Clinical Article
Vanishing pituitary mass revealed by timely magnetic resonance imaging: examples of spontaneous resolution of nonfunctioning pituitary adenoma

A. Yoshino, Y. Katayama, T. Watanabe, and H. Hirota

Department of Neurological Surgery, Nihon University School of Medicine, Tokyo, Japan

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Summary
Spontaneous necrosis of a pituitary adenoma is not rare but represents a very unlikely way of curing a nonfunctioning pituitary adenoma. We report two cases of nonfunctioning pituitary adenoma, one of them with a family history of pituitary adenoma, in whom spontaneous complete resolution occurred through the necrosis of previously well-delineated adenoma. Sequential magnetic resonance imaging (MRI) scans provided clear evidence of the event, resulting in an empty sella. In the present cases, the pituitary necrosis was entirely asymptomatic with the exception of an initial atypical headache in one case, and cured the patients as well as a surgical procedure would have done. This exceptional curative process, however, should certainly not be relied on and does not rule out the possibility of recurrence.

Keywords: Pituitary adenoma; incidentaloma; familial pituitary adenoma; vanishing tumor; MRI.

Introduction
Spontaneous bleeding and infarction into pituitary tumors may sometimes take place, resulting in subsequent necrosis of the pituitary gland. Spontaneous remission of endocrinopathy following an apoplectic event is a known phenomenon in cases with hormonally active pituitary adenomas [5, 6, 8, 10, 19]. Most instances cited in the literature involve large tumors or have features of Cushing’s syndrome or acromegaly. Such events, furthermore, may be due to the manner of treatment which does not permit spontaneous remission to take place [6]. However, spontaneous complete resolution of a nonfunctioning adenoma is a rare occurrence [7].

We report here two rare cases of endocrinologically inactive pituitary adenoma in whom successive and timely magnetic resonance imaging (MRI) provided clear evidence of complete resolution that occurred following necrosis without causing hypopituitarism.

Case reports

Case 1
A 32-year-old male presented at our department on July 9, 1997, because computed tomography of the head for a traffic accident taken at another hospital had disclosed an intrasellar abnormality. Furthermore, his 62-year-old mother had undergone transsphenoidal surgery for a nonfunctioning pituitary adenoma at our hospital 3 months previously. Hitherto, our patient had been in good health and did not have any visual field disturbance. His basal levels of pituitary hormones were normal. Anterior pituitary function tests also revealed no abnormality. MRI of the pituitary gland on July 12, 1997, demonstrated a lesion of slightly low signal intensity consistent with an intrasellar micro-adenoma (Fig. 1). Familial occurrence of pituitary adenoma not associated with multiple endocrine neoplasia type 1 (MEN 1) is very rare. However, our patient did not reveal the presence of MEN 1 in any blood examinations. We diagnosed him as incidentaloma, and kept him under careful observation as an outpatient without any treatment. A repeat MRI scan was performed 2 months later, on September 25, 1997, and demonstrated intratumoral hemorrhage without enlargement of the microadenoma (Fig. 2, left). Spontaneous clinically silent pituitary bleeding was inferred, since there was no history indicating pituitary apoplexy. The next follow-up MRI scan, on January 29, 1998, revealed no remarkable change in the intrasellar lesion (Fig. 2, center).

Subsequently, he did not attend our department until over 5 years later on October 9, 2003. At that time, he had no complaints and his clinical status remained stable. Basal pituitary hormones were normal and no pituitary insufficiency was found. The most recent follow-up MRI scan, on October 15, 2003, revealed shrinkage of the sellar content (Fig. 2, right).
Case 2

A 35-year-old male was referred to our department for MRI evaluation on March 18, 2003. An MRI scan, taken at our neurology department on March 14, 2003, because he had a history of occipital headache persisting for a few days, revealed a pituitary lesion consistent with a macro-adenoma (Fig. 3, left). There was no history of symptoms pertaining to hyperfunction of a pituitary adenoma. He did not display any visual field disturbance and his basal levels of pituitary hormones were normal.

At 3 weeks after diagnosis, he was admitted to our hospital for transsphenoidal resection of the adenoma. However, neurological, ophthalmological, and endocrinological re-evaluations failed to reveal any abnormality, and repeat MRI scans, performed on April 10, 2003, showed a marked decrease in the volume of the pituitary tumor (Fig. 3, center). Surgery was no longer indicated, and the patient was discharged. He did not receive any treatment under careful follow-up as an outpatient. Repeat MRI scans, performed on July 28, 2003, revealed complete resolution of the initial pituitary lesion, with no evidence of a residual tumor. The most recent follow-up MRI scan, on December 1, 2003, remains stationary. The MRI demonstrated focal loss of pituitary tissue at the exact location where the adenoma had been present, which was filled by a small arachnoidocele consistent with an empty sella (Fig. 3, right). Further, basal levels of pituitary hormones remained normal and no pituitary insufficiency was found.

Discussion

The incidence of pituitary hemorrhage ranges from 0.6 to 25.7% of surgically treated adenomas, but symptomatic (classical) apoplexy accounts for 0.6 to 9.1% of these [12, 13, 17]. The incidence of asymptomatic pituitary hemorrhage is therefore much higher than that of symptomatic pituitary apoplexy [13, 15]. Further, the incidence of pituitary infarction was found to be 3% of all cases, and between 10% and 15% of incidental pituitary adenomas in a large routine autopsy study [9]. The mechanism of pituitary apoplexy remains unclear. Several reports have suggested various factors that may precipitate pituitary apoplexy: head trauma, diabetes mellitus, hypertension, anticoagulant therapy, dynamic pituitary function tests, angiography, radiotherapy, and bromocriptine treatment [5, 7, 11–13, 16, 19]. However, most spontaneous pituitary hemorrhage or infarction resulting in necrosis is an unpredictable event without any local symptoms, as our cases have demonstrated.