



ROLE OF MAGNETIC RESONANCE IMAGING IN ASSESSMENT OF
NEUROLOGICAL DISORDERS IN THE POSTPARTUM PERIOD – AN
OBSERVATIONAL DESCRIPTIVE STUDY

Radio-Diagnosis

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ABSTRACT

Objectives: To evaluate the role of Magnetic Resonance Imaging (MRI) in detecting and characterizing neurological complications in postpartum women presenting with neurological symptoms and to assess the association of these findings with obstetric conditions such as preeclampsia. **Materials and Methods:** An observational descriptive study was conducted over 30 months (November 2022–April 2025) at a tertiary care hospital. Forty postpartum women within six weeks of delivery presenting with neurological symptoms were included. MRI brain was performed using a 3 Tesla Siemens Magnetom Vida scanner. Clinical profiles, imaging findings, and associations with comorbidities were analyzed using descriptive statistics and chi-square tests. **Result:** The most common presenting symptoms were seizures (22.5%) and headache (17.5%). Abnormal MRI findings were observed in 42.5% of patients, with posterior reversible encephalopathy syndrome (PRES) being the most frequent diagnosis (25%), followed by cerebral venous sinus thrombosis (CVST) (7.5%) and acute lacunar infarcts (7.5%). Preeclampsia (22.5%) showed a statistically significant correlation with abnormal MRI findings ($p = 0.049$). **Conclusion:** MRI is a highly effective, non-invasive modality for evaluating neurological complications in postpartum women. PRES and CVST were the most common abnormalities, often associated with preeclampsia. Early MRI evaluation facilitates prompt diagnosis and management, improving maternal outcomes.

KEYWORDS

Postpartum, MRI, PRES, CVST, Preeclampsia, Neurological complications

INTRODUCTION

The postpartum period is a critical transitional phase involving major hormonal, vascular, and neurological adjustments. While generally a period of recovery, it can also lead to severe complications such as posterior reversible encephalopathy syndrome (PRES), cerebral venous sinus thrombosis (CVST), ischemic or hemorrhagic strokes, and pituitary necrosis (Sheehan's syndrome). These disorders often present with nonspecific symptoms like headache, seizures, or visual disturbances, making timely diagnosis difficult. Magnetic Resonance Imaging (MRI) provides excellent soft-tissue contrast and vascular visualization without radiation exposure, making it the modality of choice for postpartum neurological evaluation.

MATERIALS AND METHODOLOGY

This observational descriptive study was conducted over 30 months (November 2022–April 2025) in a tertiary care hospital. Forty postpartum women presenting with neurological symptoms within six weeks of delivery were included. Patients with MRI contraindications (e.g., pacemakers, metallic implants, claustrophobia) were excluded. MRI was performed using a 3 Tesla Siemens Magnetom Vida scanner. Sequences included T1, T2, FLAIR, DWI, SWI, MR angiography, and MR venography. Images were interpreted on Syngo Via software. Statistical analysis was performed using Microsoft Excel 2019, and chi-square tests assessed associations between variables. Ethical approval and informed consent were obtained prior to the study.

RESULTS AND OBSERVATION

Table 1: Demographic And Clinical Profile (n = 40)

Parameter	Category	Percentage (%)
Age Group	<30 years	45.0
	≥30 years	55.0
Mean Age	30.23 ± 3.27 years	
Comorbidities	Preeclampsia	22.5
	Postpartum Hemorrhage	10.0
	Eclampsia	5.0
	None	45.0

Table 2: MRI Findings And Diagnoses

MRI Findings	Frequency	Percentage (%)
Normal Study	23	57.5
PRES	10	25.0
CVST	3	7.5
Acute Lacunar Infarcts	3	7.5
Viral Encephalitis	1	2.5

Table 3: Association Between Preeclampsia And MRI Findings

Condition	Abnormal MRI (%)	Normal MRI (%)	p-value
Preeclampsia Present	70.0	30.0	0.049*
Preeclampsia Absent	33.3	66.7	

*Statistically significant ($p < 0.05$)

FEW ILLUSTRATIVE CASES

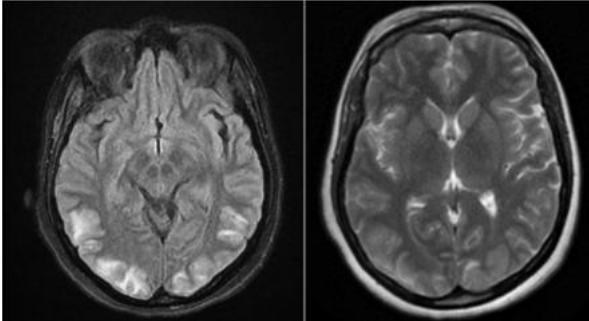


Figure 1: MRI of Posterior Reversible Encephalopathy Syndrome (PRES) – A. Axial FLAIR and B. T2-weighted images showing symmetrical hyperintensities in bilateral occipital lobes.

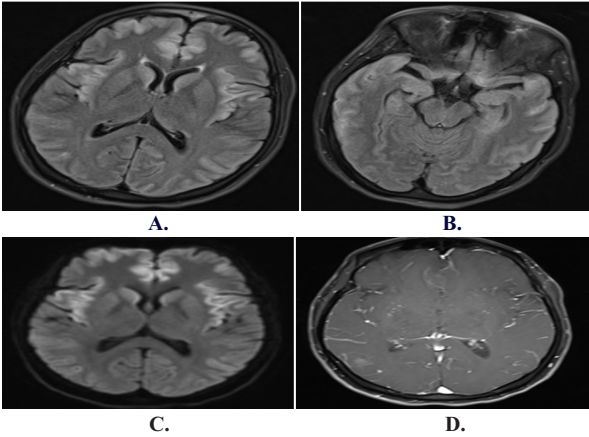


Fig 2- MRI of viral encephalitis

Bilateral symmetric FLAIR (A and B) hyperintensities are seen in bilateral frontal, temporal lobes, and insula which shows diffusion restriction (C). No significant post contrast enhancement seen (D).

DISCUSSION

MRI abnormalities were detected in 42.5% of patients. PRES (25%) and CVST (7.5%) were the most prevalent disorders, both closely associated with hypertensive complications. These findings parallel those of Chandrashekar et al. (2020), emphasizing that PRES and CVST dominate the postpartum neurological spectrum. The significant correlation between preeclampsia and MRI abnormalities ($p = 0.049$) underscores the vascular etiology of these disorders. MRI demonstrated superior diagnostic accuracy in differentiating vasogenic from cytotoxic edema using DWI and in detecting venous thrombi through MRV. Additionally, over half of the participants exhibited normal MRI scans, illustrating MRI's critical role in ruling out structural pathology and guiding conservative management.

CONCLUSION

MRI serves as a crucial, non-invasive, and radiation-free diagnostic tool for postpartum neurological disorders. PRES and CVST were the most frequent abnormalities and were significantly associated with preeclampsia. Early MRI evaluation facilitates timely treatment, preventing long-term complications and improving maternal prognosis.

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