CASE REPORT

Posterior Reversible Encephalopathy Complicated with Hemorrhage: A Case Report

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ABSTRACT

Posterior reversible encephalopathy is a condition with neurological symptoms of headache, seizures, and visual disturbance. It is a reversible neurotoxic condition with multiple complications including intracranial hemorrhage. Brain imaging of PRES shows a unique pattern predominantly involving the subcortical white matter of the parieto-occipital region. Based on clinical and radiological presentation the early diagnosis of posterior reversible encephalopathy is essential to avoid complications. We present this case of pregnant women with high blood pressure, seizures, and neurological deficits, and an MRI of the brain showed abnormal hyper-intense signals in bilateral symmetrical high parietal regions. This case highlights prompt recognition of disease with proper treatment and follow-up led to improvement of symptoms and reversibility of imaging findings of PRES. Posterior reversible encephalopathy is a reversible disease and prompt treatment has a good outcome, however, delay in treatment leads to complications and poor clinical outcome. Massive intracranial hemorrhage increases the risk of mortality. Our patient had minor bilateral intracranial hemorrhage and showed good response due to prompt elimination of underlying condition leading to PRES.

Keywords: *Seizures, posterior reversible encephalopathy, intraparenchymal hemorrhage, eclampsia, subcortical white matter.*

INTRODUCTION

Posterior reversible encephalopathy (PRES) is a reversible neurological condition commonly affecting the cortical and subcortical white matter of the parieto-occipital and frontal regions. PRES may also rarely affect the cerebellum, basal ganglia, and brain stem. The main cause of posterior reversible encephalopathy includes hypertension, eclampsia, preeclampsia and medications [1, 2]. PRES is a benign reversible condition and is sometimes complicated with intracranial parenchymal hemorrhage which may lead to functional neurological deficits [3]. The radiological findings of PRES include marked vasogenic edema involving the bilateral subcortical parieto-occipital regions [4]. The unusual complication of subarachnoid hemorrhage has now increased [5, 6]. The purpose of this report is to focus on the challenges in the diagnosis and management of this condition.

CASE REPORT

A 33-years-old women presented to the radiology department with a single episode of generalized tonic-clonic seizures after normal spontaneous vaginal delivery 2 days back in hospital. Before delivery, the patient had experienced severe headache and hypertension with a high blood pressure of 160/100mmHg. After a normal vaginal delivery, the patient experienced generalized tonic-clonic seizures on the second day of delivery. On neurological examination, the patient was unconscious and had bilateral up-going planters. The laboratory studies showed hemoglobin levels of 8.5 g/dl, leucocyte counts 15.88x 10^9/L, and lactate dehydrogenase (LDH) 292U/L. Clotting tests were elevated with fibrinogen levels measures 4.3 g/L, plasma D-dimer 3.63 g/L, platelet counts of 84x10^9/L, urea 117 mg/L, creatinine 1.9 mg /L, serum ALT levels were elevated 290. Magnetic resonance imaging (MRI) of the brain showed abnormal symmetrical hyper-intense signals on both T1 and T2 weighted images involving the bilateral high parietal regions with mild perilesional edema. Imaging findings in bilateral parietal lobes were consistent with posterior reversible encephalopathy complicated with bilateral cerebral hemorrhage **(Fig. 1)**.

After spending many days in the hospital and receiving postpartum care and antihypertensive treatment, the patient's arterial blood pressure was gradually tapered to the normal range. The patient showed improvement in her symptoms day by day and was discharged later with a follow-up appointment scheduled. During the follow-up, a repeat CT scan showed normal findings, and the patient's symptoms fully resolved.

DISCUSSION

Posterior reversible encephalopathy is a neurotoxic condition resulting from the failure of posterior circulation to regulate itself in response to a sudden increase in blood pressure [7]. Clinically the symptoms of PRES include headache, visual disturbance, seizures, and neurological deficits [8-10]. Our patient presented with MRI findings of hyper-intense signals in bilateral subcortical high parietal regions which might be responsible for the development of generalized tonic-clonic seizures **(Figs. 2** and **3)**.

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Received: May 30, 2024; Revised: October 16, 2024; Accepted: October 21, 2024
DOI: https://doi.org/10.37184/nrjp.3007-5181.1.11

 ISSN: 3007-519X (Online)

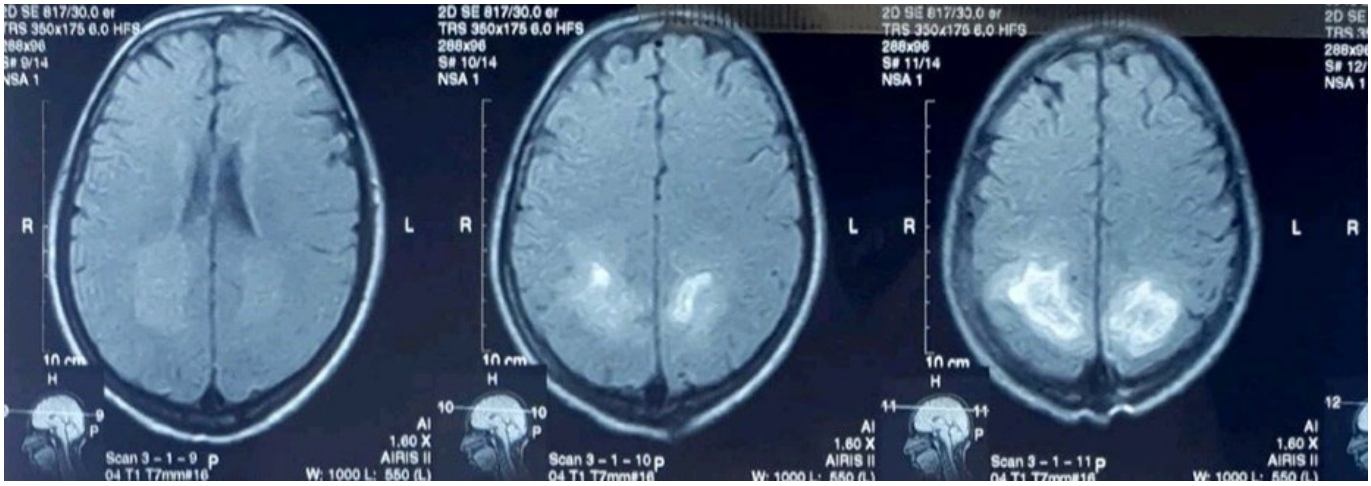

Fig. (1): Non contrast axial T1 images demonstrate T1 hyper-intense signals involving the bilateral high parietal regions.

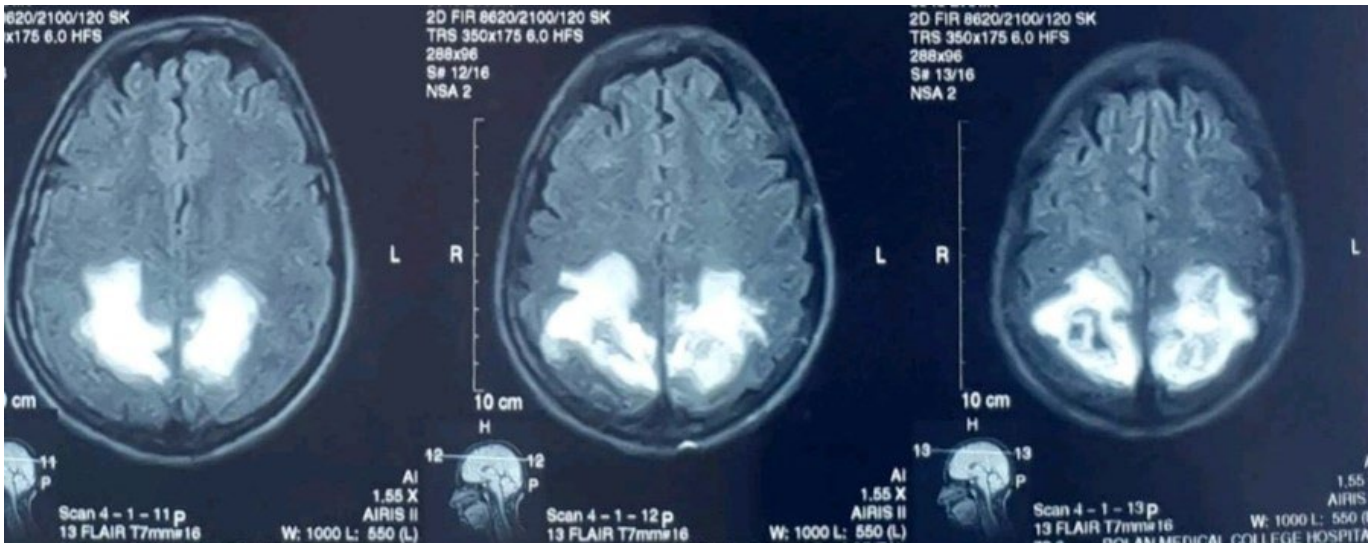

Fig. (2): Non contrast axial T2 weighted images demonstrate T2 hyper-intense signals involving the bilateral high parietal regions.

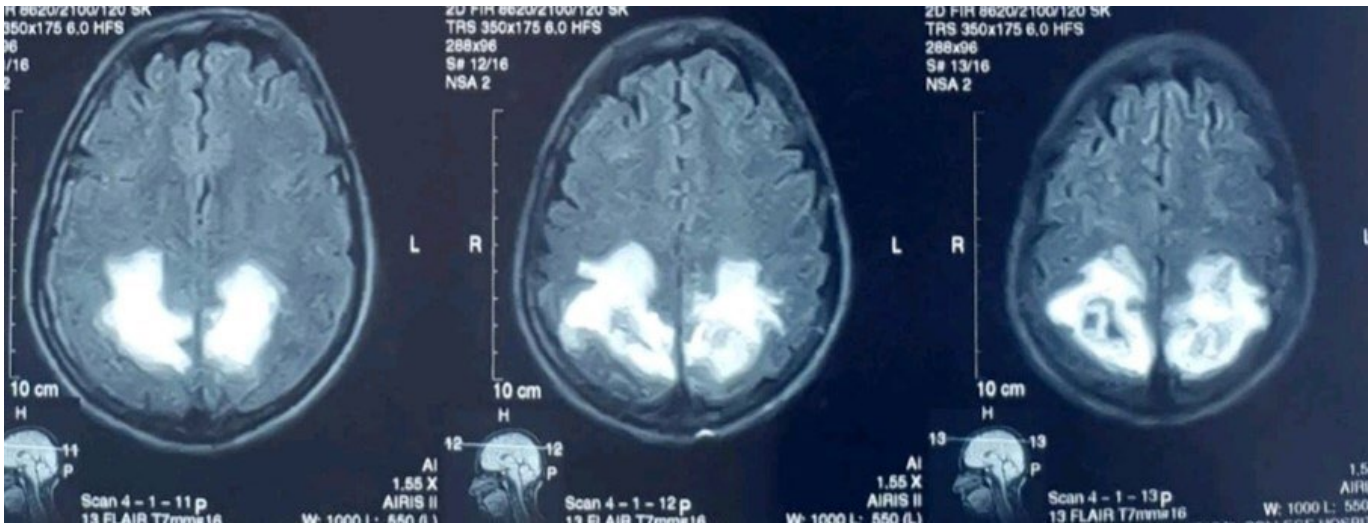

Fig. (3): FLAIR imaging axial section demonstrates hyperintensity in bilateral high parietal regions.

The incidence of Intracranial hemorrhage ranges from 9-33 % [11]. PRES complicated with hemorrhage is usually seen in patients with eclampsia, sepsis, and anticoagulation therapy [12]. Hypertension is not only the cause of hemorrhage in PRES, the mechanism behind hemorrhage includes hemodynamic disturbance, endothelial dysfunction, disruption of blood-brain barrier and disturbed coagulation profile might

contribute to causing hemorrhage in the setting of PRES. PRES is a reversible disease and carries a good prognosis, however, delays in treatment and inadequate therapeutic support lead to complications. This case highlights the challenges in managing a pregnant patient with eclampsia who develops PRES complicated with intracranial hemorrhage. Prompt recognition, interdisciplinary collaboration, and aggressive management are crucial in improving patient outcomes. The exact pathophysiology of PRES in the setting of eclampsia and its association with intracranial hemorrhage require further investigation. In this case, the patient showed gradual improvement over time, with resolution of neurological symptoms and reduction in intracranial hemorrhage size on follow-up imaging.

CONCLUSION

This case report emphasizes the significance of early recognition and handling of the uncommon presentation of PRES complicated with intracranial hemorrhage in pregnant patients with eclampsia. Early diagnosis and treatment are very important to prevent further complications. It underscores the need for interdisciplinary collaboration and close monitoring to optimize patient outcomes. Further research is warranted to better understand the underlying mechanism and improve treatment strategies for this challenging condition.

CONSENT FOR PUBLICATION

Informed consent was taken from the patient and her family.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

Declared none.

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