Astrocytoma of the pituitary gland (pituicytoma): case report

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Abstract A 34-year-old man presented with a 4-month history of visual obscuration. Magnetic resonance imaging showed a solid, discrete, contrast-enhancing pituitary mass with suprasellar extension. Surgery, which was performed via a transsphenoidal approach, disclosed the pituitary tumor to be a fibrillar astrocytoma (pituicytoma). This case report contains the clinical and neuroimaging features of this rare tumor of the neurohypophysis, which masqueraded as a pituitary adenoma.

Keywords Astrocytoma · Magnetic resonance imaging · Neurohypophysis · Pituicytoma · Pituitary tumor

Introduction

Primary tumors arising in the neurohypophysis are rare. Such tumors may include gangliogliomas, hamartomas, epidermoids, craniopharyngiomas, germ-cell tumors, Langerhans cell histiocytosis, sarcoidosis, granular cell tumors and lipomas [1, 2, 3]. This case report describes the clinical, neuroimaging and histopathological features of a rare astrocytoma of the neurohypophysis, which masqueraded as a pituitary adenoma.

Case report

A 34-year-old man with no prior illness, but complaining of a 4-month history of decreased vision in his right eye, was found to have a sellar tumor. His vision deteriorated further, and he was referred to us for evaluation of the sellar mass with suprasellar extension. He had no complaints of reduced libido, increased urination, weight gain or loss, cold/heat intolerance, or galactorrhea. His mother was living and well. However, his father had died of an anaplastic oligo-astrocytoma at the age of 69 years, and the paternal grandfather was also said to have died of a brain tumor.

Physical examination on admission revealed a well-developed and nourished man (weight 75.4 kg, height 176.0 cm). There were no signs of hypophysial dysfunction. Neurological examination disclosed bitemporal hemianopsia, that was worse in the inferior quadrants, and decreased visual acuity in the right eye. The remainder of his neurological examination was normal.

Laboratory studies including electrolytes, blood glucose, urinalysis and a complete blood count were all within the normal limits. The endocrine studies for the pituitary gland were normal except for a slightly elevated level of serum ACTH and a slightly decreased serum level of LH.

Plain skull X-ray disclosed an enlarged sella turcica with a thinning of the anterior and posterior clinoids and the floor of the sella (Fig. 1a). A computed tomographic (CT) scan revealed a well-delineated sellar mass with homogeneous contrast enhancement (Fig. 1b, 1c). Magnetic resonance imaging (MRI) revealed a solid, contrast-enhancing pituitary mass that elevated the optic chiasm. The tumor was slightly hypointense with the brain parenchyma on T1-weighted images, hyperintense on T2-weighted images, and also showed moderate enhancement following the intravenous administration of Gd-DTPA. The pituitary gland and the pituitary stalk could hardly be distinguished (Fig. 2).

The patient underwent transsphenoidal surgery for decompression of the optic nerve and chiasm and for histological diagnosis of the lesion. The tumor was soft in consistency and vascular; it was partially removed. The postoperative course was uneventful, and the patient did not develop diabetes insipidus. At the most
Fig. 1. a Lateral plain skull X-ray shows asymmetrical sellar enlargement with double floor. b, c CT scan shows a solid, smooth contoured isodense sellar mass (b), which is uniformly enhanced after contrast enhancement (c).

Fig. 2. a, b An MRI scan demonstrates a well-defined sellar mass with suprasellar extension, slightly hypointense to the brain parenchyma on T1-weighted image and hyperintense on T2-weighted image. c The tumor is enhanced after administration of Gd-DTPA.

Recent follow-up examination, 3 months after surgery, the patient is not on hormonal replacement therapy, and his visual acuity and field have markedly improved.

Pathological examination

A histological examination of the surgically removed tissue revealed the tumor to be composed of polygonal cells with fibrillated cytoplasm and slightly pleomorphic, oval-to-spherical nuclei (Fig. 3a). The cell borders were indistinct and blended into those of adjacent cells; mitoses were rare (zero to one per 20 high-power (40x) fields). No Rosenthal fibers, granular bodies, Herring bodies or areas of elongated bipolar cells were noted within the tumor. Immunohistochemical studies using the biotin-streptavidin peroxidase technique showed tumor cells to be immunoreactive for glial fibrillary acidic protein (GFAP, DAKO, 1:500) and S-100 protein (DAKO, 1:500), but reaction intensity varied from mild to moderate (Fig. 3b). In addition, no anterior pituitary tissue was present, and routine immunohistochemistry for PRL, GH, and ACTH was negative. The histopathological diagnosis was a fibrillary astrocytoma of the neurohypophysis.

Discussion

Because of their frequency in the sellar region, solid, contrast-enhancing masses are often thought to represent pituitary adenomas, craniopharyngiomas, germ-cell tumors or meningiomas. In this case, the clinical features, neuroimaging appearances and operative findings...