high intensity lesion\(^7,15\) In intratumoral hemorrhage of pituitary tumor, the pituitary lesion usually show high signal intensity on both T1-WI and T2-WI. In cystic degeneration of pituitary adenomas, sharply defined regions of low signal intensity on T-WI and marked hyperintensity on T2-WI with or without fluid-fluid level are seen\(^7,15\). Therefore, differentiation among cystic lesions may be done on the basis of MR signal intensity alone. In present case, however, the cysty could not be differentiated between Rathke’s cleft and dermoid cysts.

Rupture of cystic lesion in sellae seems to be extremely rare, while many cases of intracranial dermoid or epidermoid with rupture into subarachnoid space or ventricles have been reported\(^1\)\(^6\). Raiti et al reported one case of empty sella syndrome caused by probable rupture of intrasellar epithelial cyst, but there was no CT or MR description\(^6\).

Diagnosis of a ruptured intracranial dermoid or epidermoid relies on either CT or MR findings of an intraventricular fat-fluid level or free fat globules in the subarachnoid spaces\(^1\)\(^3\)\(^6\). Rupture of pituitary adenoma secondary to ischemia and/or necrosis is rarely seen with patients who have predisposing factors such as estrogen, bromocriptine treatment, and radiotherapy\(^17,18\).
The second sellar CT, performed 5 months after the first CT. The cystic lesion has disappeared and the sella appears “partially empty”. Note upward concavity of the upper margin of pituitary gland.

The usual clinical picture with rupture of a cyst is one of aseptic or chemical meningitis. However, this clinical picture need not always be present. The patient may be asymptomatic like present case.

REFERENCES


