Hemifield Slide Phenomenon from Pituitary Macroadenoma

Abstract

Pituitary apoplexy (PA) is a rare endocrine emergency, which can occur due to acute hemorrhage or infarction of pituitary gland, usually in the context of a pituitary macroadenoma. The most frequent ophthalmologic symptoms/sings are impaired visual acuity, visual field defects, and diplopia. A dense bitemporal hemianopic scotoma can cause a rare non-paretic diplopia, so-called hemifield slide phenomenon. This brief report describes a patient with this phenomenon caused by a PA from a pituitary macroadenoma.

Keywords: Pituitary apoplexy; hemifield slide phenomenon; non-paretic diplopia; bitemporal hemianopic scotoma.

Introduction

Pituitary apoplexy (PA) is a rare endocrine emergency, which can occur due to acute hemorrhage or infarction of the pituitary gland, usually in the context of a pituitary macroadenoma.1 PA is an endocrine emergency with headache as a frequently-reported symptom and without proper treatment can have a fatal outcome.2 Even though neurologists and endocrinologists often detect these tumors/syndrome, patients usually seek ophthalmologists because of the visual disturbances, such as impaired visual acuity, visual field defects, and diplopia.2,3 A dense bitemporal hemianopic scotoma can cause a rare non-paretic diplopia due to lack of cortical representation of corresponding points in the visual field from each eye, so-called hemifield slide phenomenon.1

Case Report

A 54-year-old female came to the Emergency Room sent from another hospital with a visual field testing (Goldman perimetry) showing bitemporal hemianopsia (Figure 1). During the previous year, she had suffered from intermittent, binocular, horizontal diplopia and a progressive blurring of vision on both eyes over the last months, without other symptoms, such as headache.

Ophthalmic examination showed a best-corrected visual acuity (BCVA) of 20/200 in the right eye (RE) and 20/30 in the left eye (LE). Pupillary reflexes were slow with a relative afferent pupillary defect in the RE. Ocular motility was maintained, without limitation and diplopia during the examination. Biomicroscopy of the anterior segment showed no changes and the
intraocular pressure (IOP) was 14/12 mmHg. Fundus examination showed optical discs (OD) with nasal sector pallor, more pronounced in the RE, without any other changes.

Computed tomography and magnetic resonance imaging of the brain showed a pituitary macroadenoma of intra and suprasellar location. The tumor had extension into the suprasellar cistern, compressing the optic chiasm, with the presence of multiple microcysts and hemorrhagic component in the top with dependent level (sub acute), signs suggestive of pituitary apoplexy (PA) (Figure 2). The tumor compressed the optic pathways asymmetrically, which explained the differences in perimetry.

The patient was referred to the Neurosurgery Department and endoscopic endonasal subtotal resection of the tumor was performed. Histological examination of the tumor was consistent with pituitary adenoma.

At the subsequent follow-up visit, the patient showed an improvement in visual acuity, with a BCVA of 20/20 in the RE and 20/20- in the LE, with improvement of bitemporal hemianopsia in visual fields (Figure 3).

Optical Coherence Tomography (OCT) showed reduced RNFL in the nasal region of the both eyes, in the RE, compatible with the damage caused by the tumor.

The alternate cover test showed a 6Δ exophoria. This phoria is probably the cause of non-paretic diplopia due to the rare entity so-called hemifield slide phenomenon. The patient has remained stable with 1-year follow-up, without further complaints of double vision.
Discussion

Hemifield slide phenomenon is a rare sensory phenomenon cause of intermittent binocular diplopia noted in some patients with lesions of the optic chiasm, as pituitary adenomas. This phenomenon occurs with a complete or nearly complete bitemporal hemianopic visual field defects, disrupting of ocular fusion. Patients complain of intermittent diplopia without ocular motor palsy, due to underlying heterophorias (either horizontal or vertical) that become manifest, in this case, an exophoria. The overlapping of the vertical meridians resulted in superimposition of images from non-corresponding retinal areas, in this case, an overlapping of nasal hemifields. A similar phenomenon can occur in other pathologies with visual field defects. As in our case, patients with bitemporal hemianopias usually do not report a decrease in visual acuity, because the function of each blind temporal hemifield is taken over by the nasal hemifield of the contralateral eye. In this case report, we have demonstrated that the double vision secondary to hemifield slide phenomenon can disappear after successful surgery, with visual field improvement.

The most common symptoms of pituitary adenomas are headache, which is frequently retro-orbital in location, and decreased visual acuity. Headache was absent in our case, which could make the diagnosis more difficult.

Despite advances in imaging methods, perimetry is still essential in the diagnosis and management of neuro-ophthalmic lesions, as well as to clarify the patient symptoms. Ophthalmologic examination is also important to correlate visual field data with fundus examination for appropriate clinical reasoning. Early diagnosis is critical for a good visual prognosis, to avoid optic atrophy.

In our case, we observed a “subclinical pituitary apoplexy”, so-called to describe pathological evidence of PA without systemic symptoms. Nausea, vomiting, headache and altered mental status may occur in PA due to adrenal insufficiency, meningeal irritation, hypothalamic dysfunction and raised intracranial pressure. PA is a potentially life-threatening endocrine disorder with a good outcome in our case. Long-term follow-up, with ophthalmological, endocrine and neurological evaluation, is required in these patients.

In conclusion, a careful ophthalmic examination is essential in the early diagnosis of many neuroophthalmological emergencies, such as PA. The involvement of multiple specialties, including ophthalmology, is necessary for appropriate diagnostic investigation and clinical management of pituitary tumors.

References