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Case Report

Posterior Reversible Encephalopathy Syndrome (PRES) Associated with Eclampsia in Adolescent Pregnancy: Case Report

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Abstract:

Posterior Reversible Encephalopathy Syndrome (PRES) is a rare complication of pre-eclampsia and eclampsia. It is a reversible syndrome characterized by headache, seizure, altered consciousness and loss of vision associated with white matter changes on imaging. The lesions predominantly in the posterior cerebral hemispheres in PRES are thought to be due to vasogenic oedema, PRES is best managed by monitoring and treatment in the setting of a neuro-intensive care unit. Prognosis is usually benign with complete reversal of symptoms, if adequate treatment is immediately initiated. Delay in diagnosis and treatment may lead to permanent neurological sequelae.

This study reports a 18-year-old woman on her 4th post operative day following caesarean section presented with headache, dimness of vision, and repeated attack of seizure. The MRI of brain report showed abnormal signal intensity in the white matter of the occipital and parietal lobes. She was treated successfully with anti-hypertensives, anticonvulsants, and supportive care in ICU.

PRES syndrome should always be considered in women with acute hypertension disorders associated with epileptic seizures or other neurological symptoms during pregnancy and in the postpartum. Early diagnosis is important to prevent permanent neurologic damage and mortality.

Keywords: *Posterior reversible encephalopathy syndrome, eclampsia, MRI of brain, pregnancy.*

Introduction

Posterior reversible encephalopathy syndrome (PRES) is a rare clinical-radiological syndrome. It is likely caused by the impaired neurovascular unit autoregulation of the cerebral blood flow which leads to endothelial dysfunction and vasogenic brain edema. PRES which is also known as reversible posterior leukoencephalopathy syndrome presents with rapid onset of symptoms such as: nausea, headache, altered consciousness, visual disturbance, cortical blindness, blurred vision, photophobia, hemianopia, and other focal neurologic deficits such as paresis, dysesthesia or dysphasia as well as seizure.[1,2,3,7] The associated symptoms may completely disappear after treatment.[1,4] The risk factors for developing PRES in adults include hypertension, eclampsia, kidney disease, liver disease, autoimmune disease, infections, endocrine disease, organ transplantation, and cytotoxic medications.[3,6] . Neuroimaging is crucial for the diagnosis of PRES.[8] Various conditions may resemble PRES, and this syndrome can be confused with other diagnoses due to its lack of specific clinical symptoms and limited clinical and imaging data.

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Case Presentation

A 18 year old lady at her 4th POD of delivery following caesarean section due to primi gravida with 39 weeks of pregnancy with fetal distress. She was discharged from local hospital on her 3rd POD. On 4th POD she admitted again in hospital with the history of 3 episodes of convulsion and transferred to a tertiary care. She presented with unconsciousness , blurring of vision, pitting edema of both leg and her blood pressure was 180/110 mm of Hg. Other vitals were within normal limit. Pupils were normally reactive to light and fundus examination was unremarkable. Rest of the cranial nerve examination was unremarkable. Motor and sensory function was intact all over the body. Cerebellar signs were intact and there was no evidence of meningeal signs such as nuchal rigidity or Kernig's/Brudzinski's sign.

On admission Urinalysis revealed 3 + proteinuria, Complete blood count revealed Hb- 11.60g/dL, WBC – 16.25 K/iL, Platelets-120 K/iL, Liver function revealed (SGPT-40U/L, SGOT-35U/L , Bilirubin-1.00mg/dL, Albumin- 2.30), Renal function showed (Creatinine-1.15 mg/dL, Reticulocyte % - 4.75, Pro-Calcitonin-3.35 ng/mL. She was treated with labetalol hydrochloride and magnesium sulphate and diagnosed as eclampsia admitted in ICU. Fluid-attenuated inversion recovery(FLAIR) image of brain MRI showing hyperdensities in the cortex and subcortical white matter of occipital lobe of right side consistent with posterior reversible leukoencephalopathy syndrome (PRES).

Clinical and radiological findings were assumed to be consisted with PRES. Three days after admission, her blood pressure was controlled, patient had no episodes of seizures and discharged.

After 3 weeks patient came with follow up MRI. Patient clinical condition completely improved without any residual deficit.

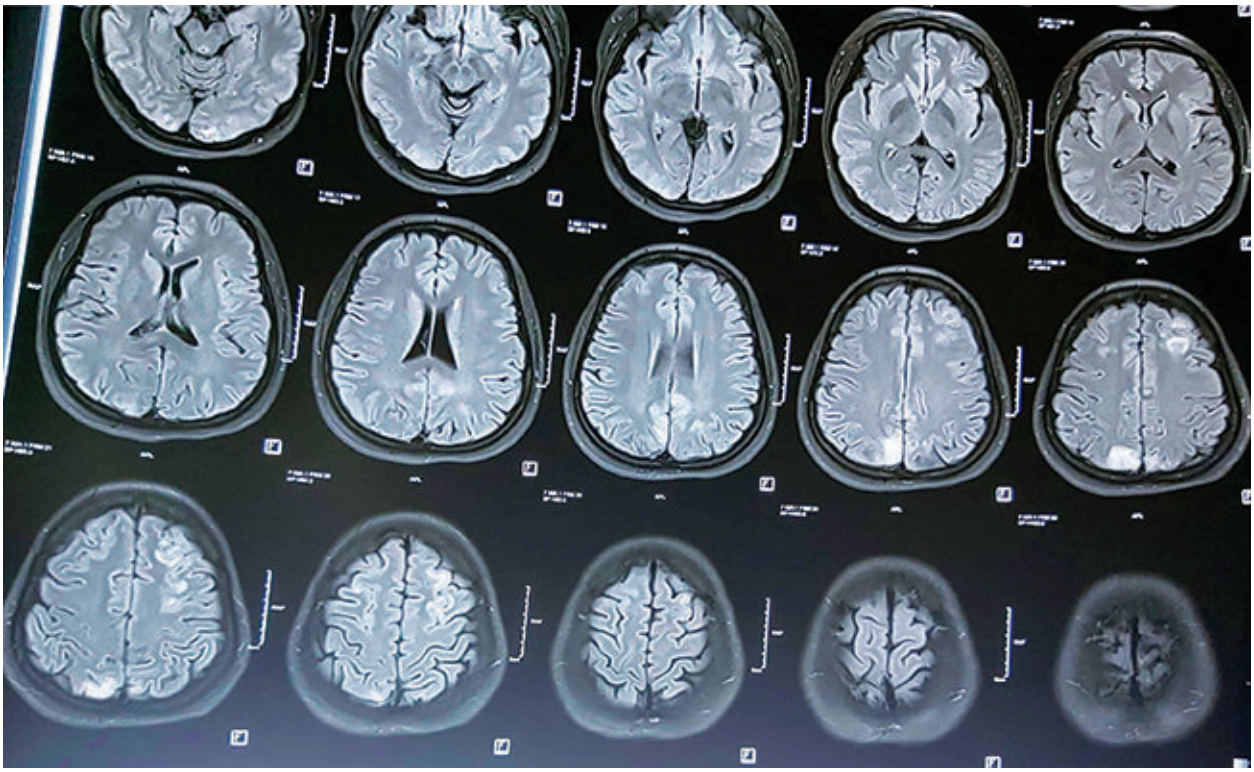

Figure 1: *Fluid-attenuated inversion recovery(FLAIR) image of brain MRI showing hyperdensities in the cortex and subcortical white matter of right occipital lobe consistent with posterior reversible leukoencephalopathy syndrome.*

Discussion:

In 1996,Hinchey *et al*. was the first investigator to report PRES in the year 1996.[1]PRES is a clinical-radiological syndrome whose nonspecific clinical manifestations and multiplicity of radiological patterns create diagnostic challenges.[8]

Bembalgi et al.,[9] had younger eclampsia patients developing PRES (20–25 years old). Fisher et al.,[10] also described younger maternal age as a risk for developing PRES in eclampsia patients.

Although various risk factors for developing PRES in eclampsia patients are described in this study, 56% of PRES eclampsia patients had no comorbidities and pregnancy-associated risk factors, 28% had preeclampsia, and 16% had gestational diabetes mellitus. Roth et al.,[11,12] also compared PRES patients with and without pregnancy and reported that 75% of the pregnant patients were without any comorbidity, one patient had hypertension, and one had obesity, whereas 23% of nonpregnant patients developing PRES had diabetes mellitus. In the literature, PRES is described to be common in primiparous patients.[9,13] Postpartum eclampsia patients had a significantly higher incidence of PRES in this study than in Mavani et al.,[13]study, although Bembalgi et al.,[9] also reported a higher incidence.

The gold standard for the diagnosis of PRES is MRI; Roth et al.,Vaughan et al.,study showed that 44% of the PRES patients had normal CT brain, but all had PRES confirmation by MRI.[14,15] Initially, CT scan was performed in these patients to rule out gross central nervous system (CNS) pathology such as hemorrhage or infarction. Subsequently, these patients underwent MRI for final diagnosis.

The typical features of PRES include seizure, headaches, visual abnormalities, consciousness impairment, and focal neurological deficits. The previous studies have reported incidence rates for headaches and nausea/vomiting of 26% - 53% among patients diagnosed with PRES, with headaches and nausea/vomiting being associated with blurred vision in 7% - 18%, seizure in up to 92%, and consciousness impairment in 13%.[16,17,18]

The standard treatment of neurologic findings is aggressive blood pressure control and management of underlying pathology [11]. The management of PRES is: ICU admission, continuous evaluation about need for upper airway protection in patients with consciousness impairment or seizure activity, correction of hypoglycaemia and electrolyte imbalance, anti-epileptic treatment, control of hypertension and correction of the underlying cause. Delay in the diagnosis and treatment can result in permanent damage to affected brain tissues.

The essence of controlling hypertension is not to normalize the blood pressure but rather to decrease the mean arterial pressure (MAP) by 20% to 25% within the first 2 h [19,20,21]. More rapid blood pressure reduction is notrecommended, since it can aggravate alterations in cerebral perfusion pressure and promote ischemia[22]. Intravenousantihypertensive drugs are necessary and appropriate choices include labetalol, nicardipine, or fenoldopam [19,22].Finsterer, et al. found that controlling blood pressure by nitro-glycerine infusion may worsen PRES [23]. We used labetalol in this case.

Conclusion:

PRES is a reversible illness. Rapid diagnosis along with help of neuroimaging we can prevent deterioration in PRES patient. . Treatment is primarily determined by the underlying disease. Apart from antenatal and intrapartum care, postpartum care should also be given equal importance to avoid postpartum eclampsia and its consequences.

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