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Eclampsia in Pregnancy: A Prospective Study on Incidence, Management, and Maternal Characteristics

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Abstract:

Introduction: Eclampsia, characterized by generalized convulsions associated with preeclampsia during pregnancy, labor, or within 7 days post-delivery, remains a significant challenge in maternal healthcare. This study explores the incidence, management, and maternal characteristics of eclampsia, emphasizing the importance of early diagnosis and timely intervention.

Materials and Methods: A two-year prospective study was conducted at a Tertiary Care Teaching Hospital, recruiting 821 pregnant mothers with eclampsia. Patients with other causes of pregnancy-related convulsions were excluded. Data on convulsion episodes, treatment modalities, and hypertension control were analyzed.

Results: The majority (66%) experienced 2 to 5 convulsion episodes, with a range from 1 to 40. Patients with more than 10 convulsions showed improved outcomes after the Loading Dose of MgSO4. Hypertension control solely through delivery was observed in 29% of cases, with additional administration of Calcigard in some instances.

Conclusion: Eclampsia, more prevalent in young primigravida patients, underscores the need for enhanced antenatal care surveillance. Early detection of pre-eclampsia through regular blood pressure monitoring and urine protein screening is crucial. Sensitization of healthcare providers at grassroots levels is imperative for ensuring timely diagnosis and effective management, thus positively impacting maternal and child care outcomes.

Keywords: Eclampsia, Pregnancy complications, Maternal health, Antenatal care, MgSO4 treatment, Pre-eclampsia, Convulsions, Hypertension, Primigravida, Obstetric care.

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INTRODUCTION

Eclampsia has long been identified as a clinical concern, dating back to the era of Hippocrates, presenting an ongoing challenge for healthcare providers. This condition is characterized by generalized convulsions associated with preeclampsia during pregnancy, labor, or within 7 days of delivery, excluding causes related to epilepsy or other convulsive disorders. The incidence of eclampsia is often regarded as an indicator of a nation's level of civilization.[1,2]

Globally, it is estimated that eclampsia contributes to approximately 50,000 maternal deaths annually.[3] The maternal mortality associated with eclampsia varies from less than 1% to nearly 20%, while perinatal mortality ranges from 2 to 8.6% in developed countries and up to 33.98% in developing nations. Serious complications affect up to 35% of women affected by eclampsia.[5-8]

In India, with a maternal mortality rate exceeding 200 per 100,000 live births, eclampsia accounts for 15% of these deaths. Even in Sri Lanka, where mortality due to eclampsia is 24 per 100,000, the scenario differs significantly from Western countries, where the rate is not more than 10%. The early marriage of 70% of Indian women before the age of 19 contributes significantly to the global burden of eclampsia and maternal mortality.[9,10]

Effective control of eclampsia faces challenges due to low utilization of antenatal and intrapartum care services. Patients often resort to hospital care as a last option, resulting in missed opportunities to detect pre-eclamptic phases. Additionally, the World Health Organization (WHO) estimates that only 40% of births in developing countries occur in health facilities.[11,12] Seeking delivery care is often delayed, contributing to maternal mortality. Even for women reaching hospitals, shortages of staff, equipment, and drugs in facilities may hinder proper care. Despite evidence supporting magnesium sulfate as the most effective anticonvulsant for preventing and treating eclampsia, its availability remains limited in many centers.

The primary goal of this thesis is to delineate the challenges impeding effective eclampsia control and propose measures tailored to the local context. This is crucial, as eclampsia is inherently preventable.

MATERIALS AND METHODS:

This prospective study was conducted at the Department of Obstetrics and Gynecology in a Tertiary Care Teaching Hospital over a span of 2 years.

Inclusion criteria:

All patients presenting with eclampsia during the specified period were included in the study.

Exclusion criteria:

- Patients with a previous history of epilepsy

- Patients with a known case of hypertension

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- Individuals with an established neurological deficit of any other etiology

All patients diagnosed with eclampsia during the study period and admitted directly to the labor ward were included. Exclusion criteria encompassed patients with convulsions attributed to causes such as cerebral malaria and epilepsy. Upon admission, a comprehensive history was obtained, followed by a thorough clinical examination and a bedside test for proteinuria. Laboratory investigations included a complete blood count, liver function test, and renal function test. A total of 821 pregnant mothers with eclampsia, admitted to the inpatient department of the tertiary care teaching hospital, were enrolled in the study, regardless of their previous antenatal check-up history.

Patients admitted with hypertension were managed using oral Nifedipine (20mg–60mg in divided doses) and/or Alpha Methyldopa (750mg–3000mg in divided doses per day) or Labetalol. Magnesium Sulphate was recognized as the anticonvulsant of choice during the review period, and the Pritchard regimen was uniformly applied in all cases.

Statistical Analysis:

The data were presented through tables, utilizing descriptive statistics such as absolute numbers, measures of central tendencies, and measures of dispersion. Microsoft Excel was employed for data entry into a spreadsheet, and statistical analysis was carried out using SPSS 18.0. The Chi-square test was utilized to assess relationships between variables, with a P-value <0.05 considered statistically significant.

RESULTS

The majority of patients (71%) fell within the age group of 20–25 years, with 13% in the 25–30 years category. About 8% were below 20 years, and a similar percentage was over 30 years old. Patient ages ranged from 18 to 37 years.

Table 1: Age Distribution Of Study Participants

Age	Frequency	Percent
<20	65	7.9
20-25	584	71.1
25-30	107	13.1
30 and above	65	7.9
Total	821	100

Concerning gravidity, 76% were primigravidae, 10% experienced their second pregnancy, 9% were at parity 3, 4% at parity 4, and 1% were Grandmultipara patients.

Table 2: Distribution Of Parity Among Study Participants

Parity	Frequency	Percent
1	623	76%
2	86	10%
3	74	9%
4	29	4%

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>4	9	1%
Grand Total	**821**	**100%**

Gestational age analysis revealed that 62% of patients were between 28 and 37 weeks, 14% were between 37 and 40 weeks, 5% were less than 28 weeks, and 4% had surpassed their expected delivery date. Postpartum eclampsia cases, constituting 15%, did not have applicable gestational age information.

Table 3. Distribution Of Gestational Age In Study Participants

Gestation Age (in weeks)	Number of Patients	%age of Patients
<28 weeks	40	5%
28-37 weeks	508	62%
37-40 weeks	118	14%
>40 weeks	29	4%
Not Applicable	126	15%
Grand Total	**821**	**100%**

Regarding the frequency of convulsions, the majority (66%) experienced between 2 and 5 episodes, with a minimum of 1 episode (13%) and a maximum of 40 convulsions. Among the 66 patients with more than 10 convulsions, 30 had not received prior treatment before referral, while none had more than 10 convulsions after the Loading Dose of MgSO4. Patients with less than 5 convulsions who received only the IM Dose of MgSO4 were 1.5 times more than those receiving the Loading Dose (228/154 = 1.48). The calculated X2 value was 161.814, with a highly significant P-value of 0.0007, indicating the significance of treatment before referral concerning the number of convulsions.

Table 4. Distribution of number of convulsions in study participants

No of Convulsions	Patient count	%age
1	110	13%
2 – 5	539	66%
5 - 10	106	13%
>10	66	8%
Grand Total	**821**	**100%**

In terms of blood pressure, 54% of patients had systolic BP between 140 and 160 mm Hg, 31% had SBP above 160 mm Hg, and less than 15% had SBP less than 140 mm Hg. For diastolic BP, 68% fell between 90 and 110 mm Hg, 19% had DBP > 110 mm Hg, and 13% had DBP < 90 mm Hg at presentation.

Table 5: Treatment before referral and number of convulsion among study participants.

	<5	5-10	>10	Total
No Rx	124	19	30	173
Antihypertensive only	96	20	9	125
Loading dose mgso4 + antihypertensive	154	38	0	192

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IM dose mgso4 + antihypertensive	228	29	18	275
Diazepam + antihypertensive	47	0	0	47
Epsolin + antihypertensive	0	0	9	9
Total	649	106	66	821

Table 6. Bp On Admission Of Study Participants

Systolic		
<140	122	15%
140-160	448	55%
>160	251	31%
Grand Total	**821**	**100%**
Diastolic		
<90	104	13%
90-110	557	68%
>110	160	19%
Grand Total	**821**	**100%**

For 29% of patients, hypertension was controlled by delivery alone. Those requiring additional intervention received Calcigard (Nifedipine), achieving BP control with 10 mg BD in 37% and 20 mg BD in 16% of cases.

Table 7. Antihypertensive Treatment Post Delivery

Antihypertensive RX		
No Rx	241	29%
10 mg Calcigard	303	37%
20 mg Calcigard	134	16%
Diazepam + Calcigard	58	7%
Labetalol + Calcigard	29	4%
Atenolol + Calcigard	56	7%
Grand Total	**821**	**100%**

Additional drugs were needed in 18% of cases, including Diazepam (7%), Labetalol (4%), and Atenolol (7%), in addition to Calcigard.

DISCUSSION

The demographic characteristics of our study population align with findings from other studies, reinforcing the trend that eclampsia is more prevalent among young primigravida patients. In our study, the majority (71%)

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were in the age group of 20–25 years, with 13% and 8% in the age groups of 25–30 years, and less than 20 or more than 30 years, respectively. This echoes a study conducted in Berhampur, Odisha, by Behera et al., where patients under 20 years constituted 44.3%, those between 20–30 years were 53.8%, and those over 30 years accounted for 1.9%.[13]

The parity distribution in our study revealed that 76% of patients were primigravidae, while 10%, 9%, 4%, and 1% had their second, third, fourth, and fifth pregnancies, respectively. Comparative studies by Behera et al., Rajshri et al., Ebeigbe et al., and Okogbenin et al. also reflected a higher incidence of eclampsia in primigravidae.[14-16]

Gestational age at presentation indicated that 62% of patients were between 28 and 37 weeks, with 14% between 37 and 40 weeks, 5% less than 28 weeks, and 4% beyond their expected date of delivery. Similar findings were noted by Dhananjay et al. in Tumkur, Karnataka.[17]

Concerning the number of convulsions, the majority (66%) experienced between 2 and 5 episodes, with a minimum of 1 episode (13%) and a maximum of 40. Comparative studies by Dhananjay et al. and Behera et al. also observed variations in the number of convulsions.

Blood pressure levels at presentation showed that 54% had systolic BP between 140 and 160 mm Hg, 31% had SBP above 160 mm Hg, and less than 15% had SBP less than 140 mm Hg. For diastolic BP, 68% fell between 90 and 110 mm Hg, 19% had DBP > 110 mm Hg, and 13% had DBP < 90 mm Hg, consistent with findings by Dhananjay et al.[17]

Complications in our study were predominantly associated with shock following delivery (7%), HELLP Syndrome (6%), and postpartum hemorrhage (5%). These findings are in line with various studies documenting complications associated with eclampsia.[17]

Hypertension control measures indicated that 29% of patients achieved control through delivery alone, while additional interventions, such as Calcigard, were administered. Calcigard alone achieved BP control at 10 mg BD in 37% and at 20 mg BD in 16% of cases. This aligns with findings by Dhananjay et al., emphasizing the need for multiple antihypertensive agents in some cases.[17]

At the time of discharge, the proportion of patients requiring antihypertensive medication versus those not requiring it was nearly equal (48% and 46%, respectively). However, 6% of patients had expired, making this aspect not applicable for this subgroup.

CONCLUSION:

Eclampsia predominantly affects young primigravida patients, underscoring the importance of heightened surveillance during antenatal care for early detection of pre-eclampsia. The establishment of intensive care facilities and ongoing construction projects for enhanced maternal and child care are promising developments. However, their impact depends on the sensitization of healthcare providers at the grassroots level to ensure early diagnosis and prompt treatment initiation. Community health education is crucial to increase awareness among pregnant women about the importance of antenatal care and safe delivery at nearby health posts. These efforts collectively aim to reduce the burden of eclampsia and improve maternal and child health outcomes.

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References

1. Majhi AK, Mondal A, Mukherjee GG. Safe motherhood- a long way to achieve. J Indian Med Assoc 2001;99:132-137
2. Duley L. Maternal mortality associated with hypertensive disorders of pregnancy in Africa, Asia, Latin America and the Caribbean. Br J Obstet Gynaecol 1992; 99: 547-553
3. Cunningham FG. MacDonald PC, Gant NF, Editors: William's Obstetrics. 18th Ed. Norwalk. Conn: Appleton and Lange 1989
4. Sibai BM, McCubbin JH, Anderson GD, Lipshitz J, Dilts PV Jr. Eclampsia: observation from 67 recent cases. Obstet Gynecol 1981; 58:609-613
5. Sardesai SS, Maira S, Patel A, Patel U. Low dose magnesium sulphate therapy for eclampsia and imminent eclampsia: regime tailored for Indian women. J Obstet Gynaecol Ind 2003; 53:546-550
6. Sibai BM, Cunningham FG: Prevention of preeclampsia and eclampsia. In Lindheimer MD, Roberts JM, Cunningham FG (eds): Chesley's Hypertensive Disorders of Pregnancy, 3rd ed. New York, Elsevier; 2009
7. Barrilleaux PS, Martin JN: Hypertension therapy during pregnancy. Clin Obstet Gynaecol 2002;45:22.
8. Robillard PY, Hall DR, Rademacher LH, Williams P, et al. Current debates on immunology of preeclampsia. Report of the sixth international workshop of Reunion Island (Indian Ocean, Dec 2008) Gynaecol Obstet Fertil 2009;37:570-57).
9. Gelband H, Liljestrand J, Nemer L: The evidence base for interventions to reduce maternal and neonatal mortality in low and middle-income countries. CMH Working Paper Series, SWG5 Paper No.5.
10. Lindheimer MD, Roberts JM: Chesley's hypertensive disorders in pregnancy 2nd ed. Stamford, CT, Appleton& Lange 1999,P3.
11. NHBPEP-2000. Report on the national high blood pressure working group on high blood pressure in pregnancy, Am J obstet gynaecol 2000;183:S1.
12. Levine RJ, Ewell MG, Hauth JC, et al: Should the definition of preeclampsia include a rise in diastolic blood pressure of >/= 15 mm Hg to a level < 90 mm Hg in association with proteinuria? Am J Obstet Gynecol 183:787, 2000
13. Behera A.K.: Eclampsia In Eastern India: Incidence, Demographic Profile And Response To Three Different Anticonvulsant Regimes Of Magnesium Sulphate. *The Internet Journal of Gynecology and Obstetrics*. 2011(15) : 2.
14. Alexander JM, McIntire DD, Leveno KJ, et al: Selective magnesium sulfate prophylaxis for the prevention of eclampsia in women with gestational hypertension. Obstet Gynecol 108:826, 2006 De Swiet M ,BP measurement during pregnancy, BJOG,1996;103:862
15. Ebeigbe PN, Aziken ME. Early onset pregnancy-induced hypertension/eclampsia in Benin City, Nigeria.Niger J Clin Pract. 2010;13(4):388-93.
16. Okogbenin, J O Eigbefoh, F Omorogbe, F Okogbo, et al. Eclampsia in Irrua Specialist Teaching Hospital: a five-year review. Niger J Clin Pract. 2010;13(2):149-53.
17. Dhananjay BS ,.Dayananda G, Sendilkumaran D. , Murthy N. A study of factors affecting perinatal mortality in Eclampsia. JPBS 2009 (22) : 2