

A Study of Posterior Reversible Encephalopathy Syndrome in Severe Preeclampsia and Eclampsia

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Abstract

Introduction: Posterior reversible encephalopathy syndrome is a clinical and radiological syndrome which develops in patients with severe preeclampsia and eclampsia. Posterior reversible encephalopathy syndrome is commonly manifested as headache, visual disturbances, altered consciousness and seizures typically in patient with new onset hypertension.

Aims and Objectives: To determine incidence and maternal outcome of PRES in severe pre-eclampsia and eclampsia patients.

Materials and Methods: A prospective study was done in patients with severe preeclampsia and eclampsia and developed PRES in a tertiary care center during year April 2022 to April 2023 at RIMS Adilabad. Patients demographics, gestational data, outcome were studied. CT Brain was done for all this patients, patients presenting in antenatal period CT Brain was done after delivery.

Results: Out of 280 severe preeclampsia and 84 eclampsia patients admitted during this period. Out of which 18 patients developed PRES. Out of these 12 were primigravida. The diagnosis was common in age group < 25 years. Of these 18 cases, 14 patients presented with multiple seizure episodes, 11 cases were controlled with mgso4 only, remaining 7 cases controlled with mgso4 and phenytoin. It is most commonly seen in gestation age >36 weeks and its incidence is mostly seen in postpartum eclampsia. Perinatal mortality was seen in 5 patients. No maternal deaths were seen during this period.

Conclusion: Timely identification and prompt initiation of medical intervention in patients with PRES can minimize the potential for adverse outcome. Prognosis of patients with PRES was favorable.

Keywords: Preeclampsia, Eclampsia, Posterior reversible encephalopathy syndrome, Gestational age.

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Introduction

Posterior reversible encephalopathy syndrome (PRES) is a clinical and radiological syndrome which is also known as reversible posterior cerebral edema syndrome, hyper perfusion encephalopathy or brain capillary leak syndrome [1].

Triggers responsible for posterior reversible encephalopathy syndrome are preeclampsia and eclampsia, autoimmune disorders and sepsis [2,3]. Of these preeclampsia and eclampsia are the most common cause of posterior reversible encephalopathy syndrome in obstetric population [4]. Vasogenic edema and vasoconstriction

resulting in cytotoxic edema are responsible for the clinical and neuroradiological picture.

posterior reversible encephalopathy syndrome is characterized by clinical pictures like headaches, visual disturbances, seizures, altered consciousness (confusion, somnolence, lethargy and coma) and focal neurological signs typically in a patient with new onset hypertension [5]. Symmetrical white matter abnormalities in the parietooccipital lobes suggestive of edema are seen at computerized tomography typically. [6]

Although posterior reversible encephalopathy syndrome is reversible it can lead to permanent damage if cerebral ischemia and hemorrhage occurs. posterior reversible encephalopathy syndrome is increasingly recognized and reported in current literature. Here we present a study of patients in whom severe preeclampsia and eclampsia was complicated with posterior reversible encephalopathy syndrome.

Aims and Objectives

To determine the incidence and maternal outcome of posterior reversible encephalopathy syndrome in severe preeclampsia and eclampsia.

Materials and Method

Type of study: A prospective observational study was done in patients with severe preeclampsia and eclampsia and developed posterior reversible encephalopathy syndrome in a tertiary care center during year 2022-2023 at RIMS Adilabad.

Patient demographics, gestational data, treatment mode and outcome were studied. CT brain was

done for all these patients (patients presenting in antenatal period CT brain was done after delivery).

Inclusion criteria: All pregnant women who were diagnosed with severe preeclampsia and developed posterior reversible encephalopathy syndrome were included in the study.

Exclusion criteria: patients who had posterior reversible encephalopathy syndrome due to any other primary conditions such as sepsis, renal failure, hypertension, immunosuppression therapy was excluded from study.

Results

A total 8268 patients were delivered at RIMS Adilabad during this study period. About 280 cases of severe preeclampsia and 84 eclampsia were admitted, of which 18 patients developed posterior reversible encephalopathy syndrome. Incidence of posterior reversible encephalopathy syndrome is 0.21% of all deliveries and 4.94% of all severe preeclampsia and eclampsia cases in this study.

Table 1: Demographic characteristics of cases included in the study

Demographic characteristics	Cases (n=18)	Percentage
Age <25 years	14	77.77%
>25 years	04	22.23%
Parity primigravida	12	66.66%
Multigravida	06	33.34%
Gestational Age <36 weeks	05	27.77%
>36 weeks	13	72.23%
Booked	0	0
Unbooked/Referred	18	100%

Out of these 18 cases 12 were primigravida. The diagnosis was common in age group of <25 years, with high prevalence observed in gestational age >36 weeks (72.23%).

Table 2: Clinical presentation of cases included in the study

Symptoms	Cases	Percentage
Headache	5	27.78%
Epigastric pain	0	0
Altered consciousness	4	22.22%
Sudden blindness	3	16.67%
Anasarca	2	11.11%
Oliguria	2	11.11%
Time of Presentation PRES with Severe preeclampsia	02	11.11%
Antepartum eclampsia	05	27.77%
Intrapartum eclampsia	01	5.55%
Postpartum eclampsia	10	55.55%
Seizure Episode NO	02	11.11%
01	02	11.11%
≥ 02	14	77.78%

The most typical symptoms observed in this patient are seizures (88.8%) headache (27.77%), altered consciousness (22.22%) and sudden blindness

(16.67%). PRES is significantly higher in postpartum eclampsia (55.55%) patients than in antepartum and intrapartum eclampsia patients.

Associated complications like abruptio placenta, acute renal failure, disseminated intravascular

coagulation, postpartum hemorrhage, anemia was also seen in these cases.

Table 3: Associated complications of cases included in the study

Associated Complications	Cases
Abruptio placenta	2
Acute renal failure	1
Pulmonary edema	0
Disseminated intravascular coagulation	1
Postpartum hemorrhage	1
Anemia	7

Table 4: Treatment of cases included in the study

Treatment	Cases	Frequency
MgSO ₄	11	61.11%
MgSO ₄ +phenytoin	07	38.89%
Mode Of Delivery LSCS	12	66.66%
NVD	06	33.34%

Antihypertensives were given to all these patients to control hypertension. Cesarean rate was significantly higher among patients (66.66%) compared to normal vaginal delivery (33.34%) Out of these 18 patients 5 were admitted in ICU, 2 patients were ventilated, one underwent dialysis. Perinatal mortality was seen in 5 patients and no maternal deaths were seen during this period

Discussion:

Pre-eclampsia and eclampsia are common etiological reasons for developing PRES, as they have an etiology of vascular nature along with disrupted blood brain barrier and vasogenic edema. This study aimed to know the incidence and maternal outcome of PRES in severe pre-eclampsia and eclampsia associated with risk factors and improve outcome of PRES.

The incidence of eclampsia patients who developed PRES was lower in this study 21.4% compared to Wen et al's [7] study 92.8%. In a study conducted by Shaikh et al [8] it is 68%.

This study shows the incidence of PRES in an age group of <25 years is 77.77% which correlates with the study of Bembalgi et al 81% whereas in Shaikh et al [8] study it is 40%. Most of the patients with PRES in this study are primiparous 66.66% whereas in the study conducted by Shaikh et al [8] it is 48% and Bembalgi et al 81%.

Postpartum Eclampsia patients have a significantly higher incidence of PRES in this study (55.55%) than Shaikh et al [8] study 48%.

Most of the patients in this study have recurrent episodes of seizures (77.78%) which coincides with Bembalgi et al [9] 72.7% and in contrast to the study conducted by Shaikh et al [8] 44%.

The common mode of fetal delivery was LSCS (86.66%) which nearly coincides with Shaikh et al

76% in contrast to Fischer et al [10] 44.4%. No maternal deaths were seen in this study in contrast to the study of Wen et al [7] which had a maternal mortality of (7.69%). PRES in general has a good outcome.

Conclusion

PRES is associated with a combination of symptoms. In patients with neurological symptoms such as seizures, disturbed vision, headache and with typical radiological features PRES is considered a possible diagnosis. Timely identification and prompt initiation of medical intervention in a patient with PRES can minimize the potential for an adverse outcome. Prognosis of a patient with PRES is favorable. The mainstay of posterior reversible encephalopathy syndrome includes antihypertensive medication, MgSO₄ and anticonvulsants.

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