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Original Research Article

Postpartum eclampsia - a clinical study

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ABSTRACT

Background: Eclampsia, an enigmatic multisystem complication of pregnancy, is commonly defined as new onset of grand mal seizure activity and/or unexplained coma during pregnancy or postpartum. Eclampsia is associated with maternal deaths ranging from, 1.8% in developed to 14% in developing countries respectively. The worldwide incidence of delayed postpartum eclampsia is on an increasing trend, now at 16-18%, of all eclamptic seizures. Objective was to study the clinical findings and morbidity, associated with postpartum eclampsia and its correlation with neuroimaging- in our institute- SRIHER, Chennai.

Methods: This is a retrospective study from a period of June 2016 to June 2021, in SRIHER, Chennai. Case records of all patients with postpartum eclampsia were analysed.

Results: A total of 35 patients who satisfied the inclusion criteria were studied, out of which 55% of patients were diagnosed with hypertension or preeclampsia antenatally, and 45% presented as atypical eclampsia. In our institution, Postpartum eclampsia commonly occurred in the age group of 26-30 years of age (51.4%); was common after lower segment caesarean section (LSCS) (71.4%); most commonly occurred immediate postpartum (42.8%). Most common prodromal symptom was headache (77%), followed by blurring of vision (37%). Most common magnetic resonance imaging (MRI) finding was posterior reversible encephalopathy syndrome (PRES) (69%). 17% patients required intensive care unit (ICU) care. There was no mortality associated with postpartum eclampsia in the study period.

Conclusions: This study emphasises that a high index of suspicion and a multidisciplinary approach effectively reduces mortality and morbidity associated with postpartum eclampsia. Neuroimaging is of robust help in the diagnosis and management of postpartum eclampsia.

Keywords: Eclampsia, Neuroimaging, Postpartum eclampsia, PRES

INTRODUCTION

Eclampsia, an enigmatic multisystem complication of pregnancy, is commonly defined as new onset of grand mal seizure activity and/or unexplained coma during pregnancy or postpartum. Eclampsia most commonly a cause of severe preeclampsia, is a poorly understood multisystem disorder of pregnancy. Eclampsia is now a major contributor to morbidity and mortality in obstetrics. Cerebral pathology is a significant cause for the same. Neuroimaging such as computed tomography (CT) and

magnetic resonance imaging (MRI) is of robust help in understanding the neurological manifestations of eclampsia. A high index of suspicion and timely intervention is essential to distinguish postpartum eclampsia with other catastrophic causes of seizures such as intracranial haemorrhage, cerebral infarction, brain tumour, central nervous system (CNS) abscess, infections, other metabolic causes.¹ At present, eclampsia contributes to 1.8% maternal deaths in developed and 14% deaths in developing countries respectively. Worldwide incidence of delayed postpartum eclampsia is on an increasing trend,

now at 16-18% of all eclamptic seizures. In this study, we aim to assess the clinical findings, morbidity associated with postpartum eclampsia and its correlation with neuroimaging, in our institute, a tertiary care hospital, Sri Ramachandra Institute of Higher Education and Research (SRIHER), Chennai, India.

METHODS

This is a retrospective data analysis in SRIHER, Chennai, in the period of June 2016 to June 2021, all case records of women who had postpartum eclampsia were studied and analysed. Women who delivered in our institute and women delivered outside presenting with postpartum eclampsia were analysed.

Data such as age, parity, period of gestation at delivery, prodromal symptoms and signs before the seizure, MRI findings post eclampsia, fundus findings, blood parameters were analysed and observed. This is an observational study on postpartum eclampsia, which will help in the future early detection of cases and better management of the same. Simple methods such as percentage and proportion, in excel were used to calculate the results and conclude.

Inclusion criteria

All patients presenting with postpartum eclampsia were included in the study.

Exclusion criteria

History or known case of seizure disorder were excluded.

RESULTS

A total of 35 patients who satisfied the inclusion criteria were studied and analysed. Out of which 55% patients were diagnosed with gestational hypertension or preeclampsia syndrome antenatally, 45% presented as atypical eclampsia. Significant data such as mode of delivery, prodromal symptoms and signs, duration between delivery and onset of convulsions, number of convulsions, MRI findings, treatment given, noted and analysed. All patients underwent an MRI, apart from the PIH profile, to confirm the diagnosis. All patients who presented with postpartum eclampsia were treated with magnesium sulphate, and levetiracetam, and severe cases with phenytoin.

Postpartum eclampsia commonly occurred in the age group of 26-30 years of age (51.4%); common in multigravida (57%); was common after lower segment caesarean section (LSCS) (71.4%); 57% had serum uric acid >7mg/dl. (Tables 1-4). All patients presented with generalised tonic clonic convulsions (Table 5). Most common prodromal symptom was headache (77%), followed by blurring of vision (37%) (Table 6).

Most commonly occurred immediate postpartum (42.8%), followed by day 3 to day 7 of delivery (20%) (Table 7). Most common MRI finding was PRES (69%), and 17% had normal neuroimaging (Table 8). Fundus examination was normal in 77%, and 23% had features of hypertensive retinopathy (Table 9). 66% patients were incidentally found to have anaemia. 10% were diagnosed with associated HELLP syndrome. 21 out of 35 patients recorded a blood pressure of >170/110 mmHg at the time of convulsions (Table 10).

17% had electrocardiography (ECG) showing sinus bradycardia and T wave abnormality. 17% had ultrasonography (USG) abdomen showing increased renal cortical echoes. 17% patients required ICU care. There was no mortality associated with postpartum eclampsia in the study period.

Table 1: Age distribution.

Age in years	N=35	%
<20	0	
20-25	8	22.8
26-30	18	51.4
>30	11	31.4

Most commonly postpartum eclampsia was observed in the age group of 26-30 years of age

Table 2: Parity.

Parity	N=35	%
Primi	15	42.8
Multi	20	57.2

Postpartum eclampsia was more common in multigravida

Table 3: Mode of delivery.

Mode	N=35	%
SVD	8	23
AVD	2	6

Most commonly postpartum eclampsia was after a cesarean section

Table 4: Uric acid levels.

Range	N=35	%
Less than 5	5	14.2
5-7	10	28.5
7-9	20	57

Uric acid levels tested after a seizure episode was at a higher level of 7-9 mg/dl

Table 5: Number of eclamptic episodes.

No. of convulsions	N=35	%
1 episode	19	54.2
2-4 episodes	16	45.8

Most commonly patients presented with only one episode of GTCS

Table 6: Prodromal symptoms.

Symptoms	N=35	%
Headache	27	77
Blurring of vision	13	37
Vomiting	8	22
Loss of consciousness	4	11
No prodromal symptoms	2	6

Most common prodromal symptom observed in patients was headache followed by blurring of vision. Albeit, hyperreflexia being the most common sign

Table 7: Time of onset.

Duration	N=35	%
<24 hours	15	42.8
24-48 hours	4	11.4
48-72 hours	1	2.8
3-7 days	7	20
7-14 days	6	17
>14 days	2	6

Most common time of onset -3 to 7 days postpartum

Table 8: MRI findings.

MRI finding	N=35	%
Normal	6	17
PRES	24	69
CVT	1	3
Cerebral edema	2	6
Encephalitis	2	6

Most common MRI finding was PRES in postpartum eclampsia

Table 9: Fundus findings.

Fundus	N=35	%
Normal	27	77%
Hypertensive retinopathy	8	23%

Most patients had a normal fundus finding, while 23% had features of hypertensive retinopathy

Table 10: Urinalysis.

Urine albumin	N=35	%
Nil	3	8.5%
3+	8	22.8%
4+	20	57%

Significant proteinuria was observed in 57% patients

DISCUSSION

Eclampsia is a poorly understood multi system complication of pregnancy that substantially contributes to maternal morbidity and mortality. Cerebral pathology is the major cause for morbidity and mortality in postpartum eclampsia. MRI is superior to CT in showing gray- white matter junction lesions that are considered diagnostic of eclampsia.²

Definitions

Generally, eclampsia which occurs either before or within 48 hours of delivery- known as early postpartum eclampsia. Eclampsia occurring more than 48 hours but less than four weeks after delivery is known as late postpartum eclampsia.

Late postpartum eclampsia was initially thought to be very uncommon. However, recent data suggests that the timing of eclampsia is changing in the developed countries and late postpartum eclampsia may account for 16–18% of all eclampsia cases. Early discharge of postpartum patients, infrequent follow-up in the postpartum period, lack of awareness amongst postnatal mothers about the prodromal signs and symptoms, increased interval between delivery and eclampsia, and an atypical presentation may be contributing factors for this changing trend. The most robust predictive factor for postpartum eclampsia is an increase in mean arterial pressure (MAP >10 mmHg) in antenatal period, these women were found to have more than a threefold risk of readmission in the postpartum period with severe preeclampsia or eclampsia.³ Now studies have shown that soluble endoglin levels, SFLT1s in blood, is more specific in the prediction of postpartum eclampsia.

The probable cause of rise in the incidence of atypical eclampsia is mobilisation of interstitial fluid back to intravenous compartment, in the immediate postpartum period, which in turn causes increased left sided filling pressure, a hyper dynamic status, which causes acute hypertension, cerebral edema and eclampsia.⁴ Post-delivery intravenous fluid overload can worsen this condition, even in normotensive women, causing an atypical eclampsia. In our study, 45.7% presented as atypical eclampsia. Cases of late atypical postpartum eclampsia upto 8 weeks have been described.⁵

The pathogenesis of eclampsia generally includes two theories- Endothelial cell dysfunction in response to severe acute hypertension which leads to vaso spasm. This causes ischemia, cytotoxic edema, tissue infarction. Sudden elevations of BP exceed the normal cerebrovascular autoregulatory capacity. Regions of forced vasodilation and vasoconstriction develops, especially in arterial boundary zones. This leads to vasogenic edema. It is reasonable to conclude that eclampsia occurs as a result of both vasogenic and cytotoxic edema.

Presentation

The most common signs and symptoms heralding the onset of eclampsia include headache, hyperreflexia, absolute or relative hypertension (defined as 30/15 mmHg increase over baseline), proteinuria, oedema, and visual disturbances.⁶

Headache and scotomata occur due to the cerebrovascular hyperperfusion. Convulsions occur due to excessive

release of neurotransmitter like glutamate, massive depolarisation of network neurons, bursts of action potential.

The most significant findings in neuroimaging studies are signs of vasogenic edema in the occipital region., which also contributes to blindness or amiosis fugax in eclampsia. The most common MRI finding is posterior reversible encephalopathy syndrome (PRES) which is characterised by hyper intense T2 lesions in the parietal and occipital lobes. Basal ganglia, brain stem may also be involved. Almost always reversible, a fourth of this hyperintense lesions show cerebral infarction.

Dutch follow up studies show signs of neurological sequelae, post eclampsia. Women with eclampsia have shown to have cognitive decline and a poor vision related quality of life in 5-10 years. Studies have shown long term persistence of white matter lesions in 40% patients post eclampsia.⁷

We infer from our study that, with a high index of suspicion, we can predict earlier the occurrence of postpartum eclampsia. It was more common immediate postpartum, followed by day 3- day 6 post. Hence, we should be very vigilant in BP monitoring immediately post-delivery and day 3- day 6 post. Intravenous fluids are not to be overloaded post-delivery. MRI is to be done in all patients presenting with atypical presentations of postpartum eclampsia. In our study most common MRI finding was PRES. 17% had normal neuroimaging. Awareness in all the postnatal mothers is crucial, regarding the prodromal signs and symptoms of postpartum eclampsia. In our study, headache was the most common symptom, followed by blurring of vision. Hyperreflexia is the most common sign. Magnesium sulphate is the treatment of choice.

Limitations

Sample size and study period is very less. Other parameters like contributing factors to late postpartum eclampsia and atypical postpartum eclampsia was not analysed in detail.

CONCLUSION

This study emphasises the need for high index of suspicion, a timely diagnosis, awareness amongst postnatal mothers the prodromal symptoms, a multidisciplinary approach – to effectively reduce the morbidity and mortality of postpartum eclampsia.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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