



# **Masked Pituitary Macroadenoma Presenting as Pituitary Apoplexy Triggered by Sepsis in Postpartum Period-A Rare Case Report**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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**Case Report**

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## **ABSTRACT**

Apoplexy of the Pituitary gland is rarely seen critical disorder marked by acute throbbing of head / altered mental status / visual disturbances /decreased consciousness, due to sudden haemorrhagic changes of the pituitary or infarction of the same. There are numerous factors which precipitate apoplexy of the pituitary, sepsis being one of the least common cause, as is elaborated in this case study. In spite of having a distinctive presentation, pituitary apoplexy eludes diagnosis and proper management as it is complicated by related co-morbidities. Its occurrence in a postpartum lady is an even rarer incident. This article shows a rare occurrence of apoplexy of macroadenoma in a postpartum woman which was managed conservatively.

*Keywords: Pituitary macro-adenoma; pituitary apoplexy; sepsis; UTI.*

## 1. INTRODUCTION

One of the commonest pituitary disorders seen in pregnancy is Pituitary adenomas [1]. Most cases of pituitary apoplexy are seen in patients who have as of yet unrecognized adenoma of the pituitary, with the apoplexy of the pituitary usually the initial feature of the pituitary tumour [2]. Pituitary apoplexy is a substantially life-endangering clinical entity that is marked by instantaneous start of headache, altered mental disorder or visual disturbances or decreased consciousness. Sepsis is a recognized precipitating factor for pituitary apoplexy associated with pituitary adenomas. In this case study, Urinary tract infection caused the septicaemia [3]. Sepsis in child-bearing and puerperal women accounts for eleven percent of overall obstetric related deaths and is thus the third most prevalent cause of their death besides postpartum haemorrhage and pre-eclampsia. Septicaemia in motherhood has not garnered the same interest and study as other major things causing death of mothers, even though sepsis is one of the cardinal reasons of elevated mortality and morbidity in pregnancy and the uncertain presence of new causative organisms (like novel influenza serotypes). International Consensus describes, sepsis as "life-threatening organ dysfunction caused by a dysregulated host response to infection." [4]. Here we have a case of pituitary adenoma triggered into pituitary apoplexy by sepsis in a pregnant patient.

## 2. CASE STUDY

A 24 year old G2P1(1001) at 37 weeks AOG with previous vaginal delivery was admitted at the latent phase of labor due to Anemia. Pertinent Vital signs, Physical and internal examinations should be stated first before the management. Table 1), for which she was given two packed red blood cell consequently. On Admission, she was haemodynamically stable with mild pallor, no oedema/icterus/ lymphadenopathy etc.

On Day 2 of admission, she reported an episode of fever followed by 1 more spike ranging from 101-102 degree Fahrenheit, relieved on antipyretics. So then, her investigations were sent, along with a COVID-19 RTPCR test, given the current pandemic status. Her labs revealed a NEGATIVE COVID-19 RTPCR REPORT, white cell count of 22,000/cu. mm (Table 1) and presence of pus cells in urine routine and microscopy. Subsequently a urine culture was sent.

She spontaneously delivered vaginally on the next day with a male child which was admitted in NICU i/v/o mild respiratory distress. On Day 2 PNC/Day 4 of admission, evening she recorded the highest temperature, about 104/105-degree Fahrenheit. At the same time, she also started complaining of severe headache, altered mental status and deteriorating level of consciousness for which antipyretics were given & she was transferred to the medical intensive care unit. Once shifted her general condition was found unsatisfactory, with vitals like B.P recording of 80/60 and pulse-160/min., she was given a central line insertion and blood samples sent for an array of tests like Complete Blood picture, liver function tests, Arterial blood gas analysis, kidney function tests, PARACHECK, DENGUE, SCRUB TYPHUS, LEPTOSPIRA, D-Dimer, BLOOD CULTURE & SENSITIVITY, CRP, and MRI scan, CHEST-XRAY, 2D-echo to find out the source of the supposed infection.

The MRI Scan revealed a relatively large lesion which was well defined round to oval altered signal intensity in the sella region arising from the pituitary gland measuring approximately 14 x 9 x 8.8 mm suggestive of pituitary macroadenoma with no evidence of aneurysm. (Fig. 1)

Her urine culture report, sent initially, revealed a growth of *E. coli* with a current raised C-Reactive protein (Table 1) indicating active infection, that responded well to higher antibiotic treatment and intravenous fluid replacement. But as her findings of Hypotension and hyponatremia initially were correlated with Low prolactin levels (Table 1), the combined trio of hypotension, hyponatremia and low cortisol levels prompted glucocorticoid therapy immediately .

Her Blood culture was positive for *E. coli* . Gradually her WBC counts became normal (Table 1). Later on this sepsis cultivated by the *E. coli* was thought to be the triggering factor for the pituitary apoplexy, as 12 days after the MRI scan, a repeat scan revealed the pituitary gland to containing haemorrhagic infarct. She was then referred to a neurophysician.

Although the patient is well and conscious with stable neuro-ophthalmic features, it was decided that the case be managed conservatively, following decision between ophthalmologists, endocrinologists and neurosurgeons. And at an interval of 3 and 6 months, the patient was recommended to follow up with MRI scans.

### 3. SUGGESTION

Due to the reassuring condition of the patient, with stable neuro-ophthalmic features, the multidisciplinary team of ophthalmologists, endocrinologists and neurosurgeons decided to manage her conservatively. A regular follow up with head/brain MRI was recommended at 3 and 6 months interval.

### 4. DISCUSSION

Clinical picture of this patient was stormy due to the out of ordinary features and events of her disease with an unrecognized pituitary adenoma. Pituitary adenomas is a common pituitary

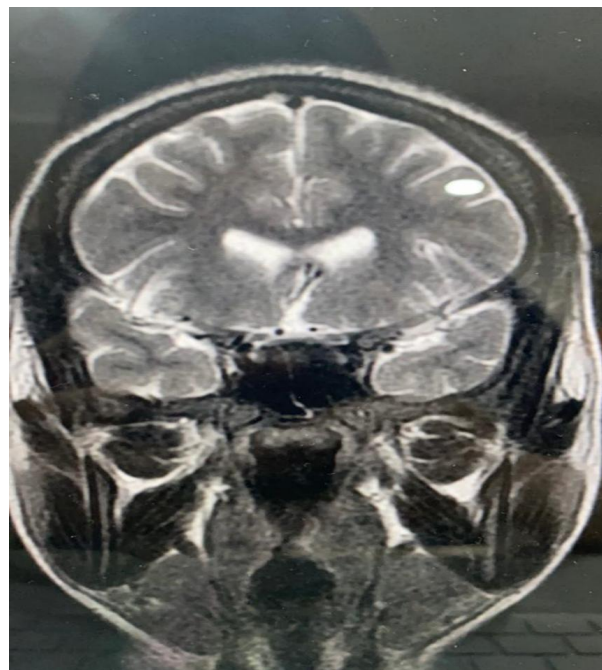
disorder affecting pregnancy. The adenomas are generally non-cancerous and grow gradually , they are differentiated according to size as microadenomas or macroadenomas (less than or greater than 10 mm in diameter) [1].

Acute Symptomatic Pituitary Apoplexy Syndrome is rarely seen , and its appearance is really unpredictable. Even though initially researchers proposed that this syndrome occurs mainly in patients with big suprasellar macroadenomas, it is now apparent that apoplexy and haemorrhagic changes may occur in tumours of any size . Most cases of pituitary apoplexy are seen in patients who have as of yet unrecognized adenoma of the pituitary ,with the apoplexy of the pituitary usually the initial feature of the pituitary tumour [2].

**Table 1. Comparison of haemoglobin, WBC's and platelet count**

Investigation date	Haemoglobin percent	Total WBC count	Total platelet count	CRP	Cortisol	Serum sodium levels
18/11/2020	7.1	10,400	2.66			135
19/11/2020	8.6	22,000	2.30			136
20/11/2020	9.2	17,500	2.12	24.7		125
21/11/2020	8.3	4300	1.29			128
22/11/2020					16.5	

*Urine culture – Showed a growth of E. coli*



**Fig. 1. MRI SCAN showing just a relatively large lesion ,well defined round to oval altered signal intensity in the sellar region arising from the pituitary gland measuring approximately 14 x 9 x 8.8 mm suggestive of pituitary macroadenoma with no evidence of aneurysm**

So apopleptic changes of the pituitary is a critical syndrome that paints a picture of headache which is unexpected and severe, changes in visual acuity and decreased awareness. The cause of the apoplexy is due to pituitary gland infarction and /or haemorrhage, usually in relation with adenomas of pituitary. This condition is comparatively rare with a yearly incidence of 1.2 per million. Innumerable theories have been proposed, but the exact mechanism of pituitary apoplexy remains a mystery. The theories suggested are the tumour exceeding its own blood supply owing to its rapid expansion (and thus leading to necrosis of ischemic origin) , rapid growth of tumour compressing the portal blood supply of pituitary gland alongside the diaphragma sellae , and vascular pathology of the blood vessels supplying the pituitary tumour.

One of the precipitating factors for apopleptic changes in pituitary is Acute systemic illness. And thus, consequently the factor incriminated in the identified patient may have been sepsis of urine and the related low bp changes. (Table 1) .

The clinical features of pituitary apoplexy are consistent with those of the frequently encountered emergencies of medicine. Therefore, patients with pituitary apoplexy can be found in many health specialties, often leading to diagnostic complications and delays. The most widely used imaging tool in the study of acute neurological condition, is the CT scan. While it can be useful in recognizing pituitary adenomas , this imaging modality is not efficient enough to diagnose the syndrome , with the sensitivity of detecting haemorrhage or infarct within the pituitary gland ranging from twenty-one to twenty eight percent of cases . In more than 90% of cases , MRI is the study of choice , but it failed to diagnose in our patient (Fig. 1). Many apoplexy patients present with hypopituitary symptoms . The clinician should be alerted to the risk of cortisol loss by hypotension and hyponatremia. In case hypercortisolism is suspected , a random test of serum cortisol levels should be conducted to diagnose this deficiency, but steroid substitution should begun immediately as is seen in the this case (Table 1). During acute disease, a cortisol level of <200nmol/l is strongly predictive of hypercortisolism , while a cortisol level of >550nmol/l implies a normal axis of the pituitary- adrenal gland .In this case , a random cortisol level of 16.5 nmol/l suggested an acute stage of apoplexy .(Table 1) [3]. Occurrence rate of Pituitary apoplexy is about 0.6% to 10.5% of overall pituitary adenomas, with idiopathic

haemorrhage found in up to 25 percent of adenoma specimens following surgical procedure [4].

Pituitary apoplexy can be a dangerous complication with severe morbidity and life-threatening effects that require medical or surgical emergency examination and utmost care to prevent long-lasting pituitary and visual damages. Glucocorticoid replacement could be required because patients with pituitary apoplexy are at high risk of hypopituitarism. Surgical decompression in patients with vision deprivation or ophthalmoplegia and those with altered consciousness who are neurologically dysfunctional is needed. Hypopituitarism can be enhanced after surgical therapy [5].

In vivo MRI studies have shown that the pituitary can swell to 120-136 percent of its volume if compared to the pre-pregnant size, also elevated oestrogen states have been pointed out as predisposing factors for the occurrence of pituitary apoplexy, secondary to both increased pituitary growth and hyperaemia, so utmost care is the need for the hour in pregnancy [6-8]. Few of the related studies from literature were reviewed [9-13].

## 5. CONCLUSION

This case shows an unusual behaviour of a dormant macroadenoma which progressed rapidly to apoplexy in early post-partum period. Management with steroids and careful follow-up have prevented a potentially life-threatening disorder.

## ETHICAL APPROVAL & CONSENT

As per international standard or university standard guideline patients consent and ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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