

Pituitary Apoplexy Presenting as Isolated Oculomotor Nerve Palsy

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The most common cause of isolated oculomotor nerve palsy is ischemia of the peripheral nerve caused by a disease, such as diabetes mellitus. Another common cause of isolated oculomotor nerve palsy is compression by an intracranial aneurysm, usually an posterior communicating artery aneurysm. However, it is extremely rare in the pituitary tumor. We report an unusual case of pituitary adenoma presenting with isolated oculomotor nerve palsy in the setting of pituitary apoplexy. We suggest that pituitary apoplexy should be included in the differential diagnosis of a patient with isolated oculomotor nerve palsy and early surgery should be considered for preservation of oculomotor nerve function.

KEY WORDS : Oculomotor nerve palsy · Pituitary adenoma · Pituitary apoplexy.

Introduction

The most frequent ophthalmic manifestation of pituitary tumors is visual field defect. Ocular nerve palsy is reported in only 5-17% of cases, although several nerves are usually affected in advanced stages of the disease. However, isolated ocular nerve palsy is an extremely rare presenting sign of these tumors. Here, we report an unusual case of a pituitary adenoma that initially presented with isolated oculomotor nerve palsy in the setting of apoplexy. We suggest that pituitary tumor should be considered in the differential diagnosis of a patient presenting with isolated oculomotor nerve palsy.

Case Report

A 50-year-old, previously healthy woman presented to the neurosurgical unit complaining of complete ptosis of the right eyelid and diplopia upon awakening. The patient denied any headache and non-ocular symptoms. At admission, the patient was alert and fully oriented. There was no evidence of sensory or motor weakness. Neuro-ophthalmic examination was notable for a complete ptosis of right eye, and anisocoria. In room light, the pupil was measured 5mm on the right, with a sluggish reaction to direct light, and 4mm on the left, with a normal reaction to light. There was marked weakness of

adduction on the right side. Visual acuity and visual field were unremarkable. Corneal and facial sensations were normal bilaterally. A right oculomotor nerve palsy involving the pupil was diagnosed.

At first, an aneurysm of the posterior communicating artery was suspected. However, magnetic resonance imaging (MRI) of sellar region showed a mass centered on pituitary fossa extending laterally with compression of the right cavernous sinus (Fig. 1). The mass demonstrated intermediate to high signal intensity on coronal T1 weighted images, suggesting hemorrhage. Under the presumptive diagnosis of pituitary apoplexy, transsphenoidal resection of tumor was performed

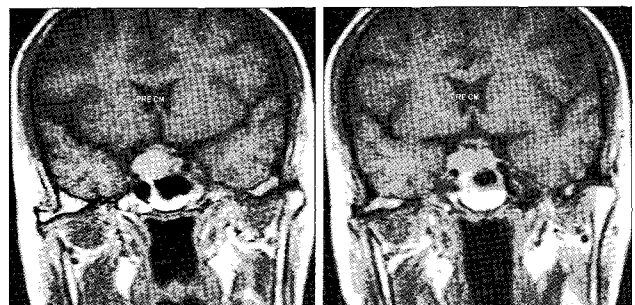


Fig. 1. T1 weighted coronal magnetic resonance image of the brain showing a hyperintense mass, indicative of subacute hemorrhage, in the pituitary fossa with extending toward the right cavernous sinus. The mass abuts the optic chiasm and displaces right internal carotid artery inferiorly.

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Fig. 2. Gadolinium enhanced T1 weighted coronal magnetic resonance image three months after surgery revealing no evidence of residual tumor.

two days later and disclosed a sella filled with soft gray tissue and hemorrhage which extended far laterally to the right. Histologic investigation confirmed the diagnosis of pituitary adenoma.

The patient showed an uneventful recovery. Her ocular paresis improved significantly after surgery. At 3 month follow up visit, she showed complete resolution of her right oculomotor nerve palsy and MRI study revealed no residual tumor (Fig. 2).

Discussion

Pituitary apoplexy is an acute ischemic or hemorrhagic vascular accident of a pituitary adenoma that may be associated with highly variable clinical presentation from mild headache to severe form of the syndrome with fever, aseptic meningitis, subarachnoid hemorrhage, hemiparesis, seizure, hypothalamic disorder, coma, and shock¹. Commonly, these tumors produce visual field defects and cause ophthalmoplegia only late in the course. The third, fourth, fifth, and sixth cranial nerve can be compressed in the cavernous sinus by expanding hematoma, thereby producing various degrees of ophthalmoplegia⁷. However, isolated oculomotor nerve palsy as the presenting sign of pituitary tumors is very unusual. So far, only a few cases of isolated oculomotor nerve palsies in patients with pituitary tumor have been reported in the literature^{2,3,5,8,9}.

There have been some hypotheses with regards to the underlying mechanisms to explain the isolated oculomotor nerve palsy in the pituitary tumor. It may occur by the slow compression of the cavernous sinus by tumor or rapidly, by secondary expansion caused by pituitary apoplexy with subsequent compression or infarction of the nerve^{7,9}. And, it can also occur by direct invasion, a finger of tumor breaking through the wall of the cavernous sinus that primarily compress the nerve⁴. Anatomically, the oculomotor nerve travels through the superior, lateral aspect of the cavernous sinus, at approximately the same horizontal level as the pituitary gland⁶. Because of this location, the oculomotor nerve is a

relatively more susceptible to the laterally transmitted pressure generated by an expanding pituitary mass abutting the cavernous sinus⁸.

In the present case, considering the findings of MRI and her acute presentation, the most likely explanation for the isolated oculomotor nerve palsy is the direct compression of the cavernous sinus by sudden enlargement of the tumor mass due to pituitary apoplexy.

Several studies on the prognosis of pituitary adenoma with isolated oculomotor nerve palsy have been reported^{1,2,3,5,8,9}. Francois et al.³ mentioned that ophthalmoplegia without a visual field defect implied a good prognosis, whereas the more common situation of oculomotor nerve palsy following visual loss was associated with a worse prognosis. Saul et al.⁹ also reported good results in four patients with pituitary adenoma and isolated oculomotor nerve palsies. This patient also had an excellent postoperative course with a complete resolution of the oculomotor nerve palsy.

When correctly diagnosed and treated, the paralysis of oculomotor nerve caused by pituitary apoplexy appears to be reversible¹. Surgery is required in most cases and may result in favorable outcome^{1,2,8,9}. However, poor outcome may be encountered if diagnosis and appropriate treatment are delayed in the pituitary apoplexy with isolated oculomotor nerve palsy.

Conclusion

We report a rare case of pituitary apoplexy presenting as isolated oculomotor nerve palsy. We suggest that pituitary apoplexy should be included in the differential diagnosis of a patient with isolated oculomotor nerve palsy and early surgery should be performed for preservation of oculomotor nerve function.

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