

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) IN PREGNANCY: A STUDY FROM A TERTIARY CARE HOSPITAL OF EASTERN INDIA

Sambedana Panigrahi¹, Om Avishek Das², Richa Rozalin Gandhi³, Madhushree Sahoo⁴, Shubhankar Mishra⁵

Received : 21/03/2023
Received in revised form : 24/04/2023
Accepted : 05/05/2023

Keywords:

Pregnancy, Posterior reversible encephalopathy syndrome (PRES), Eclampsia.

Corresponding Author:

Dr. Madhushree Sahoo,

Email: madhushreesahoo30@gmail.com

DOI: 10.47009/jamp.2023.5.3.138

Source of Support: Nil.

Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (3); 664-666



¹Senior Resident, FMMCH, Balasore, Odisha, India

²MBBS, MD Paediatrics, DM Neurology

³Assistant Professor, FMMCH, Balasore, Odisha, India

Abstract

Background: Posterior reversible encephalopathy syndrome (PRES) is a clinico-radiological syndrome characterized by symptoms including headache, seizures, altered consciousness and visual disturbances. This condition has been known by various names previously (reversible posterior leuko-encephalopathy syndrome, reversible posterior cerebral oedema syndrome and reversible occipital parietal encephalopathy). It is commonly, but not always associated with acute hypertension. **Materials and Methods:** This is a Retrospective study of pregnancy induced PRES conducted in the Department of Obstetrics and Gynaecology, Fakir Mohan Medical College, Balasore. Total patients included were 26. All patients were diagnosed with consultation from neurologists. MRI was done by 1.5 T MRI scanner with consultations from experienced radiologists. The radiological diagnosis of PRES was made by radiologists using the following two criteria in MRI: Clinical presentations of acute neurologic change, including headache, seizures, visual abnormalities, altered mental status, or focal neurologic deficits; Brain imaging showed cortical or subcortical vasogenic edema with posterior predominance. **Result:** Most of the patients of eclampsia group had undergone LSCS (57%), where as in pre-eclampsia group (60%) had undergone LSCS. Acute hypertension was present in 23 patients (88%). Mean peak systolic BP - 160 mmHg (min-max, 100-210 mmHg). Mean peak diastolic BP - 100 mmHg (min-max, 66-120 mmHg). Headache was the most common presenting symptom (84%) followed by seizures (80%), altered mental status (73%), and visual disturbance (77%). Comorbidities included anemia (46%), fever (38%), acute renal failure (27%), HELLP syndrome (27%), DIC (7%). Papilloedema - 14 patients (54%). **Conclusion:** In this study, we characterized in greater detail the clinical and radiologic characteristics of pregnancy-related PRES in a larger case series. Almost all women with eclampsia may have neurologic abnormalities and accompanying radiologic findings of PRES. Early recognition of PRES together with aggressive comprehensive and meticulous medical management may facilitate complete maternal recovery without any residual deficit.

INTRODUCTION

Posterior reversible encephalopathy syndrome (PRES) is a clinico-radiological syndrome characterized by symptoms including headache, seizures, altered consciousness and visual disturbances.^[1] This condition has been known by various names previously (reversible posterior leuko-encephalopathy syndrome, reversible posterior cerebral oedema syndrome and reversible occipital parietal encephalopathy). It is commonly, but not always associated with acute hypertension.

There is wide variation in the severity of clinical symptoms. Altered consciousness may vary from mild confusion or agitation to coma. Seizures and status epilepticus are common.

Many smaller studies recorded that almost 100% of eclamptic patients had PRES.^[2]

It was observed both in antepartum, intrapartum and postpartum eclampsia.^[3]

Most cases of PRES are part of postpartum eclampsia, and the manifestations develop within 48 hours after delivery.^[4]

Aims and Objectives

1. To know the patterns of presentation of pregnancy induced PRES.
2. To isolate the risk factors of PRES in our department of O & G.
3. To know the radiological presentation of PRES.

MATERIALS AND METHODS

Type: Retrospective study of pregnancy induced PRES

Study period: 1 year

Place: Department of Obstetrics and Gynaecology, Fakir Mohan Medical College, Balasore

Statistical Analysis: SPSS Version 20.0 was used for analysis.

Total patients included were 26. All patients were diagnosed with consultation from neurologists. MRI was done by 1.5 T MRI scanner with consultations from experienced radiologists. All details were noted in pre-structured format.

Inclusion Criteria

1. Pregnancy or within 6 weeks' postpartum
2. Clinical diagnosis of PRES
3. Initial neuroimaging via MRI was performed within 96 hr from symptoms onset with radiological features of PRES

Exclusion Criteria

1. It is a known seizure disorder
2. Other predisposing risk factors of PRES

Radiological Criteria

The radiological diagnosis of PRES was made by radiologists using the following two criteria in MRI:

1. Clinical presentations of acute neurologic change, including headache, seizures, visual abnormalities, altered mental status, or focal neurologic deficits.
2. Brain imaging showed cortical or subcortical vasogenic edema with posterior predominance (inpatients with ICH, we assigned the diagnosis of PRES only if edema was present in at least one area in addition to that surrounding the hemorrhagic focus or foci.)

RESULTS

Refer to [Figure 1] Incidence according to presentation

Total patients included were 26.

21 - eclampsia.

13 - antepartum eclampsia.

2 - intrapartum eclampsia.

6 - post partum eclampsia.

5 patients had features of preeclampsia.

Refer to [Figure 2] Incidence according to Age

Mean age of presentation - 24.5. Minimum - maximum age was 18-37. Most common age group - 26-30 years.

Refer to [Figure 3] Incidence according to mode of delivery

Most of the patients of eclampsia group had undergone LSCS (57%), where as in pre-eclampsia

group (60%) had undergone LSCS. Acute hypertension was present in 23 patients (88%). Mean peak systolic BP - 160 mmHg (min-max, 100-210 mmHg). Mean peak diastolic BP - 100 mmHg (min-max, 66-120 mmHg).

Refer to [Figure 4] Distribution according to incidence of symptoms and signs

Headache was the most common presenting symptom (84%) followed by seizures (80%), altered mental status (73%), and visual disturbance (77%). Comorbidities included anemia (46%), fever (38%), acute renal failure (27%), HELLP syndrome (27%), DIC (7%). Papilloedema - 14 patients (54%).

CSF Pressure was found in 8 patients (measured in 14). Of all patients, 24 (92%) had subcortical involvement and eight (30%) had cortical involvement. Involvement of parieto-occipital area (posterior part of brain) was commonest MRI Finding. Clinical improvement was seen within 1 week of symptom onset. Symptomatic treatment with anti-edema measures was primary modalities of treatment. One patient who suffered DIC finally died

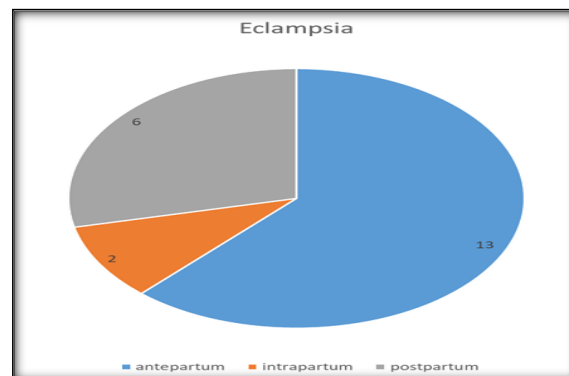


Figure 1: Incidence according to presentation

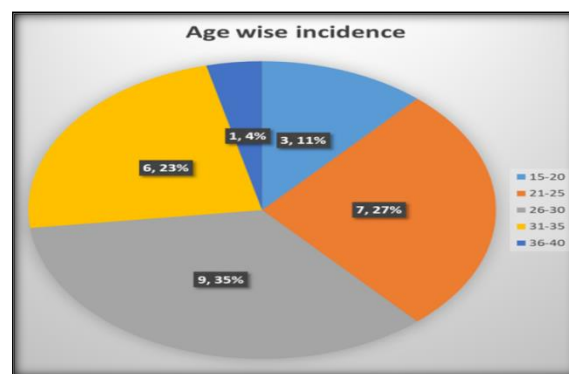


Figure 2: Incidence according to Age
Mean age of presentation

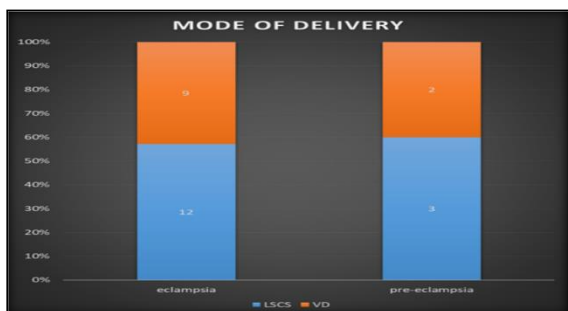


Figure 3: Incidence according to mode of delivery

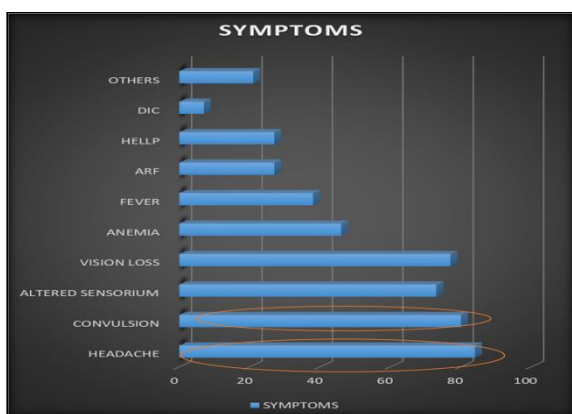


Figure 4: Distribution according to incidence of symptoms and signs

DISCUSSION

The present series of patients is the largest single institutional series of imaged patients with pregnancy-related PRES from eastern India. Consistent with previous reports,^[5,6] our data also suggest that PRES occurred almost uniformly among patients with eclampsia. Consistent with previous studies,^[5,6] our data showed that the majority of pregnancy-related PRES patients were complicated with abrupt hypertension, supporting the theory that hyperperfusion caused by abrupt hypertension that exceeds the retaining capacity of the brain capillary beds undoubtedly contributes to the development of PRES. Notably, our data revealed that pregnancy-related PRES often occurred in multiple areas of the brain, along with parietal-occipital region (50%) than other predisposing factors induced PRES. Our results is consistent with the findings of many studies.^[7] Our data showed that one women finally died of DIC, which is more inclined to develop among severe preeclampsia patients than overall during pregnancy.^[8] Appropriate reduction in blood

pressure may prevent progression from vasogenic to cytotoxic edema and the resultant permanent neurologic deficits.^[7] Because abrupt decreases in blood pressure may adversely affect uteroplacental perfusion and fetal status, treatment of hypertension should mandate close maternal blood pressure and fetal monitoring. The importance of magnesium sulfate for the prevention and treatment of eclamptic seizures is also emphasized. Our study also stressed upon the reversibility of the condition due to good outcomes.

CONCLUSION

Pregnancy related PRES is a very common complication of eclampsia. Headache, seizure with vision loss are most prominent feature. In this study, we characterized in greater detail the clinical and radiologic characteristics of pregnancy-related PRES in a larger case series. Almost all women with eclampsia may have neurologic abnormalities and accompanying radiologic findings of PRES. Early recognition of PRES together with aggressive comprehensive and meticulous medical management may facilitate complete maternal recovery without any residual deficit.

REFERENCES

- Hinchey J, Chaves C, Appignani B et al (1996) A reversible posterior leukoencephalopathy syndrome. *N Engl J Med* 334:494–500.
- Hossain N, Khan N, Panhwar N et al (2015) Clinical spectrum of Posterior Reversible Encephalopathy Syndrome (PRES) in patients with eclampsia. *Pak J Med Sci* 31:1121–1123
- Garg RK, Kumar N, Malhotra HS. Posterior reversible encephalopathy syndrome in eclampsia. *Neurol India* 2018;66:1316-23.
- Hinchey J, Chaves C, Appignani B, Breen J, Pao L, Wang A, et al. A reversible posterior leukoencephalopathy syndrome. *N Engl J Med* 1996;334:494–500.
- Zeeman GG, Fleckenstein JL, Twickler DM et al (2004) Cerebral infarction in eclampsia. *Am J Obstet Gynecol* 190:714–720
- Wagner SJ, Acquah LA, Lindell EP et al (2011) Posterior reversible encephalopathy syndrome and eclampsia: pressing the case for more aggressive blood pressure control. *Mayo Clin Proc* 86:851–856
- Liman TG, Bohner G, Heuschmann PU et al (2012) Clinical and radiological differences in posterior reversible encephalopathy syndrome between patients with preeclampsia-eclampsia and other predisposing diseases. *Eur J Neurol* 19:935–943
- Erez O, Novack L, Beer-Weisel R et al (2014) DIC score in pregnant women: a population based modification of the International Society on Thrombosis and Hemostasis score. *PLoS One* 9:e93240.