Symptomatic Rathke's Cleft Cyst Simulating Arachnoid Cyst
—Case Report—

Kiyoshi ONDA, Ryuichi TANAKA, Norio TAKEDA, Nobuhisa YAMADA and Hitoshi TAKAHASHI*

Departments of Neurosurgery and *Pathology, Brain Research Institute,
Niigata University, Niigata

Abstract

A case of symptomatic Rathke's cleft cyst simulating an arachnoid cyst is presented. Although computed tomography and magnetic resonance imaging showed that the cyst content was identical to cerebrospinal fluid, there was faint contrast enhancement in part of the wall. Histological observation suggested that the somewhat vascular connective tissue associated with nests of pituitary cells might have contributed to the enhancement. This type of Rathke's cleft cyst requires further clinical and neuroradiological studies.

Key words: Rathke's cleft cyst, arachnoid cyst, computed tomography, magnetic resonance imaging

Introduction

Preoperative diagnosis of symptomatic Rathke's cleft cysts is necessary for their appropriate treatment. A variety of computed tomographic (CT) and magnetic resonance (MR) features of these cysts have been reported. Even with the use of CT and MR imaging, however, differentiating some Rathke's cleft cysts from arachnoid cysts is difficult. Recently, we encountered such a case.

Case Report

A 58-year-old male presented in January, 1987, with a 10-year history of decreasing vision in the left eye and loss of libido, and a 9-year history of easy fatigability and headache. His wife also noted that he had become dull and had often dozed off during the year prior to this consultation.

On examination, his skin was dry and his eyebrow and axillary hair were sparse. Bilateral optic atrophy and bitemporal hemianopsia indicated a chiasmatic lesion. Visual acuity was diminished on the left side. Endocrinological laboratory tests revealed primary hypothyroidism and slight hypopituitarism.

Plain skull x-rays demonstrated marked sellar enlargement with thinning of the dorsum sellae and depression of the floor. High-resolution CT scans revealed a large, cystic lesion involving the sellar and suprasellar region (Fig. 1). There was faint contrast enhancement in part of the wall. The density of the cyst was homogeneously low and very similar to that of the cerebrospinal fluid (CSF) in the lateral ventricles (11–16 HU). The pituitary gland could not be identified. CT metrizamide cisternography showed lack of filling of the cyst over 6 hours. The signal intensities of the cyst content on T1-weighted, T2-weighted, and proton-density MR images approximated those of the CSF (Fig. 2). Bilateral common carotid and right vertebral angiograms demonstrated an avascular suprasellar mass (Fig. 3). There was a faint blush over the posterior aspect of the cyst, which was supplied by the right inferior hypophyseal artery. The preoperative diagnosis was arachnoid cyst rather than cystic craniopharyngioma.

He underwent a craniotomy via the right pterional approach. A thin-walled cyst was encountered in the intra- and suprasellar region and was confirmed to be situated beneath the arachnoid membrane. It exuded watery, clear fluid when the covering membrane was

Received March 15, 1989; Accepted July 26, 1989
Fig. 1  Postcontrast high-resolution CT scan, showing a low-density sellar and suprasellar cyst with faint enhancement in part of the wall (arrows).

Fig. 2  MR signal intensities of the cyst contents approximate those of the CSF.  
  left: Midsagittal T₁-weighted image (inversion recovery, 500/300 msec), 
  center: coronal proton-density image (spin-echo, 2000/30 msec), 
  right: coronal T₂-weighted image (spin-echo, 2000/90 msec).

Fig. 3  Right common carotid angiograms, arterial (left) and venous (right) phases, lateral view. There is a faint blush (arrowheads) over the posterior aspect of the cyst, which is supplied by the inferior hypophyseal artery (arrows).
opened. The translucent, membranous capsule was partially excised.

Histological examination revealed that the capsule was composed of cuboidal epithelium and underlying fibrous connective tissue, characteristic of Rathke's cleft cyst (Fig. 4 left). The cuboidal epithelial cells contained cytoplasmic periodic acid-Schiff (PAS)-positive material. Nests of PAS-negative glandular cells derived from the anterior lobe of the pituitary and a number of small vessels resided in the connective tissue (Fig. 4 right).

He recovered uneventfully. He became more animated and experienced improvement in both visual acuity and fields. A CT scan obtained 2 weeks after the operation revealed reduction in the size of the cyst (Fig. 5).

**Discussion**

The fluid of Rathke's cleft cyst varies in color and consistency, and may be white and mucoid, clear, yellow, or brown and viscous. Consequently, there is considerable variation in both their CT density and their MR intensity. Their CT and MR characteristics may resemble those of cystic craniopharyngiomas, cystic or necrotic pituitary adenomas, and cysticercotic, arachnoid, and epidermoid cysts.

There have been a few reports of the Rathke's cleft cyst containing clear, CSF-like fluid (Table 1). However, only one group of investigators described both the CT and MR features of such cysts. On CT, this type of Rathke's cleft cyst exhibited the density of CSF and, on MR imaging, the intensity of CSF. There was no perceptible wall and no contrast enhancement. These patterns resemble those of arachnoid cysts. In our case, CT and MR imaging yielded features compatible, for the most part, with those of arachnoid cyst, the exception being faint contrast enhancement in part of the capsule. Although it was unclear why the capsule was only partially enhanced, histological observation suggested that the somewhat vascular connective tissue associated with nests of pituitary cells might have contributed to the enhancement. We feel that this type of Rathke's cleft cyst requires further neuroradiological study, including high-resolution postcontrast CT and MR imaging.

Suprasellar arachnoid cysts and the Rathke's cleft cysts listed in Table 1 may differ somewhat in their clinical manifestations. It has been pointed out that the majority of patients with suprasellar arachnoid cyst have been children; hydrocephalus, head enlargement, visual loss, ataxic gait, and headache are common clinical manifestations, with hypopituitarism occurring less frequently. On the other hand, all the reported patients with Rathke's cleft cyst were adults (Table 1); hypopituitarism as well as visual disturbance and headache were common findings, and sellar enlargement and destruction occurred.
more often than in cases of arachnoid cyst. Awareness of these clinical features may be helpful in differentiating Rathke's cleft cyst with clear, CSF-like fluid from suprasellar arachnoid cyst. Intrasellar arachnoid cysts have been reported only very rarely, and definitive criteria for their histological diagnosis have not been established.

An additional finding in our case was a faint blush over the posterior aspect of the cyst on the angio-gram. Angiographic findings similar to those in our case have been reported previously, but their implications were not discussed. It is possible that this faint blush represents the extended and thinned posterior lobe of the pituitary gland.

Acknowledgments

The authors thank Dr. J. Ito, Department of Neuroradiology, School of Dentistry, Niigata University, for his helpful comments. We are also grateful to Mr. K. Uesugi, for his skillful technical assistance.

References


Neur Med Chir (Tokyo) 29, November 1989

Address reprint requests to: K. Onda, M.D., Department of Neurosurgery, Brain Research Institute, Niigata University, 757 Ichiban-cho, Asahimachi-dori, Niigata 951, Japan.