



Original Research Article

Pregnancy outcome in severe preeclampsia and eclampsia patients: A study from North Indian tertiary health care institution

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Abstract

Introduction: Hypertensive disorders of pregnancy comprising of pre-eclampsia and eclampsia are a major cause of adverse pregnancy outcomes. Neurological manifestations of pregnancy induced hypertension are the most common cause of maternal and foetal morbidity and mortality. Cranial neuro-imaging reveals focal regions of symmetric hemispheric oedema; with parietal and occipital regions getting most commonly affected.

Methods: The study was conducted among 65 antenatal women diagnosed with pre-eclampsia and eclampsia at gestational age >20 weeks in the Department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother and child IGMC Shimla.

Results: The maternal age range in majority (77%) of subjects with preeclampsia and eclampsia in the present study was 20-29 years. Most of the subjects in our study were primigravidae (58.46%). In our study 17.18% of the mothers presented with IUD at the time of admission and 14.51% had still births

Conclusion: The timely intervention may lower the morbidity and mortality among mothers with severe preeclampsia and eclampsia, which accounts for one tenth of all maternal deaths.

Keywords: Antenatal women, Pregnancy induced hypertension, Neuro-imaging.

Introduction

Hypertensive disorders of pregnancy comprising of pre-eclampsia and eclampsia are a major cause of perinatal adverse outcomes both in terms of adverse maternal and foetal outcomes.¹ These are the most common medical complications of pregnancy, with a reported incidence ranging between 6% and 8%.² They are an important cause of severe morbidity and mortality among mothers and babies. In Africa and Asia, hypertensive disorders of pregnancy, especially

eclampsia, are associated with nearly one-tenth of all maternal deaths.³

Despite availability of intensive care unit and improved antenatal care still some women die of eclampsia. The most common cause of death is cerebral complications.⁴ Neurological manifestations of pregnancy induced hypertension vary from diffuse symptoms such as headache and confusion to focal signs such as paralysis and visual loss. Computerized tomography (CT) Scan and magnetic resonance imaging (MRI) have

greatly enhanced our understanding of the correlation between neurological complaints and neuroanatomic pathological changes characteristic of Preeclampsia (PE) and Eclampsia (E).⁵ Cerebral microcirculation is the major target.⁶ Acute fluctuation of blood pressure leads to failure of cerebral autoregulation. In response to acute and severe hypertension, cerebrovascular overregulation leads to vasospasm resulting in ischemia, cytotoxic edema and eventually tissue infarction.

Posterior reversible encephalopathy syndrome (PRES) refers to a clinical and radiological entity presented by headache, altered mental state such as confusion, lethargy, cortical visual disturbances and seizures with transient edematous changes of subcortical white matter on neuroimaging.⁷ Neuro-Imaging of brain typically demonstrates focal regions of symmetric hemispheric oedema, parietal and occipital lobes are commonly affected followed by the frontal lobes, inferior temporal occipital junction and the cerebellum.⁸ Eclampsia patients who are refractory to MgSo₄ and antihypertensive therapy have significant CNS pathology.⁴

Although several studies have been conducted to correlate the various clinical and laboratory parameters with abnormalities on neuro-imaging, yet only a few studies provide information on predictors of outcome in eclamptic encephalopathy.⁹ Keeping all the considerations in mind and dearth of such studies in the region, the present study was conducted with a purpose to determine the spectrum of neuro-Imaging findings in patients with severe preeclampsia and eclampsia.

Materials and Methods

Study Area and Population: The study was conducted among the pregnant women attending antenatal clinic in the Department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother and child IGMC Shimla.

Study Design: Descriptive observational study.

Study Period: One year from July 2016 to June 2017.

Study Sample: As it was a time bound study, a total of 65 subjects (preeclampsia and eclampsia patients) were included in study.

Inclusion and Exclusion Criteria: Pregnant women diagnosed with pre-eclampsia and eclampsia at gestational age >20 weeks singleton pregnancy were included in the study while women with essential hypertension, liver disease, septicemia cortical vein thrombosis, tuberculoma, neurological infections, epilepsy, encephalitis, brain abscess, neurological tumors and cerebral malaria were excluded.

Study Tool: A study proforma was designed to collect and record socio-demographic parameters, antenatal history, previous medical and reproductive history, clinical signs and symptoms, plan and mode of delivery and maternal/foetal outcomes were recorded on the proforma.

Methodology: Standard case definitions were utilized to identify study participants. Patients with severe preeclampsia/eclampsia at 20 weeks or beyond were enrolled for this study. On admission detailed history was taken including warning signs and symptoms i.e. headache, blurring of vision, visual field scotomas, blindness, nausea/vomiting, pain epigastrium swelling feet. Time of onset of seizure, duration & type of seizure: tonic clonic movement, uprolling of eyeballs, frothing from mouth, deviation of head, post seizure confusion, number of seizures and any focal neurological deficit were also noted. These patients were managed in the emergency set up in labour room.

Sociodemographic variables were recorded on proforma, which was followed by general physical examination, obstetrical examination and biochemical analysis. Renal sonogram was done in subjects with chronic hypertension and decreased urinary output. All subjects enrolled for this study received antihypertensives and seizures prophylaxis with Magnesium Sulphate (Pritchards Regimen). Subjects at gestation <34 weeks received antenatal glucocorticoids for fetal

pulmonary maturity. Pelvic and cervical assessment was done after stabilizing the patient and mode of delivery was decided accordingly. Caesarean section was done for the obstetric and medical indications only. Labour was monitored partographically. Second stage was cut short by prophylactic outlet forceps/ventouse. Labour and Neonatal parameters were recorded according to the performa.

Statistical Analysis: Data were entered into Microsoft Excel spreadsheet, cleaned and transferred to Epi Info version 7.2.2.6 software for analysis. Continuous variables were presented as mean scores \pm standard deviations while discrete variables as percentages and proportions of each. Pearson's Chi-squared was used to test the statistical significance of categorical data respectively. Mean of variables was compared using Independent t- test after checking normality of data. Two tailed P value < 0.05 was considered as statistically significant for all analysis.

Ethical Considerations: Prior permission was taken from Institute Ethical Committee. Personal identifiers were omitted in order to maintain confidentiality and anonymity. Potential harms and benefits were explained to the patient and guardian before taking consent. Patient was free to leave the study at any point of time and this didn't affect her clinical care. No financial expenditure was incurred by the patient for the sake of study.

Results

The study recorded the findings of 65 Pre-eclampsic/Eclampsic antenatal women with gestational age more than 20 weeks and presenting with neurological symptoms.

Table 1: Age Distribution

Age (in years)	Number (N=65)	Percentage
<20	3	4.61%
20-29	50	76.92%
30-39	10	15.38%
≥ 40	2	3.07%

It was observed that the youngest subject was 19 yrs old, the eldest was 42 yrs old and the mean age was 25.031 ± 5.6 yrs. Out of total 65 subjects, three (4.61%) were < 20 years, 50 (76.92%) subjects were between 20-29 years, 10(15.38%) subjects

were between 30-39 years & two(3.07%) were ≥ 40 years of age. Maximum subjects were between 20-29 years as the peak fertility is in this age group

Table 2: Obstetric Profile

Gravidity	Number (n=65)	Percentage
Primigravida	38	58.46%
Multigravida	26	40%
G2	11	16.92%
G3	15	23.07%
Postpartum	1	1.54%

G: Gravida

Table 2 shows the gravidity status of the enrolled subjects. Of 65 subjects with severe preeclampsia or eclampsia, 38(58.46%) subjects were primigravidae and 26(40%) subjects were multigravidae. 11(16.92%) subjects were G2 and 15(23.07%) were G3. Maximum number of subjects were primigravidae as the incidence of pre-eclampsia and eclampsia is more in primigravidae as compared to multigravidae. 64 subjects had severe preeclampsia /eclampsia during antenatal period. One subject (1.53%) developed severe features of preeclampsia followed by convulsions in the postpartum period.

Table 3: Gestational Age

Gestational age	Number (n=65)	Percentage
20-23 weeks 6 days	1	1.54%
24-27 weeks 6 days	6	9.23%
28-33 weeks 6 days	16	24.61%
34-36 weeks 6 days	28	43.07%
≥ 37 weeks	13	20%
Postpartum	1	1.54%

When the subjects admitted with severe preeclampsia or eclampsia were further stratified according to the gestational age at the time of admission, majority (43%) were at 34-36 weeks 6 days of gestation. Out of 65 subjects, one (1.54%) subject was at period of gestation 20-23 weeks 6 days, six (9.23%) were at period of gestation 24-27 weeks 6 days, 16(24.61%) were between 28 weeks-33 weeks 6 days, 13(20%) subjects were at period of gestation ≥ 37 weeks and one (1.54%) subject was postpartum. Most of the subjects either developed preeclampsia or eclampsia late in the 3rd trimester.

Table 4: Type of Hypertensive Disorder according to Severe Pre Eclampsia/ Eclampsia

Status	Number of subjects (n=65)	Percentage
Severe pre-eclampsia	51	78.46%
Eclampsia	14	21.54%

It was observed that of 65 subjects, 51(78.46%) had severe preeclampsia and 14(21.54%) subjects had eclampsia.

Table 5: Fetal Heart Rate at the of time of Admission

Status	Number (n=64)	%
Present	53	82.81%
Absent	11	17.18%

It was observed that out of 64 subjects, 53 (82.81%) subjects had live fetus in utero and 11(17.18%) subjects presented with intrauterine death at the time of admission.

Table 6: Fetal Outcome

Fetal outcome	Number of neonates (n=62)*	Percentage
Live births	53	85.48%
Still births	9	14.51%

One subject had postpartum eclampsia and was admitted after delivery. Two subjects had abortion (birth weight <500g).

It was observed that out of 62 subjects who had fetus in utero at the time of admission, 53(85.48%) subjects had live birth, nine (14.51%) subjects had still birth.

Table 7: Birth Weight

Birth weight (kgs)	Number (64*)	Percentage
<0.5 kg	2	3.12%
0.5-0.99 kgs	11	17.18%
1-1.49 kgs	14	21.87%
1.5- 1.99 kgs	8	12.5%
2-2.49 kgs	22	34.37%
≥2.5 kgs	7	10.93%

*One subject had postpartum eclampsia and she delivered at home, two subjects had abortion with birth weight <500g.

It was observed that out of 64 subjects, 11(17.18%) had birth weight in the range 0.5-0.99kg, 14(22%) had birth weight in the range 1-1.49kgs, 8(12.5%) had birth weight in range 1.5-

1.99 kg, 22(34.37%) had birth weight in range 2-2.49 kg and seven (11%) had birth weight of ≥2.5kgs

Table 8: Apgar score and admission to Neonatal Intensive Care Unit

APGAR SCORE	Number (53)	Percentage
Normal(7&9)	37	69.81%
Low(<7&9)	16	30.18%
Required, NICU admission	20	37.73%
Did not require NICU Admission	33	62.26%

NICU: Neonatal Intensive care unit

Table depicts the APGAR scores of neonates born to mothers with severe preeclampsia and eclampsia. Total live births were 53. 69.81% (37/53) neonates were born with normal APGAR scores and 30.18% (16/53) were born with low APGAR scores.

It was observed that out of 53 live births, 20(37.73%) neonates required admission in NICU and 33(62.26%) neonates did not require NICU admission. The most of the neonates were admitted to NICU due to prematurity and low birth weight.

Discussion

The maternal age range in majority (77%) of subjects with preeclampsia and eclampsia in the present study was 20-29 years. Only 5% were younger than 20 years. On the contrary in the study conducted by Patil MM et al⁵ majority (46%) of subjects were < 20 years. The difference could be due to higher literacy rate in our state i.e. 76.6% which is 2nd highest in the country.¹⁰ Most of the subjects in our study were primigravidae (58.46%). Similar findings were there in the studies by Sibai and Cunningham.¹¹

43.07% of the cases presented at gestational age >34 weeks. Singhal et al¹² also reported similar findings.

In our study 17.18% of the mothers presented with IUD at the time of admission and 14.51% had still births. 37.73% of the babies required admission to NICU which were mostly due to prematurity and low birth weight. Whereas in the study conducted by Shobha S. Pillai¹³ 6.36% had IUD, 2.72% had

still births and 33.63 % babies were admitted to NICU.

Conclusion

Preeclampsia and eclampsia continue to be significant causes of maternal and fetal morbidity and mortality. Maternal and perinatal mortality and morbidity due to preeclampsia can only be prevented by access to quality antenatal care, early diagnosis and recognition of risk factors, careful monitoring and timely interventions.

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