CASE REPORT

Postpartum pituitary necrosis and hypopituitarism, a sequela of severe falciparum malaria in pregnancy – a case report

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Abstract

A 37 year old woman presented with a history of weakness and lethargy for many years. She had been amenorrhoeic for 5 years after a still birth at 37 weeks gestation, due to severe falciparum malaria. On examination, she appeared pale and lethargic, with a blood pressure of 100/70 mm Hg. Her systemic examination was unremarkable. Laboratory tests revealed low 9.00 am serum ACTH and cortisol levels, along with low free T4, FSH and LH levels. A short synacthen test showed an inadequate cortisol response at 30 minutes. MRI of the Pituitary gland displayed an empty sella. She was diagnosed with hypopituitarism due to postpartum pituitary necrosis, and was treated with hydrocortisone, thyroxine and sex hormone replacement therapy. The patient showed an excellent response to treatment.

Keywords: Postpartum, hypopituitarism, falciparum malaria.

DOI: https://doi.org/10.47391/JPMA.20214

Introduction

Postpartum pituitary necrosis, also known as Sheehan's syndrome, classically occurs due to transient hypoperfusion, which leads to infarction, necrosis, and gradually progressive dysfunction in the physiologically enlarged pituitary gland during pregnancy. Various factors, such as vasospasm, thrombosis and compression of the hypophyseal arteries, autoimmunity, disseminated intravascular coagulation and small size of sella have all been proposed as possible causes.[1] Sheehan's syndrome is still a leading cause of hypopituitarism in the underdeveloped and developing countries. The clinical features of hypopituitarism are usually subtle and develop slowly, leading to a delayed diagnosis.[2] A study from India showed its prevalence to be about 3% in women over the age of 20, with nearly two thirds of those cases occurring in women who had home deliveries.[3]

A case of hypopituitarism, diagnosed 5 years after severe falciparum malaria at 37 weeks gestation, resulting in still birth is presented.

Case History

A 37 year old woman presented in July 2023 at Hearts International Hospital, Rawalpindi, with complaints of generalized weakness and lethargy lasting for many years. She had been intermittently using haematinics and multivitamins, but with no significant benefits. Five years ago, she had severe falciparum malaria at 37 weeks of pregnancy, which was treated with quinine, resulting in a still birth with mild blood loss, for which she received two units of blood transfusions. She had infrequent antenatal check-ups, but progression of pregnancy was uneventful, and she did not have gestational hypertension or diabetes. Since the still birth, she had been amenorrhoeic. She had previously delivered two girls, born at term through spontaneous vaginal delivery, who are now 11 and 9 years old. There was no history of any other significant illness in the past. On examination, she appeared lethargic of average built, with a pulse rate of 70 bpm, blood pressure 100/70 mm Hg, temperature 97.80F and respiratory rate 16/min. She was slightly pale with normal hydration. The rest of the general physical and systemic examination was unremarkable. On investigation, her Hb was 10.8 g/dl with normochromic and normocytic morphology, WBC count 6.7x109/l and platelets 187x109/l. Serum sodium was 130 mmol/l, potassium 4.2 mmol/l, creatinine 1.1 umol/l, bilirubin 13.2 umol/l, ALT 34 U/l, Alkaline phosphatase 97 U/l and albumin 36 g/l. Serum FSH was 0.4 U/l (ref range: 2.5 – 10.2), LH 0.3 U/l (ref range: 1.9 – 12.5 U/l), oestradiol 37 pmol/l (ref range: 69 – 905 pmol/l), prolactin 126 mU/l (68 – 580 mU/l), ACTH 6.2 pg/ml (ref range: 10 – 56 pg/ml), Cortisol (9am) 76 nmol/l (ref range: 140 – 690 nmol/l), Free

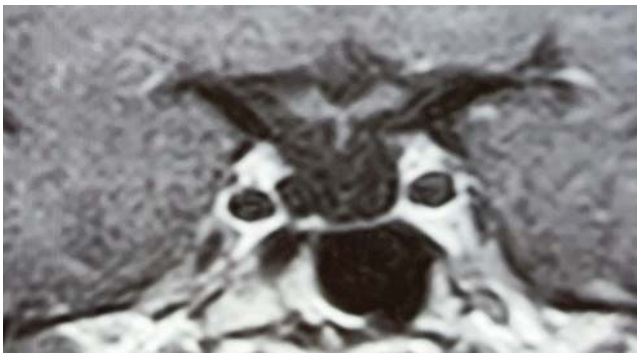

Figure-1: Pituitary MRI (Coronal section).

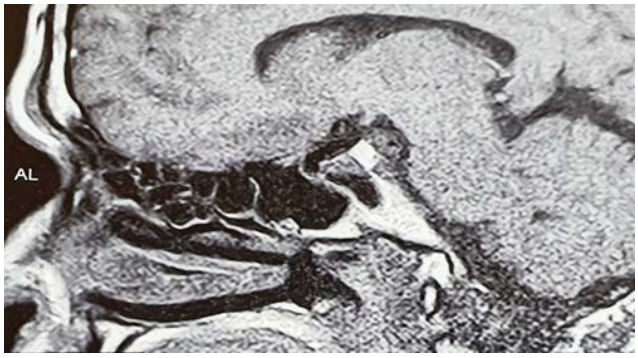

Figure-2: Pituitary MRI (Sagittal section)

T4, 3.4 pmol/l (ref range: 11.2 – 22.5 pmol/l), TSH 1.2 IU/ml (0.5 – 4.5 IU/ml). A short synacthen test was performed to assess ACTH reserve of the pituitary gland, showing basal serum cortisol level of 66 nmol/l and a post stimulation level of 76 nmol/l after 30 minutes. An MRI scan of the brain with Pituitary protocol revealed an empty sella (Figure 1 and 2). She was put on hormone replacements with Hydrocortisone 10 mg on rising in the morning, 5 mg at noon and 5 mg at 4 pm, tab thyroxine 100 mcg daily and sex hormones replacement with cyclical estrogen/progesterone pills. She has shown remarkable symptomatic improvement with these replacements.

Discussion

A meta-analysis and systemic review of 59 studies suggested that malaria in pregnancy is a major cause of stillbirth. In nearly 20 studies, antenatal infections that were detected and treated increased the odds of stillbirth by 1·47 times, whereas in over 30 studies, maternal infections at delivery increased the odds of stillbirth by 1·81 times and placental malaria increased the odds of stillbirth by 1·95 times.[4] Hypopituitarism as a rare sequel of cerebral malaria has been occasionally reported in literature.[5,6] Our patient with a near term pregnancy was hospitalized with severe falciparum malaria and received treatment, but had still birth with mild blood loss. She did not have any milk production postpartum and menstruation ceased. A diagnosis of hypopituitarism was made after five years when an empty sella was observed on MRI. The probable explanation is necrosis of the pituitary gland due to sequestration of parasitized erythrocytes in the microvasculature. The pathophysiology of severe falciparum malaria is complex, but evidence suggests that its central feature is the mechanical microcirculatory obstruction. Both autopsy and in vivo studies have shown variable obstruction of the microcirculation in severe malaria.[7] The principal cause of this is cytoadherence of the erythrocytes containing the mature forms of the malarial parasite to the vascular endothelium, leading to sequestration and blockage of small blood vessels. Moreover, red cells infected with malarial parasites become rigid, slowing the flow through capillaries, with an already reduced lumen due to sequestered erythrocytes.[8,9]

Conclusion

Postpartum pituitary necrosis is usually a complication of severe postpartum haemorrhage. In this case, the patient developed severe falciparum malaria at 37 weeks gestation, resulting in still birth followed by hypopituitarism. This condition was diagnosed five years later with an empty sella on MRI pituitary. This is a rare sequel of severe falciparum malaria in a near term pregnant patient.

Patient Consent From: Consent for publication of the case report was obtained from the patient.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

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AUTHORS' CONTRIBUTIONS:
MA: Concept, design, data acquisition, analysis and interpretation.
SA: Concept, design, data acquisition, analysis, interpretation and final approval.