

# Spectrum of Neurological Complications in Eclampsia in a Tertiary Care Hospital in India

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## Abstract

**Objective:** Preeclampsia or eclampsia is associated with significant maternal morbidity and mortality, and neurological complications are varied. This prospective observational study sought to collect data and push for early aggressive diagnostic evaluation for neurological complications in eclamptic women.

**Methods:** The study was conducted in Lady Hardinge Medical College and associated Shrimati Sucheta Kriplani Hospital in New Delhi, India from July 2014 to July 2016. All women who underwent Caesarean delivery (CD) and had preeclampsia were identified, and eclamptic women who had CD and required critical care in the ICU were further followed up.

**Results:** A total of 741 women (of the 5564 women with CDs) had preeclampsia. Of the 63 women in whom eclampsia developed, 32 required ICU admission. The incidence of neurological complications associated with eclampsia was 20.63%, and it was 40.62% among patients admitted to the ICU. In the patients who developed neurological complications, the mortality rate was 46.15%.

**Conclusion:** Neurological complications are not uncommon in eclampsia, and a high index of clinical suspicion is essential for early detection and proper management of these patients. All patients with eclampsia and neurological complications had raised systolic blood pressure, but not all had thrombocytopenia. Despite control of seizure with MgSO<sub>4</sub>, the incidence of neurological complications remains high.

## Résumé

**Objectif :** La prééclampsie et l'éclampsie sont associées à une morbidité et à une mortalité maternelles importantes, et à diverses complications neurologiques. Cette étude observationnelle prospective avait pour but de recueillir des données et de générer des arguments pour la réalisation précoce d'une évaluation diagnostique rigoureuse des complications chez les femmes éclamptiques.

**Méthodologie :** Cette étude a été menée de juillet 2014 à juillet 2016 au Lady Hardinge Medical College et à un hôpital affilié, le Shrimati Sucheta Kriplani Hospital, à New Delhi (Inde). Nous avons repéré toutes les femmes prééclamptiques ayant accouché

par césarienne, et avons assuré un suivi auprès de celles ayant développé une éclampsie et nécessité des soins à l'USI.

**Résultats :** Au total, 741 femmes (sur les 5 564 ayant accouché par césarienne) ont été atteintes de prééclampsie. Parmi les 63 femmes qui ont développé une éclampsie, 32 ont été admises à l'USI. L'incidence de complications neurologiques était de 20,63 % chez les femmes éclamptiques, et de 40,62 % chez celles hospitalisées à l'USI. Le taux de mortalité chez les patientes ayant développé ce type de complications était de 46,15 %.

**Conclusion :** Les complications neurologiques n'étant pas rares chez les patientes éclamptiques, il est essentiel de maintenir un haut niveau de suspicion clinique pour une détection précoce et une prise en charge adéquate. Les patientes éclamptiques ayant développé des complications présentaient toutes une tension artérielle systolique élevée, mais pas toutes une thrombopénie. Même si les convulsions peuvent être maîtrisées par l'administration de MgSO<sub>4</sub>, l'incidence des complications neurologiques demeure élevée.

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## INTRODUCTION

Preeclampsia, the most common serious medical disorder of human pregnancy, complicates around 3% to 10% of pregnancies worldwide.<sup>1</sup> This incidence is much higher in developing countries because of a lack of access to proper antenatal care. Eclampsia (defined as new onset grand mal seizures in a patient with or without pre-existing preeclampsia without any underlying neurological disorder) and its consequences, such as intracranial hemorrhage, are some of the primary mechanisms by which preeclampsia exerts its fatal maternal influence, along with acute pulmonary edema and hepatic rupture. Eclampsia is responsible for 15% of all maternal deaths worldwide.<sup>2</sup> In fact, the incidence in our own institution, Lady Hardinge Medical College and Associated Hospitals in New Delhi, India, is as high as 16.7%.<sup>3</sup>

In addition to mortality, preeclampsia or eclampsia is associated with significant morbidity, and eclamptic women have

**Key Words:** Eclampsia, preeclampsia, neurological complications, seizures, maternal mortality, MgSO<sub>4</sub>

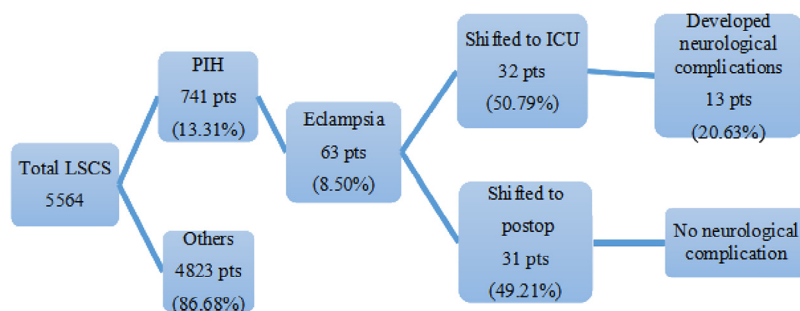
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Figure 1. Study results.



LSCS: lower segment Caesarean section; PIH: pregnancy-induced hypertension; postop: postoperative.

a three-fold to 25-fold increased risk of developing severe maternal and fetal complications. Again, it is the neurological manifestations of this condition that contribute largely to this morbidity in the mother, including blindness, persistent neurological deficits secondary to stroke, and later cognitive impairment.<sup>4</sup> The wide spectrum of neurological complications associated with eclampsia can range from cerebral edema, posterior reversible encephalopathy syndrome, and ischemic stroke to intracranial hemorrhage including intraparenchymal, subdural, basal ganglia, and pontine hemorrhage. The fetal complications can vary from intrauterine growth retardation, prematurity, and fetal bradycardia or distress to death.

Because ours is a tertiary care referral centre, we see a greater proportion of sick obstetric patients, including a high number of eclamptic women with uncontrolled blood pressure who develop neurological complications. Although the incidence of these complications was high, there were as yet no data available on the actual incidence of neurological complications occurring in eclamptic women in our institution, nor was there a protocol to determine which eclamptic patients should undergo diagnostic radiological investigations and when. Through this observational study we wished to collect data and push for early aggressive diagnostic evaluation for neurological complications in eclamptic women.

**METHODS**

We conducted this prospective observational study at Lady Hardinge Medical College and its associated Shrimati Sucheta Kriplani Hospital over a course of 2 years, from July 2014 to July 2016. All women who underwent Caesarean deliv-

**ABBREVIATIONS**

- CD Caesarean delivery
- PRES posterior reversible encephalopathy syndrome
- SBP systolic blood pressure

ery and who had preeclampsia were identified. Eclamptic women who delivered by CD and who required critical care in the ICU were further followed up. Data were collected and entered into a structured proforma. Patients with chronic hypertension, seizure disorder, or diabetes mellitus were excluded from the study population. Demographic and obstetric data (age, height, weight, gravidity, antenatal visits), indication for CD, choice of anaesthesia, neurological manifestations (headache, impaired consciousness), CT findings (type, location of lesion), therapeutic data (treatment history, course of ICU stay), maternal outcome (discharge, transfer, disability, death), and fetal outcome (Apgar score, prematurity, live birth, intrauterine death) were recorded and analyzed.

**RESULTS**

We observed that 5564 women underwent CD during the course of these 2 years, and 741 (13.31%) of these patients had preeclampsia. Of these 741 patients, 63 (8.50%) developed eclampsia. Of the 63 eclamptic women, 32 (50.79%) required critical care and were shifted to the ICU, and during the course of ICU stay 20.63% of these women (13 of 32) developed neurological complications. Fortunately, the 31 patients (49.21%) who were shifted to the postoperative ward had an uneventful postoperative period (Figure 1).

The mean age of the 63 eclamptic patients was 24.60, the mean height was 151.12 cm, and the mean weight was 52.42 kg. Most of our patients were primigravida, and most of the cases (65.08%) were unbooked pregnancies in women who did not receive any antenatal care. A total of 93.65% of our patients underwent CD under emergency conditions. Thirty-six of the 63 patients received general anaesthesia, whereas 27 received spinal anaesthesia (Table 1).

On preoperative examination, 36 of our patients were conscious and alert, whereas 22 were in the post-ictal phase, and five were unconscious (Table 1). All of our patients had

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