Pituitary Apoplexy: An Update Review of the Literature

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ABSTRACT

Since its first description more than a century ago, pituitary apoplexy remains a neuroendocrinological emergency with significant relevance today. Its early recognition, confirmation and initiation of treatment is important to avert adverse morbidity or mortality. Rare cases of pituitary apoplexy in pregnancy, post-open-heart surgery and complicating a pituitary tuberculoma have been reviewed in the body of this article.

Keywords: Neuroendocrine emergency, pituitary apoplexy, prolactinoma, Sheehan’s syndrome.

I. INTRODUCTION

Pituitary apoplexy is a medical emergency with neuroendocrinological importance. Early diagnosis and intervention can help to reduce the severe morbidity and mortality associated with it [1]. The pituitary gland, made up of an anterior and a posterior pituitary portion, is the master endocrine organ in the body. The anterior pituitary secretes luteinizing hormone, follicle-stimulating hormone, thyroid-stimulating hormone, adrenocorticotropic hormone, and prolactin. The posterior secretes antidiuretic hormone and oxytocin [2]. Significant processes affecting the pituitary gland (e.g., tumorigenesis, hemorrhage, or infarction) can cause significant morbidity or mortality.

II. BODY

Pituitary apoplexy is described in literature as hemorrhage or infarction of the pituitary gland in the setting of known or previously undiagnosed pituitary tumors [3]. Pituitary tumors (functional or non-functional) are affected, creating a mass effect within the sellar turcica and manifests with symptoms such as headache, visual impairment, and altered sensorium to even coma. Asymptomatic pituitary hemorrhage or necrosis has however been described in pathological pituitary tumors examined [4]. The concept of pituitary apoplexy was first described by [5]. Its management could involve medical replacement of deficient hormones especially corticosteroids, close surveillance, or surgical intervention (transsphenoidal approach) [6]. While prolactinomas are typically treated with medical therapy, apoplexy is a common reason that surgery may be indicated.

Reference [7] described in a case series three rare incidences of pituitary apoplexy complicating cardiopulmonary bypass procedures for different cardiac procedures in the immediate post-operative periods. They explained the underlying precipitating factors for this development could be due to the use of extracorporeal apparatus, low cerebral blood flow states, anticoagulation, or anesthetics delivered for this procedure. The cases in their series underwent transsphenoidal resection of their pituitary tumors nine hours, eighteen hours, and two weeks after the open-heart surgeries were performed. They stated that tissue edema, or tissue ischemia as well as anticoagulation related to the use of cardiopulmonary bypass may be the underlying mechanisms for the pituitary apoplexy record events [7].

In a review of 12 cases of pituitary apoplexy in previously undiagnosed pituitary adenoma cases, [8] revealed that 9 of the 12 cases had non-functional adenomas and prolactinoma found in the remaining three. Common manifestations of pituitary apoplexy described include headache (of sudden onset), features of meningism, altered consciousness, and visual disturbances. Among the 12 cases, ten of them underwent surgery with resultant eight cases of permanent panhypopituitarism, and three cases of persistent hyperprolactinemia were reported [8]. Reference [9] published a 7-year retrospective review on 14 pituitary apoplexy cases in an ophthalmology journal and shared that the likely tendency is for the development of oculomotor palsy from pituitary apoplexy (82% frequency) than chiasmatic impairments (54%).

Cerebral ischemia can complicate the occurrence of pituitary apoplexy either by direct compression of the internal carotid artery or via vasospasm related to hemorrhagic or necrotic materials release in pituitary apoplexy. In a publication in 2008, [10] described the occurrence of cerebral ischemia complicating pituitary apoplexy in 2 cases with each case having one of either mechanism of cerebral ischemia above listed. Radiological images (magnetic resonance imaging and angiography), as well as hormonal profile studies, helped to clinch the diagnosis and there was a good resolution to urgent surgical decompression surgery offered [10].

Reference [11] described a rare case of intrasellar tuberculoma (confirmed with a transsphenoidal biopsy)
associated with the development of pituitary apoplexy in a 27-year-old male. They stated that there was a reduction in the size of the lesion with anti-tuberculosis medication administration and a resolution of symptoms as well [11].

There have been limited reports of pituitary apoplexy occurring in pregnancy in the literature. The exact reason why this occurs is unclear, but a few authors have theorized that the hypercoagulable state in pregnancy as well as the heavy hormonal changes involved are predisposing factors for pituitary apoplexy. Reference [12] described the case of a 28-year-old multigravida at a gestational age of 38 weeks, who developed symptoms suggesting apoplexy that went on to be confirmed. At presentation, she also had a COVID-19 infection although not symptomatic. She had corticosteroid administered, which improved her visual symptoms. She underwent vaginal delivery aided by epidural anesthesia at 39 weeks gestational age and underwent transsphenoidal resection of pituitary mass under strict COVID-19 precautions [12].

A description of pituitary apoplexy as Sheehan’s syndrome in obstetrics is increasingly being documented in literature. Sheehan’s syndrome occurs as a complication of severe postpartum hemorrhage with resultant infarction of the pituitary gland. In this case, not necessarily associated with an underlying pituitary tumor. Improving obstetric care and prompt management of obstetric hemorrhages can help to reduce incidences of Sheehan’s syndrome. Patients affected by Sheehan’s syndrome may develop problems with lactation or experience non-resumption of menses post-delivery [13].

III. CONCLUSION

Pathologies affecting the pituitary gland vary in effect from being asymptomatic to causing significant morbidity and mortality. Pituitary apoplexy is one of such with possible significant consequences. A clinical readiness to identify and treat this condition can help to prevent unfavorable outcomes.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

REFERENCES