Suprasellar Ectopic Pituitary Adenoma
—Case Report—

Michihiro KOHNO, Tomio SASAKI, Yoshitaka NARITA, Akira TERAMOTO, and Kintomo TAKAKURA

Department of Neurosurgery, Faculty of Medicine, Tokyo University, Tokyo

Abstract

A 33-year-old female presented with a suprasellar ectopic pituitary adenoma manifesting as visual disturbances. Preoperative magnetic resonance imaging demonstrated intact pituitary gland and suprasellar cystic tumor, with a preoperative diagnosis of craniopharyngioma. At surgery, the tumor was identified as a suprasellar ectopic pituitary adenoma with intracapsular hematoma. There was no communication between the tumor and intrasellar structures. Total removal of the tumor immediately improved the severe visual disturbance. Ectopic pituitary adenoma should be considered in the differential diagnosis of a suprasellar lesion with intact pituitary gland.

Key words: ectopic pituitary adenoma, suprasellar lesion, surgery, magnetic resonance imaging

Introduction

Ectopic pituitary adenoma is an adenoma of the pituitary gland located outside the sella turcica without continuity with the intrasellar normal pituitary gland. Ectopic pituitary adenoma is very rare, with only 29 cases previously reported, located in the sphenoid sinus (11 cases), suprasellar region (10 cases), cranial base (4 cases), nasal cavity (3 cases), and temporal lobe (1 case). Matsumura et al. and Iwai et al. have both extensively reviewed past reported cases of ectopic pituitary adenoma. Here we report another case of suprasellar ectopic pituitary adenoma.

Case Report

A 33-year-old female was referred to our department with decreased visual acuity and loss of visual field for 3 years.

Neurological examination on admission showed no abnormal findings except for visual disturbance. Visual acuity was 0.05 (0.15) in the right eye, 0.06 (0.20) in the left. Examination of the visual field by Goldmann's perimeter revealed bitemporal hemianopsia. Hormone study revealed low baseline and hyporeaction of luteinizing hormone and follicle-stimulating hormone. Plain skull x-ray films showed no deformity of the sella turcica and dorsum sellae. Precontrast computed tomography (CT) demonstrated a slightly high-density mass in the suprasellar cistern, which was partially enhanced with contrast (Fig. 1). Postcontrast coronal CT suggested that the tumor had a cystic component. Magnetic resonance (MR) imaging showed that the cystic tumor originated from around the sella and extended to the floor of the third ventricle (Fig. 2). The tumor was 20 × 15 × 15 mm. The cystic part, which demonstrated niveau formation, was slightly high/isointense on both the T1- and T2-weighted images. The capsule and solid part of the tumor were isointense on both the T1- and T2-weighted images, and were enhanced with gadolinium-diethylene...
triaminepenta-acetic acid (Gd-DTPA). The pituitary gland appeared to be normal (Fig. 2). Cerebral angiography revealed no abnormal staining. The possible diagnoses were craniopharyngioma based on the normal pituitary gland and high-intensity cystic component on the T₁-weighted MR image, or pituitary adenoma with pituitary apoplexy although MR imaging showed an intact pituitary gland.

A right frontotemporal craniotomy was performed under general anesthesia. Opening the right Sylvian fissure exposed the tumor which was compressing the right optic nerve upward. The cystic part of the tumor was identified and the capsule was opened. Yellowish liquid was aspirated and dark reddish old hematoma suggesting intratumoral bleeding was found at the bottom of the cyst. After intracapsular decompression, the capsule was dissected from the hypothalamus via the lateral internal carotid artery space and opticocarotid space. The pituitary stalk was identified, and tumor adhesion was recognized at the pars tuberalis of the stalk above the diaphragma sellae. The capsule was dissected from the stalk without much difficulty, and the tumor was totally removed. The stalk was preserved intact and ran into the hiatus of the normal diaphragma sellae. These findings indicated that the tumor had no communication with intrasellar structures (Fig. 3).

Histological staining (hematoxylin and eosin, periodic acid-Schiff, and orange-G stain) of the tumor specimen revealed typical chromophobe adenoma with sinusoidal structures (Fig. 4). Immunohistochemical staining against growth hormone, adrenocorticotropic hormone, prolactin, the common alpha-subunit and each beta-subunit of luteinizing hormone, follicle-stimulating hormone, and thyroid-stimulating hormone were all negative.

Postoperatively, she developed transient hyponatremia but soon recovered. Her visual disturbance much improved with visual acuity at discharge 0.2 (1.2) on the right, 0.3 (1.2) on the left. The visual field defect was resolved. Postoperative hormone study showed normal reaction of luteinizing hormone and follicle-stimulating hormone. Postoperative MR imaging revealed the preserved pituitary stalk and intact pituitary gland, and no residual

Fig. 1 Preoperative precontrast CT scan showing a slightly high-density mass in the suprasellar cistern (left), and postcontrast scan showing the posterior part of the mass slightly enhanced (right).

Fig. 2 Preoperative MR sagittal images revealing niveau formation in the cystic part of the tumor appearing as high intensity (left: T₁-weighted image, center: T₂-weighted image), and the capsule and solid part of the tumor enhanced (right: T₁-weighted image with Gd-DTPA). The intact pituitary gland (arrow) was separated from the mass (arrowheads).
tumor (Fig. 5). She was discharged 2 weeks after surgery under cortisol and thyroid hormone replacement therapy.

Table 1 summarizes the 11 reported cases of suprasellar ectopic pituitary adenoma. The patients were aged 15 to 71 years old (mean 41.5 yrs) with a slight male predominance (male:female 6:5). Seven patients (63.6%) had visual disturbance. The tumors were totally removed in only three cases including ours. Histologically, all tumors except one included a chromophobic element. Only three cases (27.3%) were functional adenomas, suggesting that functional suprasellar adenoma is comparatively rare because the incidence of functional ectopic pituitary adenoma is reported to be 63.3%, 58.8%, and 45.4%.

The pathogenesis and origin of ectopic pituitary adenomas are classified into three or four types. The most common three types are: 1) adenomas derived from residual cells of Rathke's pouch, which is believed to become the anterior pituitary gland, persisting along the developmental pathway and located in the sphenoid sinus or nasopharynx; 2) adenomas derived from the cells of the supradiaphragmatic portion of the pars tuberalis located in the suprasellar region; and 3) dissemination of the primary intrasellar adenoma, which is not a true ectopic pituitary adenoma. Adenomas derived from aberrant migrating cells of the craniopharyngeal duct in the third ventricle form a fourth type. Hori investigated 20 adult normal brains by histological, electron microscopic, and immunohistochemical methods, finding suprasellar ectopic pituitary gland cells in 15 cases (75%). Most suprasellar ectopic pituitary adenomas belong to the second type (Cases 1, 6–8, 10, 11), with two of the fourth
Suprasellar ectopic pituitary adenoma can be diagnosed only by operative or autopsy findings and histological study. Recently, MR imaging has been important in diagnosis. In our case, the cystic part of the tumor with niveau formation indicated intratumoral hemorrhage. Bleeding is rare in craniopharyngiomas but comparatively frequent in pituitary adenomas (9.6-16.6%), so niveau formation is indicative of ectopic pituitary adenoma despite any separation between the tumor and normal pituitary gland. T1-weighted MR images often show homogeneous high-intensity areas in patients with craniopharyngioma. Hamada et al. reported a case of suprasellar ectopic pituitary adenoma demonstrating homogeneous high-intensity areas on the T1-weighted MR images which was also preoperatively diagnosed as craniopharyngioma. We emphasize that ectopic pituitary adenoma should be included in the differential diagnoses of a suprasellar lesion with intact pituitary gland although suprasellar ectopic pituitary adenoma is quite rare.

References

7) Erdheim J: Uber einen Hypophysentumor von...
13) Kepes JJ, Fritzlen TJ: Large invasive chromophobe adenoma with a well preserved pituitary gland. Neurology (Minneap) 14: 537–541, 1964

Address reprint requests to: M. Kohno, M.D., Department of Neurosurgery, Tokyo Metropolitan Neurological Hospital, 2–6–1 Musashidai, Fuchu, Tokyo 183, Japan.

Neurol Med Chir (Tokyo) 34, August, 1994