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A Rare Presentation Of Pres With Stress-Induced Cardiomyopathy And Postpartum Psychosis

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Abstract
Posterior Reversible Encephalopathy Syndrome (PRES) is a rare but potentially reversible neurological condition characterized by seizures, altered mental status, and specific radiological findings. Though often associated with hypertensive emergencies, it can also occur in normotensive postpartum women. The coexistence of PRES with stress-induced cardiomyopathy and postpartum psychosis is exceedingly rare and clinically challenging.
We report a rare case of a 21-year-old primigravida at 36+3 weeks gestation with an uneventful antenatal course who underwent emergency cesarean section for decreased fetal movements and suspected leaking per vaginum. On postoperative day 1, she developed generalized tonic-clonic seizures without preceding hypertension or eclampsia. MRI brain revealed findings consistent with PRES. Severe hyponatremia (Na: 114 mmol/L) was identified as a likely precipitating factor. On postoperative day 3, she developed paranoid delusions, auditory hallucinations, and disturbed sleep, suggestive of postpartum psychosis. She was managed in the intensive care unit with antiepileptics, correction of hyponatremia, and antipsychotic therapy. A multidisciplinary approach led to gradual recovery. This case highlights the clinical complexity of PRES presenting alongside stress-induced cardiomyopathy and postpartum psychosis in a normotensive patient. Early neuroimaging, correction of metabolic derangements, and psychiatric evaluation are essential for timely diagnosis and management. High clinical suspicion and multidisciplinary care are crucial for favorable outcomes in postpartum neurological emergencies.
Keywords: *PRES; Neuropsychiatric Manifestations; Postpartum Psychosis; Electroencephalography.*

INTRODUCTION

Posterior reversible encephalopathy syndrome (PRES) is a neurological condition defined by a distinct set of clinical symptoms and radiological features. It frequently arises in association with blood pressure instability, preeclampsia or eclampsia, renal dysfunction, malignancies, autoimmune disorders, and infections such as sepsis [1, 2]. The estimated incidence of PRES in the general population is unclear, but studies suggest it affects approximately 0.4% of patients with eclampsia and preeclampsia, highlighting its significance in obstetric practice [3].

Stress-induced cardiomyopathy, also known as Takotsubo cardiomyopathy, is a transient myocardial dysfunction that mimics acute coronary syndrome but occurs without obstructive coronary artery disease. It is commonly precipitated by emotional or physical stress and is characterized by reversible left ventricular systolic dysfunction, often with apical ballooning on echocardiography [4]. Its coexistence with PRES, although infrequently reported, is gaining attention due to shared pathophysiological mechanisms involving endothelial dysfunction and sympathetic overactivity [5].

Postpartum psychosis is a rare but severe psychiatric emergency occurring in approximately 0.1–0.2% of postpartum women, characterized by hallucinations, delusions, and cognitive disturbances. The overlap between postpartum psychosis and PRES further complicates diagnosis and management, underscoring the need for multidisciplinary care [6].

Here, we present a rare case of PRES complicated by stress-induced cardiomyopathy and postpartum psychosis in a young primigravida following emergency cesarean section, emphasizing the clinical complexity and importance of early recognition and comprehensive management.

Case Presentation

A 21-year-old primigravida woman, at 36 weeks and 3 days of gestation (LMP: 10/10/2024; EDD: 17/07/2025), presented to Dr. D. Y. Patil Medical College Hospital, Pune, with complaints of decreased fetal

movements and a history of leaking per vaginum. Obstetric ultrasound revealed a live intrauterine pregnancy with cephalic presentation, normal fetal heart rate (143 bpm), and an amniotic fluid index of 16 cm. The placenta was fundo-posterior and thickened (6.3 cm), suggestive of placentomegaly. No fetal anomalies were noted.

She underwent an emergency lower segment cesarean section (LSCS) under spinal anesthesia with 2.2 mL Bupivacaine. Due to inadequate initial anesthesia, a repeat spinal block was administered. The procedure was uneventful, and a healthy female baby weighing 2.5 kg was delivered with good APGAR scores.

POSTOPERATIVE COURSE

On postoperative day 1, the patient experienced two episodes of generalized tonic-clonic seizures lasting 1–2 minutes, with frothing and up-rolling of eyes, but no urinary incontinence. She had no history of seizures, epilepsy, eclampsia, hypertension, or other comorbidities. Her antenatal period was otherwise unremarkable. Post-seizure vitals showed BP of 126/86 mmHg, HR of 157 bpm, SpO_2 100%, and RR 30/min. She became drowsy with a low GCS and was subsequently intubated and shifted to the Surgical ICU. She was started on IV Midazolam, Propofol, Vecuronium, and Levetiracetam (LEVIPIL).

ABG analysis showed pH 7.018, pCO_2 30 mmHg, HCO_3^- 18.9 mol/L, lactate 5.2 mmol/L, sodium 114 mmol/L, potassium 3.7 mmol/L, and glucose 97 mg/dL. MRI brain (plain) revealed diffuse patchy T2/FLAIR hyperintensities in a symmetrical distribution involving the bilateral posterior cerebellar lobes, occipitotemporal cortices, and frontoparietal lobes, consistent with vasogenic edema. EEG showed generalized intermittent slowing (5–6 Hz) without epileptiform discharges. Photic stimulation and hyperventilation were not performed due to sedation.

Differential diagnoses included postpartum eclampsia, new-onset epilepsy, and Posterior Reversible Encephalopathy Syndrome (PRES) (fig 1), with PRES being the most likely based on MRI findings and clinical context.

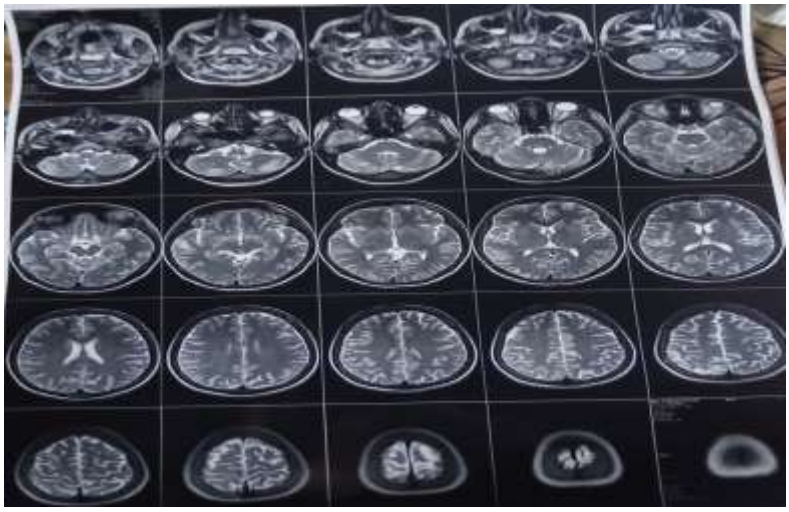

Fig 1:

Psychiatric Evaluation

By postoperative day 3, the patient regained consciousness but showed signs of postpartum psychosis, including paranoia, auditory hallucinations, delusions (e.g., believing blood was stuck in her arms, or that her sister was pregnant), fearfulness, and disturbed sleep. She was referred to psychiatry and started on antipsychotic medication while continuing IV Levetiracetam 500 mg twice daily under neurologic and psychiatric monitoring.

DISCUSSION:

Posterior Reversible Encephalopathy Syndrome (PRES) is a clinico-radiological condition characterized by acute neurological symptoms and unique imaging findings. Although it is commononly associted with the hypertensive emergencies, eclampsia, and renal failure, its occurrence in the normotensive postpartum population raises diagnostic challenges.

In present case, a 21 year primigravida with no prior history of eclampsia or seizure disorder developed generalized tonic-clonic seizures (GTCS) and neuropsychiatric symptoms in the early postoperative period, eventually diagnosed as PRES complicated by hyponatremia and postpartum psychosis. A similar case was reported by **Rashid H et al. [3] (2023),** describing a 31-year-old ASA II primigravida with hypothyroidism at 38 weeks of gestation, who had an uneventful antenatal period and presented to the emergency room with an eclamptic seizure. In the immediate postoperative period, she developed both stress cardiomyopathy and PRES.

Gómez Jordan S et al. [7] (2024) reported a case of PRES in a previously healthy 29-year-old woman following hypovolemic cardiac arrest from a ruptured ectopic pregnancy. Timely treatment with antiepileptics, antihypertensives, and antipsychotics led to full recovery without neurological deficits.

A critical aspect of this case is the presence of severe hyponatremia (Na: 114 mmol/L), which likely acted as both a precipitating and aggravating factor for PRES and seizure activity. Hyponatremia is a known cause of cerebral edema and seizures due to neuronal swelling and increased intracranial pressure. Peripartum women are particularly vulnerable because of elevated antidiuretic hormone (ADH) levels, which lead to fluid retention [8,9]. It is important to avoid rapid correction of hyponatremia to prevent osmotic demyelination; however, in acute symptomatic cases, careful and gradual correction is essential to prevent further seizures or encephalopathy. **Gayathri K et al. [10]** reported a case of a 31-year-old ASA II hypothyroid primigravida at 38 weeks of gestation with an uneventful antenatal course who presented to the emergency department with an eclamptic seizure. In the immediate postoperative period, she developed both stress cardiomyopathy and posterior reversible encephalopathy syndrome (PRES)—two conditions that are increasingly reported to occur simultaneously in similar clinical settings. Similarly, **Noh YS et al. [11] (2018)** described a case of a woman with a prior history of stress cardiomyopathy who presented with chest discomfort 12 days postpartum. Investigations revealed transient left ventricular dysfunction and elevated cardiac enzymes. Her cardiac function normalized within a few days without invasive intervention, and she was discharged without symptoms, indicating a favorable prognosis.

Kandah F et al. [7] also reported a rare case of Takotsubo cardiomyopathy (TCM) in a 35-year-old woman two days postpartum. Although TCM typically affects postmenopausal women, it can occur during pregnancy and must be carefully distinguished from peripartum cardiomyopathy. Early recognition is essential, as TCM can rarely lead to complications such as cardiac rupture and death. Management involves close inpatient hemodynamic monitoring, supportive therapy, and cardiology follow-up with serial echocardiography. Most patients recover normal cardiac function within 4–8 weeks, though recurrence in premenopausal women remains rare.

Even with growing recognition of the overlap between postpartum psychosis and organic encephalopathies like PRES, there remains a gap in the literature regarding clear diagnostic criteria and management guidelines for cases where these conditions coexist. Limited studies address how to effectively differentiate primary psychiatric disorders from secondary psychosis following neurological events in the postpartum period. Additionally, the role of EEG and neuroimaging in guiding treatment decisions in such complex presentations is not well defined. This gap underscores the need for further research to develop multidisciplinary approaches that integrate neurology, psychiatry, and critical care to improve outcomes for postpartum patients presenting with seizures, altered mental status, and psychotic symptoms.

CONCLUSION

This case highlights the importance of recognizing psychiatric symptoms as manifestations of PRES in postpartum patients without typical risk factors like preeclampsia or hypertension. Early postoperative seizures triggered by severe hyponatremia emphasize the need to consider electrolyte imbalances in obstetric seizure cases. The emergence of neuropsychiatric symptoms such as hallucinations and delusions illustrates the overlap between PRES and postpartum psychosis, complicating diagnosis. Timely MRI diagnosis, careful correction of hyponatremia, and supportive care were crucial. This case stresses maintaining high suspicion for PRES in postpartum women with seizures and altered mental status, regardless of blood pressure, and the importance of multidisciplinary management. Early intervention improves outcomes in these neurological emergencies.

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