IMMINENT ECLAMPSIA AND ECLAMPSIA- RISKS FACTORS AND CLINICAL PRESENTATION, 2 YEARS STUDY

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Abstract

Background: The anatomical, Physiological and biochemical adaptations to Pregnancy are well orchestrated. In certain cases departure from this normal course leads to the pregnancy being complicated. Complications that so develop, endanger the life of both mother and her unborn child. One such dreaded complication is pregnancy induced hypertension. Eclampsia is defined as the pre- eclampsia when complicated with convulsion and/ or coma. However, eclampsia usually proceeds pre-eclampsia. It is one of the leading causes of maternal and perinatal mortality as well as morbidity, throughout the world. Approximately 50000 women die worldwide each year from eclampsia. The reported mortality rate ranges from 1-20%. The perinatal mortality rate of neonates born to eclamptic mothers ranges from 1.3-3%.

Aims: 1. To evaluate the risk factors and clinical presentation in women with imminent eclampsia preoperatively.

2. To evaluate the risk factors and clinical presentation in women with eclampsia.

Materials and Methods: The present study will be carried out in department of Obstetrics & Gynecology and MEDICINE of National Institute of Medical Sciences (NIMS), Jaipur from October 2012 to September 2014. The study will be conducted on the antenatal and postnatal women admitted in the inpatient department of NIMS, Jaipur. Study Design: Prospective and retrospective observational study. Study Period October 2012 to September 2014. All the women are evaluated for demographic data, antenatal history, obstetric history, menstrual history, medical and surgical history, mode of delivery, onset of eclampsia, treatment received and maternal and fetal complications.

Result: From the present study, it can be concluded that the age group 21-30 years is most prone for eclampsia and imminent eclampsia and the disease severity is higher in age group less than 30 years. Low socioeconomic status and poor educational status contribute to their increased incidence. These patients generally have higher proteinuria with headache followed by epigastric pain and vomiting. These women are mostly delivered by caesarian section and deliver low birth baby (< 2.5kg), which needs immediate attention and is admitted to nursery.

Conclusion: Eclampsia and imminent eclampsia is a major health problem in pregnant women. And it carries high morbidities and mortality. Eclampsia is more complicated than imminent Eclampsia.

Keywords: Eclampsia, hypertension, preeclampsia, proteinuria

Introduction

The anatomical, physiological and biochemical adaptations to pregnancy are well orchestrated. In certain cases departure from this normal course leads to the pregnancy being complicated. Complications that so develop, endanger the life of both the mother and her unborn child. One such dreaded complication is pregnancy induced hypertension.

Eclampsia is defined as the pre-eclampsia when complicated with convulsion and/or coma. Eclampsia is still commonly perceived as the end of a linear spectrum that stretches from normal pregnancy, through mild hypertension, Preeclampsia and finally eclampsia. However, eclampsia usually proceeds pre-eclampsia and an alternative view is that seizures are one of the ranges of signs and symptoms caused by the widespread endothelial cell damage secondary to an ischemic placenta.

It is one of the leading causes of maternal and perinatal mortality as well as morbidity throughout the world

Eclampsia is a preventable disease. Incidence of eclampsia is variable in different parts of world. Approximately 50,000 women die worldwide each year from eclampsia. The reported maternal mortality rate ranges from 1-20%. The perinatal mortality rate of neonates born to eclamptic mothers ranges from 1.3-3%. Most of these deaths are from developing nations. While it is on decline in developed countries, it is still one of the principle causes of maternal morbidity and mortality in developing countries like India.

Aims and Objectives

The present study was undertaken with the following aims and objectives:

1. To evaluate the risk factors and clinical presentation in women with imminent eclampsia
2. To evaluate the risk factors and clinical presentation in with eclampsia.

Materials and Method

The present study will be carried out in the Department of Obstetrics &Gynecology and medicine of national institute of medical sciences (NIMS), JAIPUR from October 2012 to September 2014. The study will be conducted on the antenatal and postnatal women admitted in the inpatient department of NIMS JAIPUR

Study Site: Department of Obstetrics &Gynecology and medicine in NIMS JAIPUR

Study Population: Antenatal and postnatal women admitted in the inpatient department.

Study Design: Prospective observational study.

Sample Size: 100 women were enrolled in the study.

Study Period: October 2012 to September 2014.

Inclusion Criteria

1. Women willing to give voluntary consent for participation in the study
2. Pregnant women with BP of >140/90 mm Hg with proteinuria, edema with convulsions.
3. Pregnant women with BP of > 140 / 90 mm Hg with proteinuria, edema with signs and symptoms suggestive of imminent eclampsia i.e. characterized by visual disturbance, headache or epigastric pain and / or signs of brisk reflexes.

Exclusion Criteria

1. Women who were not willing to provide voluntary consent for their participation in the study.
2. Women with neurological disorders like epilepsy, chronic hypertension, hepatic and cardiac diseases, vascular diseases and diseases cause convulsion other than the eclampsia.

Methodology

All the women are evaluated for demographic data, antenatal history, obstetric history, menstrual history, medical and surgical history, mode of delivery, onset of eclampsia, treatment received.

Statistical Analysis

Data was analyzed using MS Office Excel 2010. All the data was represented as number and percentages.

Previous studies so reviewed most of the studies have included approximately 100 women in their sample. Accordingly, to justify our sample size, we have also included 100 women in the study.

Results

INCIDENCE OF ECLAMPSIA AND IMMINENT ECLAMPSIA

Total number of Obstetric admissions: 3980

Total number of eclampsia cases seen: 46

Total number of imminent eclampsia cases seen: 54

Incidence of eclampsia: $46 / 3980 * 100$
1.15%

Incidence of imminent eclampsia: $54 / 3980 * 100$
1.35%

Table 1: Distribution of Women According to Age

Age Group	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
< 20 years	5	10.90	2	3.70
21-30 years	38	82.60	38	70.40
31-40 years	3	6.50	14	25.90
Total	46	100.00	54	100.00

In our study 5 (10.90%) eclampsia and 2 (3.70%)imminent eclampsia patients belonged to < 20 years age group, 38(82.60%)eclampsia and 38 (70.40%)imminent eclampsia patients belonged to 21-30 years age group and 3 (6.50%) eclampsia and 14 (25.90%) imminent eclampsia patients belonged to 31-40 years age group. Maximum number of patients was between 21-30 years age group.

Table 2: Distribution of Women According to Gestational Age

Gestational Age	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
20-30 weeks	7	15.2	12	21.93
30-40 weeks	29	63.04	42	77.77
Postnatal	10	21.74	2	3.70
Total	46	100.00	54	100.00

In our study 7 (15.20%) eclampsia and 12 (21.93%) imminent eclampsia women had gestational age between 20-30weeks,29

(63.04%) eclampsia and 42 (77.77%) imminent eclampsia patient had gestational age between 30-40 weeks. In postnatal period 10 (21.74%) eclampsia and 3 (2.70%) imminent eclampsia cases were seen. Maximum number of women has a gestational age between 30-40 weeks of pregnancy. Gestational age was also associated with severity of the disease. Women that were less than 30 weeks of gestational age had more severe disease.

Table 3: Distribution of Women According to Clinical Presentation

Clinical Presentation	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
Raised blood pressure	46	100.00	54	100.00
Headache	38	82.60	52	96.30
Vomiting	30	65.20	36	66.70
Epigastric pain	11	23.90	40	74.10
Abdominal edema	3	6.52	2	3.71

In our study blood pressure raised in all the cases of the eclampsia and imminent eclampsia women. Headache was seen in 38 (82.60%) eclampsia and 52 (96.30%) imminent eclampsia women, vomiting in 30 (65.20%) eclampsia and 36 (66.70%) imminent eclampsia women, epigastric pain in 11 (23.90%) eclampsia and 40 (74.10%) imminent eclampsia women and as cites was seen in 3 (6.52%) eclampsia and 2 (3.71%) imminent eclampsia women.

Table 4: Distribution of Women According to Past History of PIH

Past History of PIH	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
Absent	38	82.60	39	72.20
Present	8	17.40	15	27.80
Total	46	100.00	54	100.00

In our study 38 (82.60%) eclampsia women and 39 (72.20%) imminent eclampsia patients past history was not significant and 8 (17.40%) eclampsia and 15 (27.80%) imminent eclampsia women past history was significant.

Table 5: Distribution of Women According to Past History of PIH

Past History of PIH	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
Absent	38	82.60	39	72.20
Present	8	17.40	15	27.80
Total	46	100.00	54	100.00

In our study 38 (82.60%) eclampsia women and 39 (72.20%) imminent eclampsia patients past history was not significant and 8 (17.40%) eclampsia and 15 (27.80%) imminent eclampsia women past history was significant.

Table 6: Distribution of Women According to Past History of PIH

Past History of PIH	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
Absent	38	82.60	39	72.20
Present	8	17.40	15	27.80
Total	46	100.00	54	100.00

In our study 38 (82.60%) eclampsia women and 39 (72.20%) imminent eclampsia patients past history was not significant and 8 (17.40%) eclampsia and 15 (27.80%) imminent eclampsia women past history was significant.

Table 7: Distribution of Women According to Proteinuria

Proteinuria	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
2+	2	4.30	5	9.30
3+	30	65.20	37	68.50
4+	14	30.40	12	22.20
Total	46	100.00	54	100.00

In our study 2 (4.30%) eclampsia and 5 (9.30%) imminent eclampsia had proteinuria 2+, 30 (65.20%) eclampsia and 37 (68.50%) imminent eclampsia had proteinuria 3+, and 14 (30.40%) eclampsia and 12 (22.20%) imminent eclampsia women had proteinuria 4+.

Table 8: Distribution of Women According to Term / Preterm

Term / Preterm	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
Preterm	33	71.70	31	57.40
Term	9	19.60	23	42.60
Postnatal	4	8.70	0	0.00
Total	46	100.00	54	100.00

In our study 33 (71.70%) eclampsia and 31 (57.40%) imminent eclampsia women were delivered preterm, 9 (19.60%) eclampsia and 23 (42.60%) imminent eclampsia women delivered at term gestation and 4 (8.70%) eclampsia women were postnatal. Maximum number of eclampsia and imminent eclampsia women delivered preterm.

Table 9: Distribution of Women According to Mode of Induction

Mode of Induction	Eclampsia (N=46)		Imminent Eclampsia (N=54)	
	No.	%	No.	%
LSCS	18	39.13	27	50.00
Postnatal	4	8.70	0	0.00
Spontaneous	1	2.20	7	12.96
ARM	6	13.00	1	1.90
Cerviprim gel	6	13.00	13	24.10
Misoprostol	11	23.90	6	11.10
Total	46	100.00	54	100.00

In our study 18 (39.13%) eclampsia and 27 (50%) imminent eclampsia women were delivered by LSCS, 24 (60.9%) eclampsia and 27 (50%) imminent eclampsia delivered vaginally. Among those who delivered vaginally 1 (2.20%) eclampsia and 7 (12.96%) imminent eclampsia delivered spontaneously by vaginal route, 6 (13%) eclampsia and 1 (1.9%) imminent eclampsia were delivered after doing ARM, 6 (13%) eclampsia and 13 (24.1%) imminent eclampsia were delivered after inducing with cerviprime gel, and 11 (23.90%) eclampsia and 6 (11.10%) imminent eclampsia were delivered after inducing by misoprost.

Discussion

Despite advances in medical practices imminent eclampsia and eclampsia has remained a leading cause of maternal and perinatal morbidity and mortality throughout the world. It is a common problem in developing countries because of illiteracy, poor antenatal care, poverty, and lack of health awareness and health facilities.

Incidence

In our study incidence of imminent eclampsia was found to be 1.35% and that of eclampsia was 1.15%. Incidence of eclampsia in our study is lower than the studies carried out by Ndaboine EM *et al* (2012)^[16] and Onuh SO *et al* (2004)^[42] where the incidence of eclampsia was 1.37% and 1.32% respectively. Incidence of eclampsia in the present study is higher than the study carried out by Abalos E *et al* (2014),^[19] where the incidence of eclampsia was only 0.28%. The incidence of imminent eclampsia in the present study was lower than that reported by Doddamanil GB *et al* (2014).^[28] In his study overall incidence of preeclampsia is 8.3%. In our study incidence of imminent eclampsia was lower probably because these women being from a low socioeconomic status give first preference to the government run institutions and only in case, they are affording, they are referred to our institute.

Risk Factor

Common risk factors for imminent eclampsia and eclampsia were age <30 years, primigravida, unbooked with irregular antenatal visits, <30 weeks of gestational age and with a poor educational status, with the rural background having limited access to health care facilities, poor transportation etc. impacting the increased incidence of imminent eclampsia and eclampsia.

In imminent eclampsia mean age was 24 ± 5 years while in eclamptic women, the mean age was 26 ± 5 years.

12.96% of imminent eclampsia and 15.20% of eclamptic women presented with gestational age < 30 weeks.

Onuh so et al (2004)^[42] study found that the mean age of eclampsia was 27.1 ± 5.6 years., 48% cases were primigravidas and 49.2% of women were of age group 21-25 years.

Our results positively correlate with results of studies done by **Sibai BM in 1986**.^[18]

Clinical presentation

Eclampsia /imminent eclampsia can manifest as either maternal syndrome (convulsion, headache, epigastric pain, vomiting, edema and signs of multi system abnormality) or as fetal syndrome (fetal growth restriction, abnormal placentation, decreased amniotic fluid).

In our study headache was the most common symptom. It was seen in 99.3% of imminent eclampsia and 82.6% of eclamptic women.

Other common symptoms were epigastric pain, vomiting and ascites. Epigastric pain was seen in 74.1% of imminent eclampsia and 23.9% of eclamptic women. Vomiting was seen in 66.7% of imminent eclampsia and 65.2% of eclamptic women. Ascites were seen in 3.71% of imminent eclampsia and 6.5% of eclamptic women.

Our study results correlate with **Singhal SR et al (2009)**^[15] study where headache was the most common antecedent symptom seen in 44% of women, followed by epigastric pain, oliguria, blurring of vision and ascitis. In **Douglas KA et al (1994)**^[37] study headache, epigastric pain and blurring of vision was seen in 50%, 19% and 19% of women respectively. **Singhal et al (2009)**^[15] found in their study that headache was the most common antecedent symptom seen in 44% of women followed by epigastric pain, oliguria, blurring of vision and ascites. Our study results were comparable with **France J et al (2012)**^[44] study where headache, visual problems and upper abdominal pain was significantly more reported by eclamptic patients. **Onuh so et al (2004)**^[42] study had also reported headache as the most common symptom.

Our study results corroborate with the results of the above studies.

Past history of PIH in previous pregnancy (Table No. 10):

In our study 82.60% of eclampsia women and 72.20% of imminent eclampsia women had a past history of previous pregnancy having similar complaints. It was 17.40% in eclampsia and 27.80% in imminent eclampsia women.

Proteinuria (Table No. 12):

Urinary protein levels are directly related to severity of preeclampsia which in turn increases the morbidity and mortality of women. In our study urinary protein by dipstick method was +3 in 68.5% of imminent eclampsia and 65.2% of eclampsia women. It was +4 in 22.2% of imminent eclampsia 30.4% of eclampsia women.

Our study results are comparable with the results of **Gawde A et al (2014)**^[17] study. In this study, information obtained from patients' antenatal cards show that among all women who developed eclampsia, only 45.2% had a documented BP and only 24.7% had a documented urine dipstick result, despite a high antenatal attendance rate, Failure to screen for such basic but important parameters may reflect the local clinics' lack of access to basic equipment such as sphygmomanometers and urine dipsticks.

Prematurity (Table No. 13):

Prematurity is commonly associated with imminent eclampsia and eclampsia.

In our study 57.4% of imminent eclampsia women and 71.70% of eclampsia women had delivered a preterm baby.

Our study results are comparable with **Singhal SR et al (2009)**^[15] study where 66% of the cases had preterm delivery, **Tuffnell et al (2005)**^[38] found in her study 65.3% had preterm delivery and also to **Gawde A et al (2014)**^[17] study where 88.4% cases delivered before 37 weeks suggesting that in severe preeclampsia, preterm births are more common.

Our study results are higher than the **Ndaboine EM et al (2012)**^[16] study where they reported 42.9% had preterm deliveries and **Doddamani GB et al (2014)**^[28] study reported 46.6% preterm deliveries. **Pannu D et al (2014)**^[29] found in their study that preterm deliveries were associated with poor maternal and fetal outcome.

Mode of delivery (Table No. 14 and 15):

In our study 50% of imminent eclampsia and 60.9% of eclampsia women delivered by vaginal route. 50% of imminent eclampsia and 39.13% of eclampsia patients had undergone LSCS.

In women who delivered by vaginal route, 12.96% of imminent eclampsia women and 2.2% of eclampsia women delivered spontaneously by vaginal route, while 35.20% of imminent eclampsia and 36.90% of eclampsia women had to be induced by prostaglandin (cerviprime and misoprost).

Our study results were comparable with **Singhal et al (2009)**^[15] study where 48% of labor was induced by prostaglandin and 32% of women underwent LSCS. In **Tuffnell et al (2005)**^[38] study 36.2% of patients labor was induced by prostaglandin and 72.1% of patients were delivered by LSCS much higher rate. Similar results were seen in **Sibai et al (1986)**^[18] study where 49% of women delivered by LSCS. In **Ndaboine EM et al (2012)**^[16] study

the majority of pregnant women delivered by caesarean section (66.22%). **Gawde A et al (2014)**^[17] found in their study that 54% women underwent emergency or elective LSCS. **Abdullah A et al (2009)**^[34] found in their study that C-section was the mode of delivery in 58%, while vaginal delivery (spontaneous + instrumental) was seen in 42% cases.

In our study more women were delivered by LSCS because women generally had poor Bishops score, fetal distress, CPD, abruption placenta and other obstetrics indication.

In our study vaginal delivery rate high than other comparable study.

Results

In the prospective observational study, a total of 100 antenatal and postnatal (up to 42 days) women were included from who fulfilled all the inclusion criteria and none of the exclusion criteria with the aim to evaluate the risk factors in women with eclampsia and imminent eclampsia and to analyze the maternal and perinatal outcome in these women.

10.90% of eclampsia and 3.70% of imminent eclampsia women were to < 20 years age group, 82.60% of eclampsia and 70.40% of imminent eclampsia women were between 21-30 years age group and 6.50% of eclampsia and 25.90% of imminent eclampsia women belonged to 31-40 years age group. Maximum number of women was between 21-30 years age group.

15.20% of eclampsia and 21.96% of imminent eclampsia women had gestational age between 20 -30 weeks, 63.04% of eclampsia and 77.77% of imminent eclampsia patient had gestational age between 30 -40 weeks. In post natal period 21.74% of eclampsia and 3.70% of imminent eclampsia cases were seen. Maximum number of women had a gestational age between 30 -40 weeks of pregnancy. Gestational age was also associated with severity of the disease. Women who were less than 30 weeks of gestational age had more severe disease.

Headache was seen in 82.60% of eclampsia and 96.30% of imminent eclampsia women, vomiting in 65.20% of eclampsia and 66.70% of imminent eclampsia women, epigastric pain in 23.90 % of eclampsia and 74.10% of imminent eclampsia women and ascites was seen in 6.52% of eclampsia and 33.71% of imminent eclampsia women.

17.40% of eclampsia and 27.80% of imminent eclampsia women had past history of PIH.

23.90% of eclampsia and 35.20% of imminent eclampsia women had family history of PIH.

4.30% of eclampsia and 9.30% of imminent eclampsia had proteinuria 2+; 65.20 % of eclampsia and 68.50% of imminent eclampsia had proteinuria 3+; and 30.40% of eclampsia and 22.20% of imminent eclampsia women had proteinuria 4+.

71.70 % of eclampsia and 57.40% of imminent eclampsia

women were delivered preterm babies; 19.60 % of eclampsia and 38.90% of imminent eclampsia women delivered at term gestation; and 8.70% of eclampsia and 3.70% of imminent eclampsia women were postnatal. Large number of eclampsia and imminent eclampsia women had delivered preterm babies.

39.13% of eclampsia and 50% of imminent eclampsia women delivered by caesarean section. 60.9% of eclampsia and 50% of imminent eclampsia women delivered vaginally. Among those who delivered vaginally, 2.20% of eclampsia and 5.70% of imminent eclampsia delivered spontaneously by vaginal route, 13% of eclampsia and 1.9% of imminent eclampsia delivered after performing ARM, 13% of eclampsia and 24.1% of imminent eclampsia were delivered after induction with cerviprime gel, and 23.90% of eclampsia and 11.10% of imminent eclampsia delivered after misoprostol induction.

Conclusion

Eclampsia and imminent eclampsia is a major health problem in pregnant women. And it carries high morbidities and mortality. Eclampsia is more complicated than imminent eclampsia. From the present study, it can be concluded that the age group 21-30 years is most prone for the eclampsia and imminent eclampsia and disease severity is higher in age group less than 30 years. Low socioeconomic status and poor educational status contribute for their increased incidence. These patients generally have higher proteinuria, with headache followed by epigastric pain and vomiting. These women are mostly delivered by caesarean section and deliver a low birth baby (< 2.5 kg), which needs immediate attention and is admitted to the nursery. Most common maternal complication of eclampsia and imminent eclampsia was PPH followed by HELLP syndrome, renal dysfunction, pulmonary edema, pulmonary embolism, abruption placenta, and DIC

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