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CASE REPORT

Posterior Reversible Encephalopathy Syndrome Following Cesarean Section

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Abstract: Posterior Reversible Encephalopathy Syndrome (PRES) is a complex neurological disorder characterized by diverse clinical manifestations and potentially severe complications, particularly in the peripartum period. We present a case of a 23-year-old female who developed PRES eight days after cesarean section. The patient presented with acute onset of visual disturbances, frontal headache, multiple seizure episodes, and vomiting. Her medical history was significant for gestational thrombocytopenia and anemia. Clinical examination revealed elevated blood pressure (160/100 mmHg) with otherwise stable vital signs and a Glasgow Coma Scale score of $E_4M_6V_5$. Laboratory investigations demonstrated thrombocytopenia (1.14 lakhs/cumm), elevated inflammatory markers (ESR 70 mm/hr), and abnormal liver function tests. Magnetic Resonance Imaging with venography confirmed PRES, showing T_2W_1/Flair hyperintensities in the right supraventricular parietal region and left cerebellar hemisphere. The patient received comprehensive treatment including intravenous fluids, anticonvulsants, antihypertensives, and supportive care. After four weeks of hospitalization, she showed significant clinical improvement and was discharged on oral medications with a planned follow-up regimen. Early intervention and appropriate medical management can lead to favorable outcomes in this potentially severe but reversible condition.

Keywords: Posterior Reversible Encephalopathy Syndrome (PRES); Postpartum complications; Neurological disorders; Hypertension; Thrombocytopenia.

1. Introduction

Posterior Reversible Encephalopathy Syndrome (PRES) represents a unique neurological condition characterized by a constellation of symptoms including headache, seizures, visual abnormalities, and altered mental status [1]. The condition, first identified in 1996, has gained increasing recognition in clinical practice, particularly in relation to pregnancy-related complications and hypertensive disorders [2]. The epidemiology of PRES reveals a distinct pattern of occurrence across different patient populations.

While it can affect individuals of all ages, young and middle-aged adults, particularly females, show a higher predisposition. This gender disparity persists even when excluding cases related to eclampsia, suggesting underlying sex-specific vulnerabilities [3]. Recent epidemiological data indicates varying prevalence rates across different clinical scenarios: 2.7-25% in bone marrow transplant recipients, 0.4% in solid organ transplant patients, 0.84% in end-stage renal disease cases, and 0.69% in individuals with systemic lupus erythematosus [4].

The risk factors for PRES encompass a broad spectrum of conditions, with hypertensive disorders and pregnancy-related complications being particularly significant (shown in Figure 1). Other notable risk factors include renal dysfunction, autoimmune conditions, immunosuppressive therapy, and various systemic diseases [5]. The peripartum period represents a particularly vulnerable time, as the physiological changes associated with pregnancy and delivery can precipitate the development of PRES [6, 7]. The condition's reversible nature, when identified and treated early, highlights the critical role of healthcare providers in recognizing its clinical presentation and initiating timely management [8].

This case report aims to contribute to the growing body of literature on PRES by presenting a detailed analysis of its manifestation in a postpartum patient, emphasizing the importance of early recognition and appropriate management strategies [9].

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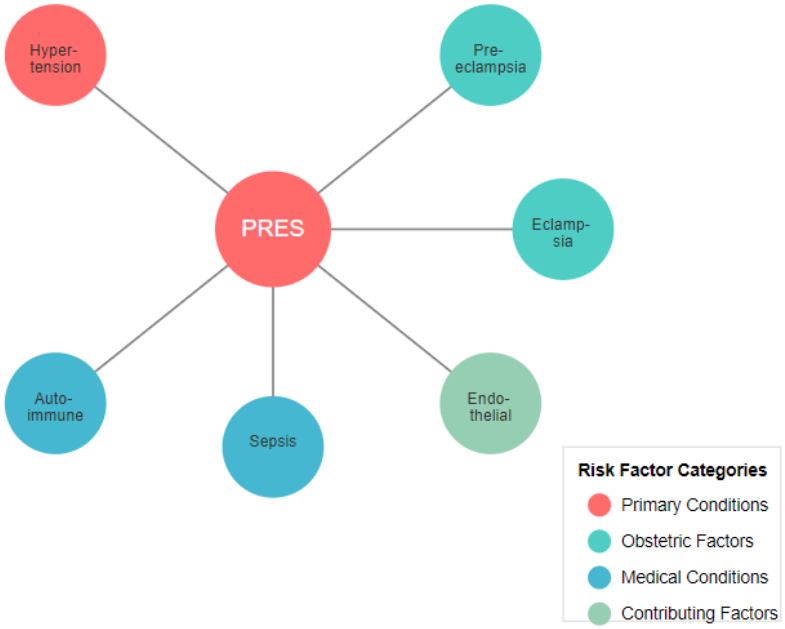

Figure 1. PRES risk factors and their interrelationships

2. Clinical Presentation

2.1. Patient History

A 23-year-old female patient presented to the general medicine department on her eighth post-cesarean day with acute onset neurological symptoms. The primary presenting complaints included sudden visual blurring, severe frontal headache without radiation, six episodes of generalized tonic-clonic seizures, and three episodes of non-projectile vomiting [10]. Prior to this acute presentation, the patient had been clinically stable during her immediate postoperative period.

2.2. Medical Background

The patient's antenatal history was significant for gestational thrombocytopenia and anemia, both of which were monitored throughout pregnancy. No other significant past medical history or chronic conditions were reported [11].

2.3. Physical Examination and Vital Signs

Initial clinical assessment revealed concerning vital parameters, with blood pressure elevated to 160/100 mmHg and a regular pulse rate of 88 beats per minute. The respiratory rate was maintained at 24 cycles per minute, and the patient remained afebrile at 98.6°F (37°C). Oxygen saturation was preserved at 98% on room air, while random blood glucose measured 82 mg/dL, indicating adequate glycemic control. Consciousness assessment using the Glasgow Coma Scale demonstrated a score of $E_4M_6V_5$, confirming normal mental status [12].

2.4. Laboratory Investigations

Comprehensive laboratory studies revealed multiple significant abnormalities across various parameters. Hematological findings showed an MCHC of 30.2%, with a concerning platelet count of 1.14 lakhs/cumm. The differential count revealed lymphocytes at 11% and polymorphs at 84%, indicating an inflammatory response. Biochemical analysis demonstrated elevated alkaline phosphatase at 119 IU/L, with reduced total protein (4.7 g/dL), serum albumin (2.7 mg/dL), and serum globulin (2.0 g/dL). The inflammatory marker ESR was notably elevated at 70 mm/hr. Thyroid function assessment revealed an elevated total T4 at 14.72 µg/dL [13].

Table 1. Complete Laboratory Findings with Reference Ranges

Parameter	Result	Reference Range
Hemoglobin	11.2 g/dL	12.0-15.5
Hematocrit	34%	36-46
White blood cells	12.3 x 10^3/µL	4.0-11.0
Platelets	145 x 10^3/µL	150-450
INR	1.1	0.8-1.2
Sodium	138 mEq/L	135-145
Potassium	3.8 mEq/L	3.5-5.0
Chloride	102 mEq/L	98-108
Bicarbonate	22 mEq/L	22-29
BUN	18 mg/dL	7-20
Creatinine	1.1 mg/dL	0.6-1.2
Glucose	112 mg/dL	70-100
Calcium	8.9 mg/dL	8.5-10.5
Magnesium	2.0 mg/dL	1.8-2.4
Total protein	6.2 g/dL	6.0-8.3
Albumin	3.3 g/dL	3.5-5.0
Total bilirubin	0.8 mg/dL	0.3-1.2
AST	45 U/L	10-40
ALT	52 U/L	7-56
Alkaline phosphatase	92 U/L	44-147
PT	13.2 seconds	11.0-13.5
PTT	32 seconds	25-35
Fibrinogen	425 mg/dL	200-400
Protein	2+	Negative
RBC	0-2/HPF	0-4
WBC	2-5/HPF	0-4
Specific gravity	1.015	1.005-1.030
LDH	285 U/L	140-280
Uric acid	6.8 mg/dL	2.4-6.0
C-reactive protein	2.8 mg/L	<3.0
D-dimer	850 ng/mL	<500

2.5. Imaging Studies

Magnetic Resonance Imaging with venography provided crucial diagnostic information, revealing characteristic findings consistent with PRES. The imaging demonstrated T_2W_1/FLAIR hyperintensities in the right supraventricular parietal region, accompanied by signal abnormalities in the left cerebellar hemisphere (shown in Figure 2). The presence of restricted diffusion further supported the diagnosis. These radiological findings, in conjunction with the clinical presentation and laboratory results, definitively confirmed the diagnosis of Posterior Reversible Encephalopathy Syndrome [14].

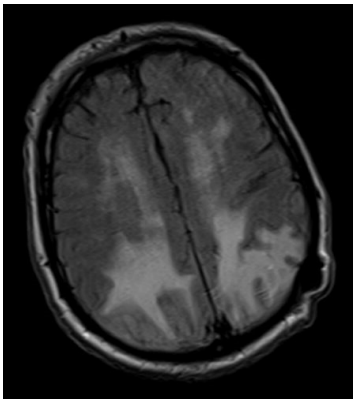

Figure 2: T1 axial MRI image showing Posterior Reversible Encephalopathy Syndrome (PRES) of brain

3. Treatment and Management

The patient received a comprehensive therapeutic approach focusing on both immediate symptom control and underlying pathology management [15]. Initial stabilization included careful blood pressure management and seizure control, with continuous monitoring of neurological status.

Intravenous fluid therapy was initiated with 0.9% sodium chloride solution administered at a controlled rate of 40 mL/hour to maintain adequate hydration while avoiding fluid overload. The anticonvulsant management consisted of intravenous Levetiracetam 500 mg administered twice daily, which effectively controlled the seizure activity. Gastrointestinal prophylaxis was achieved through intravenous Pantoprazole 40 mg once daily [16].

Table 2. Complete Medication Schedule and Dosing

Medication Class	Drug Name	Dose	Frequency	Route	Duration
Antihypertensives	Nicardipine	5 mg/hr	Continuous infusion	IV	48-72 hours
	Labetalol	20 mg	Every 4 hours	IV	48 hours
	Amlodipine	10 mg	Once daily	Oral	After IV therapy
Anticonvulsants	Magnesium sulfate	4 g loading, then 2 g/hr	Continuous infusion	IV	24-48 hours
	Levetiracetam	1000 mg	Every 12 hours	IV/Oral	7 days
Steroids	Dexamethasone	4 mg	Every 6 hours	IV	48-72 hours
Anticoagulation	Enoxaparin	40 mg	Once daily	Subcutaneous	During admission
Electrolyte Replacement	Potassium chloride	20 mEq	As needed	IV/Oral	Based on levels
	Magnesium sulfate	2 g	As needed	IV	Based on levels
Supportive Care	Pantoprazole	40 mg	Once daily	IV/Oral	During admission
	Normal saline	100 mL/hr	Continuous	IV	As needed
PRN Medications	Ondansetron	4 mg	Every 6 hours as needed	IV/Oral	For nausea
	Acetaminophen	650 mg	Every 6 hours as needed	Oral	For headache

Hypertension control was achieved through oral Nifedipine 10 mg twice daily, with careful titration to maintain systolic blood pressure below 140 mmHg while avoiding rapid decreases. This approach aligns with current guidelines for managing PRES-associated hypertension [17].

Additional therapeutic measures included Rosuvastatin-Fenofibrate combination (10/60 mg) administered at bedtime to address the patient's lipid profile. The treatment regimen was continuously monitored and adjusted based on clinical response and laboratory parameters [18]. Throughout the four-week hospitalization period, the patient underwent regular neurological assessments, vital sign monitoring, and laboratory evaluations. Serial imaging studies were performed to track the resolution of cerebral edema. The patient demonstrated progressive improvement in neurological symptoms, with complete resolution of visual disturbances and no recurrence of seizures [19].

Upon achieving clinical stability, the patient was transitioned to oral medications. The discharge medication regimen included:

- Oral Levetiracetam 500 mg twice daily
- Oral Nifedipine 10 mg twice daily
- Rosuvastatin-Fenofibrate combination (10/150 mg) at bedtime

Comprehensive discharge instructions included medication adherence guidance, blood pressure monitoring protocols, and clear instructions regarding warning signs requiring immediate medical attention [20]. A structured follow-up plan was established, incorporating regular outpatient visits to monitor blood pressure, neurological status, and medication effectiveness. The patient was scheduled for follow-up neurological imaging at three months post-discharge to confirm complete resolution of the radiological findings [21].

4. Discussion

The presented case exemplifies the complex interplay between pregnancy-related complications and PRES, highlighting several crucial clinical aspects worthy of detailed analysis [22]. The patient's presentation eight days post-cesarean section underscores the importance of maintaining vigilance during the entire peripartum period, not just immediately following delivery. Clinical Manifestations and Risk Factors:

The symptoms exhibited by our patient aligns with classical PRES presentations, including visual disturbances, headache, and seizures. The presence of pre-existing thrombocytopenia and anemia during pregnancy likely contributed to the patient's vulnerability to developing PRES [23]. This association emphasizes the need for careful monitoring of patients with hematological complications during pregnancy and the postpartum period.

The radiological findings in our case demonstrated the typical posterior-predominant pattern characteristic of PRES, though the involvement of the left cerebellar hemisphere represents a less common manifestation. This variation in imaging patterns reinforces the understanding that PRES can present with diverse neuroimaging features while maintaining its core clinical characteristics [24].

Our management approach focused on rapid blood pressure control and seizure prevention, which proved effective in this case. The decision to use Levetiracetam as the primary anticonvulsant was based on its favorable safety profile and minimal drug interactions. The gradual normalization of blood pressure with Nifedipine demonstrates the importance of careful titration to avoid potential complications from rapid pressure changes [24].

5. Conclusion

Early recognition and rapid implementation of targeted interventions remain crucial determinants in the management of postpartum Posterior Reversible Encephalopathy Syndrome (PRES). The observed clinical resolution correlates with systematic blood pressure control, strategic anticonvulsant administration, and comprehensive supportive measures. The reversibility of neurological manifestations following prompt therapeutic intervention shows the significance of including PRES in the differential diagnosis for postpartum patients presenting with acute neurological deterioration.

Compliance with ethical standards

Acknowledgements

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Conflict of interest statement

The authors report no conflicts of interest that could have affected this work. No funding was received for this case report.

Statement of ethical approval

This case report was conducted in accordance with the ethical standards of our institutional research committee and with the 1964 Helsinki Declaration and its later amendments. No experimental interventions were performed as part of this case report.

Statement of informed consent

The patient provided written informed consent for publishing of this case report and any related photos. All patient identifiable information has been removed to ensure anonymity

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