

Farhana Selina, MBBS, MD
Department of Anesthesiology
Square Hospitals Ltd.
Dhaka, Bangladesh

Khandaker Abu Talha, MBBS, MS
Department of Neurosurgery
Square Hospitals Ltd.
Dhaka, Bangladesh

Nargis Fatema, MBBS, FCPS
Department of Gynecology & Obstetrics
Square Hospitals Ltd.
Dhaka, Bangladesh

Shah Mohammad Ali, MBBS, DA
Department of Anesthesiology
Square Hospitals Ltd.
Dhaka, Bangladesh

Wahiuddin Mahmood, MBBS, DA
Department of Anesthesiology
Square Hospitals Ltd.
Dhaka, Bangladesh

Mohammad Khalilur Rahman, MBBS, DA
Department of Anesthesiology
Square Hospitals Ltd.
Dhaka, Bangladesh

Address for correspondence:

Farhana Selina, MBBS, MD
Department of Anesthesiology
Square Hospitals Ltd.
18/F, West panthapath, Dhaka-1205
Dhaka, Bangladesh
Email: farhana.selina@gmail.com

Received, 23rd July, 2010

Accepted, 6th August, 2010

Eclampsia is development of generalized convulsions in a pregnant or puerperal woman, usually between 20 weeks gestation and the first 48 hours postpartum.¹ In classic eclampsia, the onset of seizures is preceded by the preeclamptic syndrome of proteinuria and hypertension during the antepartum or intrapartum periods.⁹ In contrast, late postpartum encephalopathy (LPE) occurs between 48 hours and 1 month postpartum, frequently in women who have had a normal pregnancy and delivery and have no signs of a preeclamptic syndrome.⁹ These features can make LPE difficult to be recognized and can delay diagnosis. Prompt diagnosis and treatment of eclampsia are important as cerebrovascular damage caused by eclampsia may result in permanent neurologic sequelae.

Posterior Reversible Encephalopathy Syndrome (PRES) with Postpartum Eclampsia: A Case Report

Posterior reversible encephalopathy syndrome is a reversible syndrome characterized by headache, seizures, altered mentation, and loss of vision associated with white matter changes on imaging. We report here a 22 year-old lady four days postpartum, presenting with posterior reversible encephalopathy syndrome. She was treated successfully with antihypertensives, anticonvulsant and showed dramatic improvement. This condition is important to recognize and needs to be treated promptly to prevent morbidity and mortality in pregnancy and postpartum.

Key words: Posterior reversible encephalopathy syndrome, postpartum, white matter changes on imaging.

Posterior reversible encephalopathy syndrome (PRES) is a reversible syndrome characterized by headache, seizures, altered mentation, and loss of vision associated with white matter changes on imaging. PRES was first described by Hinchey in 1996.⁴ She described it as a reversible syndrome due to edema mainly in the posterior regions of the cerebral hemispheres, but also involving the brainstem, cerebellum, and other cerebral areas. Postpartum preeclampsia is rare and under-recognized condition occurring in 5.7% of all cases of pregnancy-induced hypertension.⁴ PRES is a very rare condition and so it is usually not suspected. This causes delay in diagnosis and treatment, which can lead to permanent neurological damage. We report a case of postpartum preeclampsia presenting with PRES, emphasizing the fact that early diagnosis and treatment can prevent complications.

The pathophysiology of PRES is not clear, but it is related to disordered cerebral autoregulation. Two pathophysiologic mechanisms have been proposed regarding cerebral autoregulation; cerebral vasospasm, which results in cytotoxic edema, and vasodilatation, which results in vasogenic edema.³ The latter is more favored by most experimental and clinical data. The pathophysiology of PRES also implicates endothelial dysfunction, especially in cases without severe hypertension, such as pre-eclampsia or cytotoxic therapies.³

The most characteristic imaging pattern of PRES is the presence of edema involving the white matter of the posterior portions of both cerebral hemispheres, especially the parieto-occipital regions, in a relatively symmetric pattern that spares the calcarine and paramedian parts of the occipital lobes. However, other structures, such as the brain stem, cerebellum, and frontal and temporal lobes, may also be involved, and although the abnormality primarily affects the subcortical white matter, the cortex and the basal ganglia may also be involved. Although they are rare, gyriform signal enhancement or parenchymal hemorrhage can occur in complicated cases.⁸ Recently, studies with diffusion weighted sequences and diffusion tensor sequences have shown increased apparent diffusion coefficients (ADCs) in the involved regions accompanied by anisotropy loss, which suggests reversible vasogenic edema as an underlying pathophysiology. Therefore, early diagnosis and treatment is essential for the better prognosis.

Case report

We present a 22 year-old, Primi (62 kg, 158 cm), admitted under Gynae unit with 37+ weeks of pregnancy with the complaints of per vaginal watery discharge for 2 days. Her medical history was significant for sinusitis during pregnancy. Other medical history and laboratory examinations were unremarkable. No signs of preeclampsia, such as edema, proteinuria, arterial hypertension, or neurologic complaints had been observed during pregnancy.

After counseling, LSCS was planned & on the same day proposed surgery was done. With all aseptic precaution a spinal block was performed on the first attempt. A male baby was delivered by vertex. Patient was stable during & after procedure. The mother's vital signs were normal in the postoperative care unit; motor and sensory block had totally worn off 2 hour after spinal anesthesia.

The patient had sleep disturbance from 1st post operative day. In spite of sedative the condition did not improve on following days. She developed mild occipital headache (visual analog scale, VAS, 2/10), which was constant in nature and was not related with posture. Oral

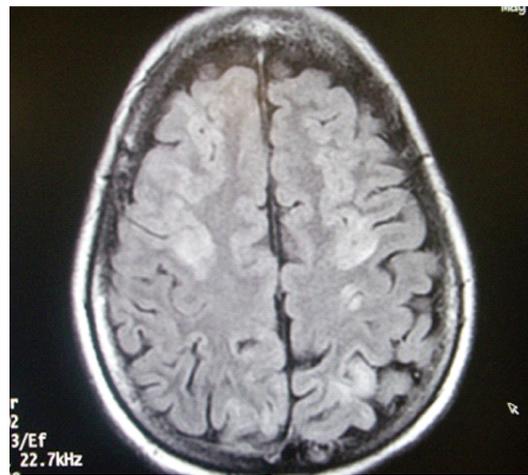


Figure 1. MRI T1W Flair shows brain oedema of posterior frontal and occipital lobe.

analgesic, proper hydration and complete bed rest were ensured but even then intensity of headache increased on following days. She developed severe throbbing headache (VAS 10/10) over occipital area, blurring of vision with raised BP (160/100) and restlessness on 4th post operative day evening. Then she gradually developed somnolence, confusion, visual hallucinations, right-sided facial and limb numbness, and slurred speech with convulsion on the same day. She experienced 3 episodes of generalized tonic clonic convulsion within 12 hours. Of them 1st and 2nd one was for near about 1 minute and 3rd one was for about 3 minute. Biochemical causes of seizure (S. electrolyte, Calcium, Magnesium, blood sugar, zinc) were excluded. She was also examined and reviewed to exclude the other causes of raised BP, headache and convulsion. MRI of brain and CT angiogram of brain was done. MRI T1W Flair showed brain oedema of posterior frontal, parieto-occipital region and in cerebellar hemisphere (Figure 1). Cerebral CT angiogram showed vasospasm of left (MCA) middle cerebral artery (Figure 2). The patient improved on next day, shifted to cabin and discharged 8 days after operation.

At the time of 2 months follow up patient was found symptom free. There was no episode of severe headache or seizure in this period. Her blood pressure was also controlled without any regular medication.

Discussions

We are presenting of PRES who was presented 4 days after cesarean section surgery with an unremarkable pregnancy. The findings of this patient were compared with those of other published patients and fair similarity was found in clinical features and radiological findings.

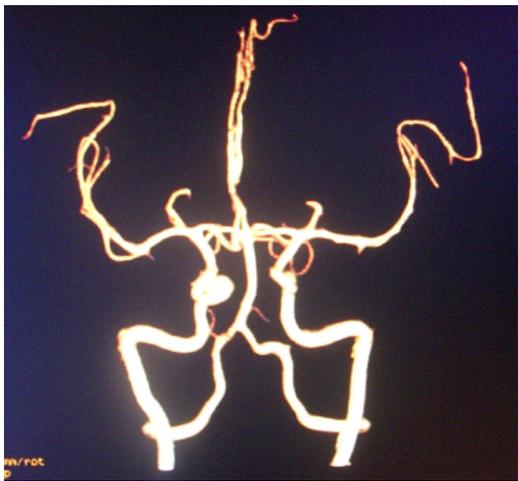


Figure 2. Cerebral CT Angiogram shows left MCA vasospasm.

Ritesh et al has published their case report on PRES. The age of their patient was 27 year, who presented with headache, blurring of vision, nausea, and vomiting three weeks after her caesarean section⁷. This patient was 22 years of age. She presented with sleep disturbance, headache, blurring of vision, raised BP. She did not have nausea and vomiting. The onset of features started from 1st post operative day.

The case of Val E was a previously healthy 37-year-old woman (gravida 3, para 1 with 2 first-trimester miscarriages) who had an unremarkable pregnancy until the 35th week¹⁰. On postpartum day 5, the patient presented to the emergency department with a 1-day history of a gradual-onset throbbing occipital headache that was associated with photophobia and 3 episodes of vomiting. In this case it was found that the symptoms started from 1st post operative day.

Chiu Ming Ho et al presented A 33 year old lady who underwent cesarean delivery under spinal anesthesia without any sign of preeclampsia, such as edema, proteinuria, arterial hypertension, or neurologic complaints had been observed during pregnancy⁵. After 5 days she presented with somnolence, confusion, visual hallucinations, right-sided facial and limb numbness, and slurred speech. Magnetic resonance (MR) imaging of the brain revealed edema of the bilateral posterior parietooccipital lobes and was diagnosed as Posterior Reversible Encephalopathy Syndrome. This patient also presented with somnolence, confusion, visual hallucinations, right-sided facial and limb numbness, and slurred speech with generalized tonic clonic seizure on 4th post operative day.

Alexander M et al. presented a series of 67 patients of PRES¹. Their study was on different regions of brain affected by PRES. The incidence of regions of involvement was parietooccipital, 98.7%; posterior frontal, 78.9%; temporal,

68.4%; thalamus, 30.3%; cerebellum, 34.2%; brainstem, 18.4%; and basal ganglia, 11.8%. In this case MRI showed edema on posterior frontal, posterior parietooccipital lobes and cerebellar hemisphere. CT Angiogram revealed vasospasm of left middle cerebral artery (MCA).

Belogolovkin V et al. presented a 39-year-old woman (para 1) presented with late postpartum preeclampsia on postpartum day 4. She developed eclampsia and posterior reversible encephalopathy syndrome, which was diagnosed by magnetic resonance imaging². She subsequently developed clinical and radiologic evidence of reversible cerebral herniation. This patient was recovered without any cerebral herniation from reversible post encephalopathy syndrome (PRES).

Jamie M et al presented 2 cases of PRES. First case was a 30-year-old woman gravida 2, para 2 presented 8 days postpartum after she experienced severe headaches, nausea, and a seizure⁶. During pregnancy, she had 1 recorded episode of high blood pressure that resolved by the time it was rechecked during the same office visit. Her medical history was significant for migraines during pregnancy. She had a normal pregnancy and an uncomplicated vaginal delivery. Second case was a 30-year-old woman gravida 1, para 1 presented complaining of severe headaches for 3 days, nausea and vomiting, and blurry vision. She reported having peripheral edema since a normal vaginal delivery 12 days prior. In both the cases there was no sign of eclampsia all through the pregnancy. Case of this study also showed a similarity with these cases in terms of clinical features and onset of symptoms.

Posterior Reversible Encephalopathy Syndrome (PRES) with postpartum eclampsia is a rare condition usually detected after uneventful pregnancy. This condition is important to recognize and needs to be treated promptly to prevent morbidity and mortality in pregnancy and postpartum.

References

1. Alexander M, McKinney, James Short, Charles L. Truwit, Zeke J. McKinney, Osman S. Kozak, Karen S. SantaCruz et al. Posterior Reversible Encephalopathy Syndrome: Incidence of Atypical Regions of Involvement and Imaging Findings. *AJR* **189**: 904-912, 2007
2. Belogolovkin V, Levine SR, Fields MC, Stone JL. Postpartum eclampsia complicated by reversible cerebral herniation. *Obstet Gynecol* **107**: 442-445, 2006
3. Casey SO, Sampaio RC, Michel E. Posterior reversible encephalopathy syndrome: Utility of fluid-attenuated inversion recovery MR imaging in the detection of cortical and subcortical lesions. *AJNR Am J Neuroradiol* **21**: 1199-1206, 2000
4. Hinchey J, Chaves C, Appignani B, Breen J, Pao L, Wang A et al. A reversible posterior

- leukoencephalopathy syndrome. **N Engl J Med** **334**: 494-500, 1996
5. Ho CM, Chan KH. Posterior reversible encephalopathy syndrome with vasospasm in a postpartum woman after postdural puncture headache following spinal anesthesia. **Anesth Analg.** **105**: 770-772, 2007
 6. Jamie M. Nuwer, Shervin Eshaghian. Late Postpartum Eclampsia with Posterior Reversible Encephalopathy Syndrome. **Hospital Physician** **46**: 45-49, 2007
 7. Ritesh Kauntia, Rohith Valsalan, Shubha Seshadri, Vinay R Pandit, MM Prabhu. Late postpartum preeclampsia with posterior reversible encephalopathy syndrome. **Ind J Med Sci** **63**: 508-511, 2009
 8. Schwartz RB, Mulkern RV, Gudbjartsson H, Jolesz F. Diffusion-weighted MR imaging in hypertensive encephalopathy: Clues to pathogenesis. **Am J Neuroradiol** **19**: 859-862, 1998
 9. Sibai BM. Diagnosis, prevention, and management of eclampsia. **Obstet Gynecol** **105**: 402-410, 2005
 10. Val E. Ginzburg, MD MSc and Bryan Wolff, MD. Headache and seizure on postpartum day 5: late postpartum eclampsia. **CMAJ** **171**: 425-428, 2009