Case report

MR imaging findings in granular cell tumor of the neurohypophysis: a difficult preoperative diagnosis

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Abstract. Granular cell tumor is a rare neoplasm arising within the neurohypophysis. We describe the MR imaging findings in two symptomatic patients. In one patient with history of panhypopituitarism, MR images showed a large sellar and suprasellar mass. The other patient presented with acute loss of vision in her left eye, and MR images showed a suprasellar mass with compression of the optic chiasm.

Key words: Granular cell tumor – MR imaging

Introduction

Granular cell tumor (GCT), also referred to as choriostoma, myoblastoma, or granular cell myoblastoma, is a rare neoplasm of the neurohypophysis. Several authors [1, 2, 3, 4] suggest that small GCT are relatively common as incidental autopsy findings. However, there are few reports of GCT large enough to cause symptoms, because GCT are clinically silent until they cause symptoms due to their size [1, 2, 3, 4, 5, 6]. The purpose of this article is to describe two symptomatic cases of this rare tumor with emphasis on MR imaging findings.

Case reports

Case 1

A 49-year-old man with an 8-year history of reduction in the growth rate of facial and body hair, decreased libido, and impotence, was referred for evaluation. He complained of chronic fatigue, progressive obesity, and diurnal somnolence. No galactorrhea, headache, or visual impairment was reported. Physical examination revealed obesity, scanty pubic hair, and small, soft testes. Ophthalmologic evaluation was normal. Panhypopituitarism was evident on endocrine assessment.

Magnetic resonance imaging showed an enlarged sella and a lobulated, well-defined, homogeneous sellar mass which extended superiorly into the suprasellar cistern, contacting and compressing the optic chiasm. The mass was isointense to gray matter on both T2- (Fig. 1a) and T1-weighted images (Fig. 1b). The normal posterior lobe hyperintensity could not be identified (Fig. 1b). After contrast administration, the neoplasm showed intense homogeneous contrast enhancement (Fig. 1c). Transphenoidal resection was performed with total extirpation of the tumor. Histological examination showed several types of cells, some of them with positive immunohistochemistry staining for glial fibrillary acid protein (GFAP). Pathological diagnosis was a tumor of the neurohypophysis: GCT. Postoperatively, the patient’s course was uneventful and control MRI performed 6 months later did not show any sign of reappraisal of the tumor.

Case 2

A 49-year-old woman presented with an acute loss of vision in her left eye, bilateral decreased visual acuity, and a visual field loss developed a week latter. Endocrine assessment was unremarkable.

Magnetic resonance imaging showed a well-defined, 2-cm-diameter suprasellar mass, isointense to gray matter on T1- (Fig. 2a) and T2-weighted sequences and absence of the normal high intensity of the neurohypophysis. The optic chiasm was compressed. After contrast administration, the neoplasm showed homogeneous contrast enhancement (Fig. 2b), and radiological preoperative diagnosis was that of meningioma originating from the posterior clinoid. A right fronto-peritoneal craniotomy was performed and histology revealed a parasellar
GCT. Control MRI performed 6 months later did not show any evidence of the tumor and the patient is doing well without relevant symptoms.

**Discussion**

The most common tumors of neurohypophysis are the GCT [5]. These lesions are a fairly common incidental finding at autopsy, seen in up to 17% of unselected adult autopsy cases [1], but reports of symptomatic cases are scarce. These tumors are clinically silent until they cause symptoms related to their size. As a consequence, they are usually large at the time of discovery. The most common clinical presentation includes neurological symptoms such as visual disturbances and headaches, and endocrinopathies such as hypopituitarism or hyperprolactinemia. Clinical exam usually shows bitemporal hemianopsia, optic nerve atrophy, and in male patients, decreased body hair [1, 2, 3, 4, 5, 6]. They are found most commonly in old people, with a peak of occurrence in the fifth decade.

Etiology and histogenesis of neurohypophysis GCT are uncertain, and this uncertainty about their cellular origin [1] gives rise to a descriptive diagnosis such as GCT, choristoma [2], myoblastoma [7], and granular cell myoblastoma [4]. Ultrastructural and immunohistochemical studies support that they arise from pituicytes or Schwann cells of the posterior lobe of the hypophysis, a fact that has not yet been proved [1]. Tumors are composed of large polygonal cells, with small nuclei and granular cytoplasm [2, 4], and can be extremely vascular, so careful preoperative study is crucial previous to surgical planning, as surgical removal by a transphenoidal approach that is the therapy of choice in most sellar benign symptomatic tumors [5] can be dangerous in patients with GCT who present a high risk of bleeding.