Pituitary Apoplexy: A Rare Cause of Visual Changes During Pregnancy

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Case Report

A 20 year old previously healthy primigravid Hispanic female presented to the OB/GYN clinic at 26 weeks, 5 days gestation with headache and blurry vision. She described her blurry vision as primarily in her right eye and stated that it had been present for 2-3 weeks. The symptoms acutely worsened 2 days prior to her visit and were accompanied by a mild headache. She reported no weakness, loss of sensation, nausea/vomiting, or any history of trauma. Her pregnancy was uncomplicated to this point and she reported regular fetal movement with no abdominal pain or vaginal discharge.

Her vital signs were within normal limits and her physical exam demonstrated diminished visual acuity bilaterally that made evaluation of visual fields by confrontation difficult. No other abnormalities were noted on exam. She was seen by an ophthalmologist for further evaluation of her visual deficits and it was determined that a non-contrast MRI would be the best next diagnostic step.

The MRI demonstrated a heterogeneous mass in the pituitary gland measuring 2.1 x 2.3 x 2.1 cm in size. It extended into the suprasellar space and was compressing the optic chiasm. The mass had a fluid level and posterior hemosiderin deposition that were consistent with hemorrhage. There were no other cranial abnormalities. Labs included basic metabolic panel and thyroid function tests, both of which were normal.

The diagnosis of apoplectic pituitary macroadenoma with probable apoplexy was made and she was referred to a neurosurgeon. She underwent transsphenoidal resection of the apoplectic tumor two days after her initial visit. She had restoration of normal vision and relief of her headache postoperatively. The patient required short-term glucocorticoid replacement post-operatively but has not required any long-term replacement therapy. There were no other complications during the remainder of her pregnancy and delivered a healthy baby at term. She has done well without any long-term sequelae at 6 months follow-up.

Discussion

Pituitary apoplexy is an endocrine emergency that occurs in the setting of a pituitary adenoma. It is defined as an acute clinical syndrome characterized by sudden onset of headaches, visual impairment and ophthalmoplegia due to hemorrhage with enlargement of a pituitary adenoma (1,2). Pituitary apoplexy occurs in approximately 9% of patients with pituitary adenoma and is the presenting symptom in 1-7% of pituitary adenoma cases (2, 3). The most common presenting symptoms in patients with pituitary apoplexy are headache in over 90%, nausea/vomiting in 50-80%, and visual field deficits in 50-75% (3,4). Most studies have demonstrated an increased incidence of apoplexy in patients with non-functioning adenomas (1, 3, 4), although a large study published by Wakai *et al.* (2) found no statistical difference between tumor types. The pathophysiology of pituitary apoplexy is not fully understood, but one model postulates that infarction with secondary hemorrhage can occur when an adenoma outgrows its blood supply (1, 5). This model of apoplexy is particularly important in the setting of pregnancy due to the anatomical changes affecting the pituitary of the pregnant patient. The pituitary during pregnancy has been demonstrated through *in vivo* MRI studies to enlarge to 120-136% of its pre-partum volume (6,7,8), and increased estrogen states have been implicated as predisposing factors for development of pituitary apoplexy, secondary to both increased pituitary growth and hyperemia (1,4,9,10).

Management

If pituitary apoplexy is suspected in the pregnant patient, MRI without contrast is the imaging modality of choice (4, 6, 11). Non-contrast MRI is safe for the pregnant patient and is more sensitive and specific than CT for identification of pituitary hemorrhage. Treatment consists of either conservative management with

replacement of deficient hormones, especially glucocorticoids, and close observation followed by transsphenoidal resection if no improvement is seen; or direct transsphenoidal resection within the first eight days if the pituitary hemorrhage has resulted in visual deficits (3, 4, 12, 13). Several studies have demonstrated resolution of visual deficits in 88-100% of patients when surgery is performed within the first eight days (3, 4, 12), although improvement in visual deficits has also been observed with conservative management (13, 14). In eight cases of pituitary apoplexy during pregnancy in the literature, five were managed with transsphenoidal resection, two were managed conservatively with replacement of deficient hormones, and one was managed with left frontal craniotomy and bromocriptine therapy (11, 14, 15, 16, 17, 18, 19, 20). One patient managed with transsphenoidal resection had persistent minimal diplopia postoperatively, both patients managed conservatively had complete recovery, and the patient managed with left frontal craniotomy had left third cranial nerve palsy postoperatively.

Conclusion

In conclusion, pituitary apoplexy is a rare but serious complication that can likely be precipitated by the physiologic changes associated with pregnancy in patients with a pituitary adenoma. Because early treatment can and often does result in complete recovery, it is important to recognize and effectively manage this event when it occurs.

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