Atypical CT and MR Appearance of a Rathke Cleft Cyst

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Although rare, Rathke cleft cyst should be considered in the differential diagnosis of sellar and juxtasellar masses in children. We report atypical appearances on CT and MR of a Rathke cleft cyst in a 10-year-old child.

Case Report

A 10-year-old boy had a 4-year history of growth retardation, a 10-month history of polyuria and polydipsia, and recent onset of frontal headaches.

Physical examination revealed a small, prepubescent boy without neurologic or visual-field deficits. His growth curve fell below the fifth percentile for height and weight, and the bone age was delayed. CT showed a round sellar mass that bulged into the suprasellar cistern. The lesion was of mixed attenuation, but mostly hyperdense and noncalcified, and it failed to show contrast enhancement (Fig. 1). On MR, the mass was hyperintense on T1-weighted images, diminished in signal intensity on intermediate-weighted images, and became isointense on T2-weighted images. A prominent area of signal void was noted centrally on the T2-weighted image. The cyst displaced the optic chiasm anterosuperiorly and obscured the pituitary stalk. At craniotomy, a cyst containing gray-brown gelatinous material was excised completely. Histologically, the cyst was lined with ciliated epithelium and contained scattered foci of inflammation with hemosiderin deposition, diagnostic of a Rathke cleft cyst.

Discussion

In a similar fashion to craniopharyngiomas, Rathke cleft cysts arise from embryologic remnants of the Rathke pouch. The cysts typically are lined with simple cuboidal, columnar, or pseudostratified columnar epithelium [1]; however, a finding of ciliated cells in the lining epithelium is common [2]. Occasionally, stratified squamous epithelial cells can be identified; these are thought to represent a metaplastic change due to irritation of the cyst wall [3]. Goblet cells and, rarely, mucus-secreting glands may be seen [1, 4].

Many of the cysts contain clear fluid or viscous, mucoid, white to yellow material [2, 5, 6], whereas others contain brown or black fluid, thought to represent aging intracyst hemorrhage [6]. Cholesterol crystals have been identified as a component within the cyst fluid in a number of cases.

On CT, Rathke cleft cysts usually appear as homogeneous, intrasellar hypodense masses, with or without capsular enhancement [5]. The cysts typically are located within the sella turcica and rarely have suprasellar extension. Calcification within the cyst wall is rare; however, a ringlike pattern of cyst-wall enhancement often is found [2]. Although a typical CT appearance of Rathke cleft cyst has emerged, it is by no means pathognomonic, and atypical cases may be confused with a primarily intrasellar craniopharyngioma. Perhaps the atypical appearance of high density on CT in our case was due to the high colloid content of the cyst.

Kucharczyk [7] has reported the MR features of four Rathke cleft cysts. He found two distinct patterns. Two cysts were hypointense on T1-weighted images and hyperintense on T2-weighted images. The other two were hyperintense on both T1- and T2-weighted images. He hypothesized that the first pattern was produced by cysts containing serous fluid and that the second resulted from the presence of mucinous fluid. Maggio et al. [8] reported a case of Rathke cleft cyst that was hypointense on T1-weighted images and hyperintense on T2-weighted images and that contained a "light brown, proteinacious fluid." The MR images in our case revealed a third pattern: bright signal on T1-weighted images and diminished signal on T2-weighted images. This pattern of signal characteristics on MR has not, to our knowledge, been reported before. We speculate that this pattern may have resulted from a combination of factors, including chronic hemorrhage with the presence of hemosiderin and cholesterol within the cyst.

In imaging children with CT or MR, it may be difficult to differentiate other parasellar masses from Rathke cleft cyst. The MR signal characteristics depend on the cyst's contents. Therefore, variation in MR appearance is expected, depending on the relative amounts of protein, cholesterol, and hemorrhage within the cyst. Cystic craniopharyngioma also may produce variable signal characteristics, depending on its fluid contents, that may be indistinguishable from the developmental Rathke cleft cyst. In addition, MR does not detect calcification, which is helpful in differentiating parasellar masses in children, as well as CT does. Therefore, it is unlikely that MR alone can reliably distinguish Rathke cleft cyst from a cystic craniopharyn-

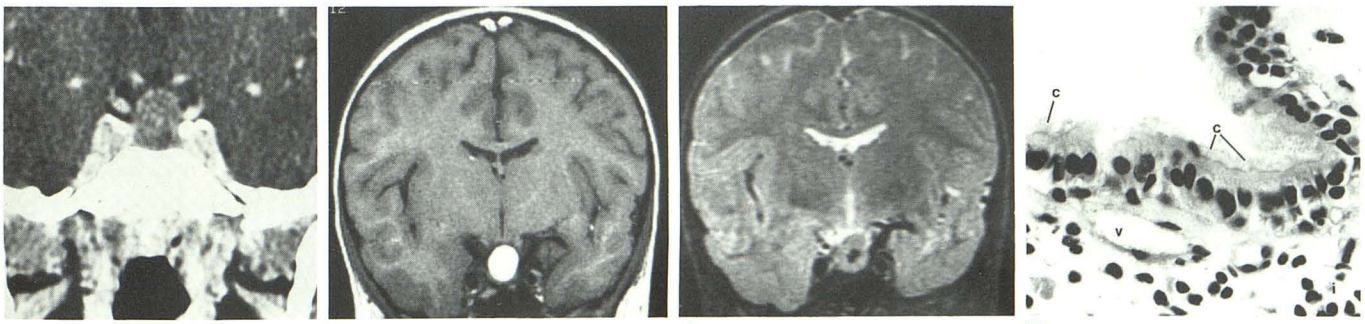

Fig. 1.—Rathke cleft cyst.

***A*, CT scan shows a well-defined, hyperdense sellar mass without calcification that bulges into suprasellar cistern.**

***B*, T1-weighted MR image, 600/20, shows homogeneous and hyperintense sellar mass. Hypothalamus and floor of third ventricle are separate and appear normal in signal.**

***C*, On T2-weighted MR image, 2000/100, mass is mostly isointense with a prominent signal void centrally.**

***D*, Photomicrograph shows cyst lining contains a well-organized, ciliated, columnar epithelium. Most of cyst wall is degenerated and atrophic and contains deposits of hemosiderin. c = cilia; i = underlying lymphoplasmocytic infiltrates in fibrovascular stroma; v = capillary.**

gioma, degenerative cystic pituitary adenoma, or possibly even an intrasellar arachnoid cyst. The presence of calcification within the wall of the cyst more strongly supports the diagnosis of a craniopharyngioma rather than a Rathke cleft cyst. We think that CT is still an important diagnostic tool that is complementary to MR in the diagnosis of sellar and suprasellar lesions in children.

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