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Technical Notes & Neurosurgical Techniques

Ectopic pituitary null cell adenoma arising from the infundibulum in the third ventricle: A successful endonasal transsphenoidal resection after long-term follow-up MR imaging – A technical note

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ABSTRACT

Background: Since the origin and growth pattern of third ventricle ectopic pituitary adenoma (ectPA) remain unclear, its optimal surgical approach is debatable.
Clinical presentation: We present a rare case of null cell pituitary adenoma arising from the pituitary infundibulum with long-term preoperative follow-up images. The tumor was resected gross-totally via an extended transsphenoidal approach.
Conclusion: To our best knowledge, this is the first case with long-term preoperative follow-up images, which can bridge the knowledge gap in operations of third ventricle ectPA as following: (1) Truly third ventricle ectPA can exist, (2) the third ventricle ectPA extended into the sella turcica along the pituitary stalk, (3) this ectPA can arise from the suprasellar peri-infundibular ectopic pituitary cells or the pars tuberalis of the adenohypophysis, and therefore adhere to the optic chiasm, (4) thus neurosurgeons should take great care in resection of ectPA arising from the infundibulum, and (5) it can be resected through an endoscopic extended transsphenoidal approach.

1. Introduction

We present a rare case of infundibular ectopic pituitary adenoma (ectPA) in the third ventricle. This ectPA was estimated to arise from the suprasellar peri-infundibular ectopic pituitary cells or the pars tuberalis of the adenohypophysis on the basis of follow-up imaging findings. It is difficult to distinguish this kind of infundibular ectPA from craniopharyngioma, germ cell tumors, or neuroepithelial tumors, even with long-term follow-up images. Despite the extraordinary morphological findings and growth pattern for pituitary adenoma (PA), this tumor was gross-totally resected via an endoscopic endonasal transsphenoidal approach (EETSA). This ectPA had a tight connection with the optic chiasm. In this report, we describe the clinical course of this rare case with long-term follow-up images and discuss the knowledge gap that this case bridges in regard to the surgical resection of infundibular ectPA.

1.1. Case description

A 55-year-old woman with a mild intellectual disability had been diagnosed with a suprasellar lesion on July 4, 200X (Fig. 1) and had been followed-up at a local medical center. Since the first diagnosis of the suprasellar mass in 200X (Fig. 1) until her most recent admission, she had been observed to possess slowly progressive cognitive dysfunction. Although follow-up images demonstrated gradual enlargement of the lesion (Fig. 2), the woman did not desire treatment on grounds of lack of subjective symptoms. Shortly before admission, she had left the house very little and mostly stayed home. She suddenly collapsed and was brought to the local medical center by ambulance on January 21, 200X. The patient had turned 65 shortly before being admitted. Cranial computed tomographic scan and magnetic resonance imaging (MRI) showed a large multicystic suprasellar tumor extending into the third ventricle (Figs. 3, A–D) and caused non-communicating hydrocephalus.

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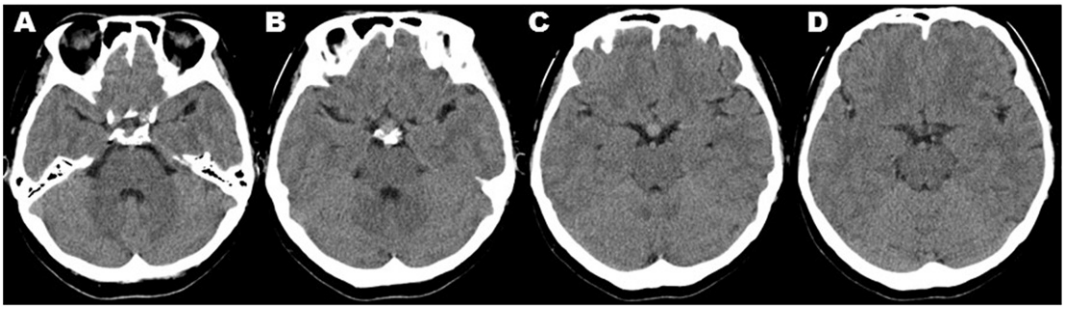

Fig. 1. A small suprasellar (C), not intrasellar, tumor is shown on precontrast computed tomographic scan at the initial diagnosis. Since the tumor was asymptomatic, the patient wanted image follow-up of the lesion instead of surgery.

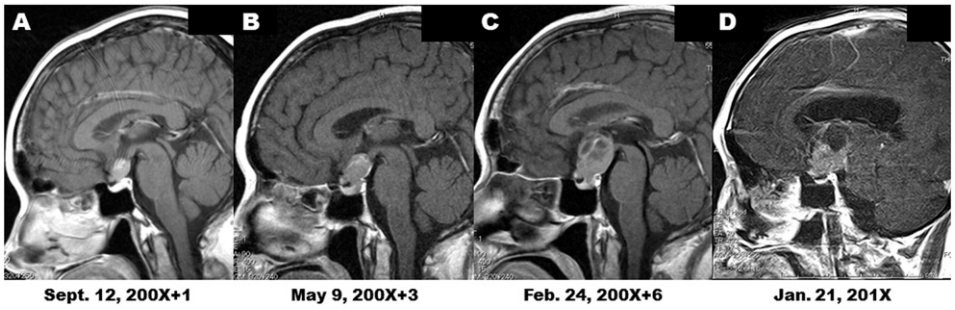

Fig. 2. Serial follow-up MRI demonstrates the gradual enlargement of the suprasellar tumor. Preoperative image evaluation reveals slowly progressive atrophy of the pituitary gland on serial MR images (C, D). Serial image evaluation also demonstrates that the tumor grew and extended not only into the third ventricle (C, D) but also into the sella turcica along the pituitary stalk (B, C).

Her level of consciousness was somnolence, so she was transferred to our hospital by ambulance on January 23, 201X. Endocrinological work-up revealed hypopituitarism in the patient, despite diabetes insipidus (DI) was unclear. Serum tumor markers, such as alpha-fetoprotein (AFP) and beta human chorionic gonadotropin (hCG), were negative. Preoperative image evaluation revealed slowly progressive atrophy of the pituitary gland on serial MRIs as well as the non-communicating hydrocephalus (Fig. 3A, C). Serial image evaluation also demonstrated that the tumor grew and extended not only into the third ventricle but also into the sella turcica along the pituitary stalk. Increased intracranial pressure (ICP) was controlled with intravenous prednisolone and glycerol until surgical intervention. Preoperative ophthalmological assessments of the patient were unable even after the medical intervention, except for 20/500 as the visual acuity of the right eye and bilateral optic atrophy.

1.2. Operative procedure and clinical course

She was diagnosed with craniopharyngioma rather than pituitary adenoma, germ cell tumors, or neuroepithelial tumors, preoperatively and underwent an extended endoscopic transsphenoidal surgery (eTSS) for removal of the tumor on January 29, 201X. The tumor was

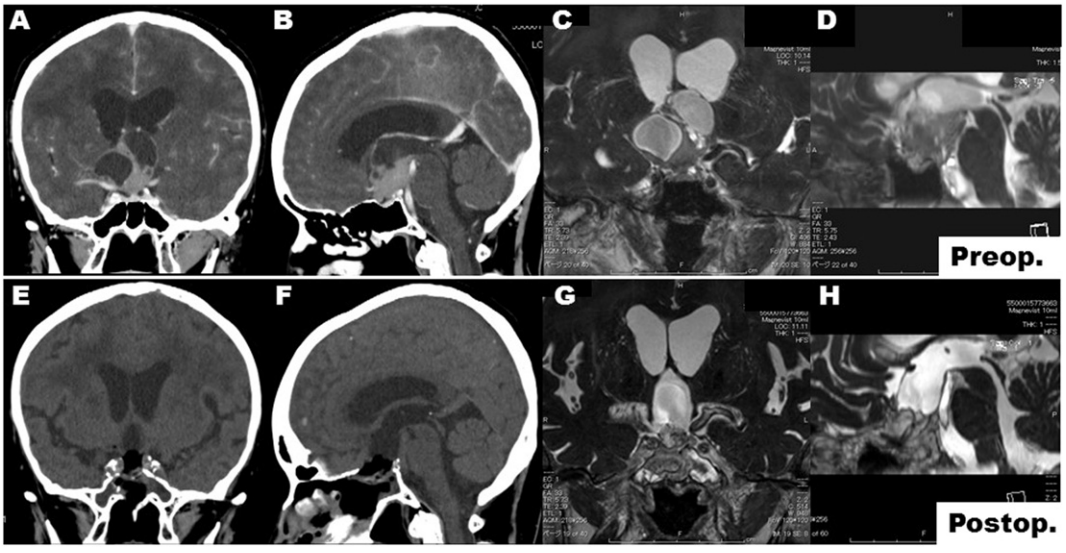

Fig. 3. MRI shows a large multicystic supurasellar tumor extending into the third ventricle and caused non-communicating hydrocephalus (A, C). Calcified components are not detected on preoperative computed tomography (A, B). The tumor is gross-totally resected through an extended eTSS (A-D). Non-communicating hydrocephalus (A, C) is in remission (E, G).