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## Case Report

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# Pituitary Apoplexy Presenting as Acute Painful Isolated Unilateral Third Cranial Nerve Palsy

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**A 40-year-old man presented with a sudden severe headache and complete right-sided ptosis. Neuro-ophthalmic examination revealed a right oculomotor nerve palsy. Computed tomography of the brain showed a round isodense intrasellar mass. Magnetic resonance imaging demonstrated a pituitary tumor with some areas of infarction and invasion into the right cavernous sinus, which was diagnosed as pituitary apoplexy. The patient received intravenous steroid for 10 days with no recovery of the oculomotor nerve palsy. He underwent trans-sphenoid tumor resection followed by complete recovery of the oculomotor nerve and no sign of tumor in postoperative MRI, two weeks after the surgery.**

*Archives of Iranian Medicine, Volume 11, Number 4, 2008: 466 – 468.*

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**Keywords:** Pituitary apoplexy • ptosis • third nerve palsy

### Introduction

**P**ituitary apoplexy is defined as a sudden loss of blood supply to the pituitary gland, leading to tissue necrosis and loss of function. Signs and symptoms are attributed to the rapid expansion of an infarcted and/or hemorrhagic pituitary adenoma that either extends laterally into the cavernous sinus or expands superiorly to displace the optic nerve and optic chiasm. Ophthalmoplegia is commonly seen only late in the course of the disease.<sup>1,2</sup> Presentation of pituitary apoplexy as an acute isolated third cranial nerve palsy is very rare.<sup>1,3,4</sup> Herein, we reported on a sudden painful unilateral third cranial nerve palsy as the presenting sign of a pituitary apoplexy.

### Case Report

A 40-year-old man with a history of intermit-

tent mild headache since one year, presented with an acute severe headache, right-sided complete ptosis, retro-orbital pain, and diplopia to the Emergency Ward. His past medical and family history was unremarkable.

Limited adduction, supraduction, and infra-duction associated with complete ptosis and a dilated pupil on the right side were diagnosed as right oculomotor nerve palsy. Examination of the other eye including visual field perimetry was unremarkable. He was mentally alert and there were no other pathologic findings in general and neurologic examination.

A brain computed tomography (CT) without contrast showed a round isodense intrasellar mass with suprasellar extension and no subarachnoid hemorrhage (Figure 1). Magnetic Resonance Imaging (MRI) of the brain with and without contrast revealed a heterogeneous pituitary tumor which was hypersignal in both T<sub>1</sub>- and T<sub>2</sub>-weighted images with some areas of infarction which was associated with the right cavernous sinus expansion that was diagnosed as pituitary apoplexy (Figures 1 and 2). The patients were given 100 mg hydrocortisone intravenously every eight hours in the emergency ward. Carotid angiography was performed which revealed just a mild spasm in the right intracavernous carotid.

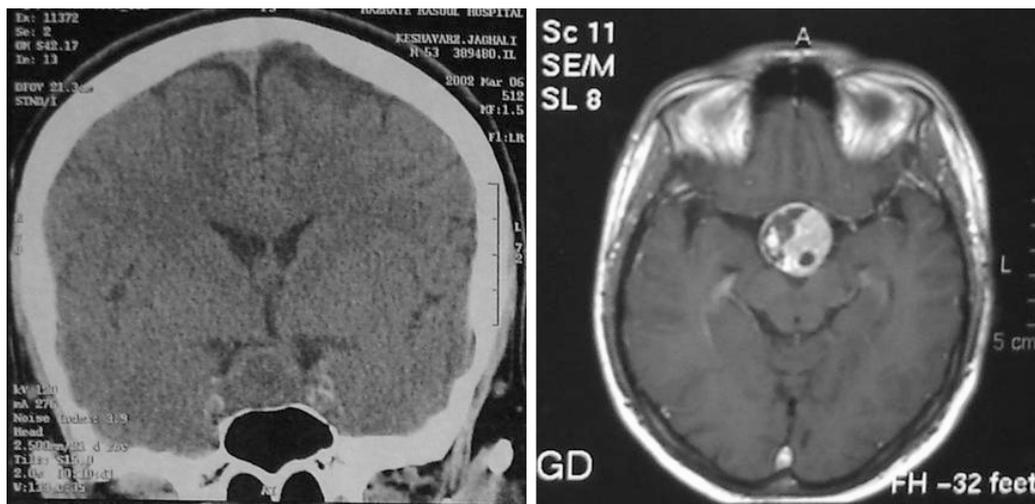
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Accepted for publication: 19 May 2007



**Figure 1.** Pituitary apoplexy presenting as a painful isolated unilateral third cranial nerve palsy.

Thyroid and pituitary hormone assays were normal. The intravenous steroid treatment was continued for 10 days which resulted in a decrease in headache and periorbital pain. Nevertheless, the third cranial nerve palsy was not improved. As a result, the patient underwent a trans-septal trans-sphenoid tumor resection. Histologic examination of the resected mass showed a nonfunctional pituitary adenoma with areas of necrosis and hemorrhage consistent with pituitary apoplexy. Complete recovery of the third cranial nerve palsy was achieved two weeks after the surgery. Post-operative MRI revealed a complete removal of the tumor (Figure 2).

### Discussion

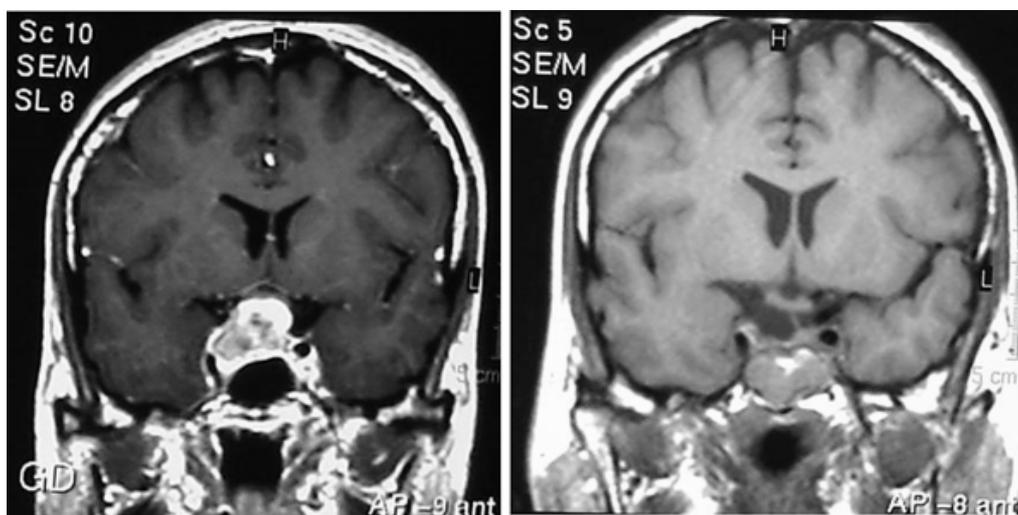
Pituitary apoplexy, infarction, and/or hemorrhage of the pituitary gland, is a rare but life-

threatening condition which requires prompt diagnosis. Ophthalmic manifestations of pituitary apoplexy are resulted from lateral and/or superior expansion of the tumor. Lateral expansion of the pituitary adenoma into the cavernous sinus is usually presented as compressive multiple cranial nerve palsies (nerves III, IV, V, and VI). Superior expansion of the tumor causes dysfunction of the optic nerve and optic chiasma.

Anatomic location of the oculomotor nerve in the superior and lateral cavernous sinus makes this nerve more susceptible to the laterally-transmitted pressure by an expanding pituitary mass.<sup>1</sup>

The hemorrhagic expansion may disrupt the dural covering of the pituitary, and thus allowing blood to enter the subarachnoid space to produce meningeal irritation.<sup>5</sup>

Therefore, retro-orbital headache is the most common presenting symptom in a conscious



**Figure 2.** Pituitary apoplexy presenting as a painful isolated unilateral third cranial nerve palsy.

patient (75%) followed by visual impairment (62%).<sup>6</sup> Altered level of consciousness is due to compression of the internal carotid artery which may present a rapid downhill course.<sup>7</sup> Severe mental status change is an indication for rapid neurosurgical decompression.<sup>7</sup>

Pituitary apoplexy mostly occurs spontaneously, but has been described in association with some pathologic states such as hypertension, following medical interventions (e.g., dynamic pituitary function tests), cardiac surgery, pituitary radiotherapy, and administration of some medications (e.g., bromocriptine and anticoagulants).<sup>8</sup> Pituitary apoplexy may cause some temporary or permanent endocrinopathies due to hypofunction of the pituitary gland. The most life-threatening endocrinopathy is acute adrenal crisis.<sup>9</sup> As a result, steroid therapy is a mainstay of the initial treatment in all suspected cases of pituitary apoplexy. Our patient received intravenous steroid with improvement of his headache but no change was observed in his oculomotor palsy.

The definite treatment for the pituitary tumor apoplexy is surgical decompression of the cavernous sinus and/or suprasellar structures, especially in those with impaired visual acuity or field defect, decreased level of consciousness, or progressive deterioration of visual or oculomotor function (Table 1).<sup>10-13</sup> Surgical decompression was performed in the presented case due to persistent oculomotor nerve palsy after 10 days of steroid therapy. Complete recovery of the oculomotor nerve was achieved, similar to the previous reports.<sup>11-14</sup>

A sudden isolated complete oculomotor nerve palsy, as described in our case, is very rarely the presenting sign of pituitary apoplexy.

Pituitary apoplexy should be considered and correctly diagnosed in patients presenting with a sudden complete third cranial nerve palsy because it can be life-threatening.

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