

Fetomaternal Outcome in Cases of Pre-eclampsia in a Tertiary Care Referral Hospital in Delhi, India: A Retrospective Analysis

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Abstract

Introduction: Pre-eclampsia is a multiorgan disorder unique to pregnancy typically characterized by blood pressure $\geq 140/90$ mm Hg after 20 weeks gestation.

Aim: To determine maternal and fetal outcomes in patients diagnosed with pre-eclampsia.

Materials and Methods: This was a retrospective, observational study done by analysis of hospital records of patients admitted in Hospital with diagnosis of pre-eclampsia. Data of three years (2012 to 2014) were analyzed. Exclusion criterion - patients with chronic diseases.

Results: A total of 224 patients were analyzed. Out of them, 40% were booked and 76.8% cases were of age group 21-30 years. About 58.9% of them were primigravida. About 82.1% of patients presented at gestational age of ≥ 34 weeks and 5.4% were below 30 weeks. About 14.2% patients of severe pre-eclampsia were delivered by lower segment cesarean section, whereas cesarean rate in mild pre-eclampsia group was 7.2%. Prematurity was the most common complication seen in 67.9% of cases, perinatal mortality in 12.5% cases while birth asphyxia was present in 21.4% of patients. Partial HELLP and HELLP were seen in 37.5% of patients, eclampsia in 1.8% patients; other complications included disseminated intravascular coagulation and pulmonary edema which was seen in 3.6% of cases each and maternal mortality rate was 1.8%.

Conclusion: Only quality obstetric care can reduce the adverse outcomes of pre-eclampsia. This study therefore advocates more research into the prevention, prediction, and management including neonatal care of pre-eclampsia.

Key words: Maternal and fetal complications, Pre-eclampsia, Pregnancy

INTRODUCTION

Hypertensive disorders are among the most common medical disorders during pregnancy and continue to be the major cause of maternal and perinatal morbidity and mortality. Pre-eclampsia is a multiorgan disorder unique to pregnancy typically characterized by blood pressure $\geq 140/90$ mmHg after 20 weeks gestation associated with

proteinuria ≥ 300 mg/24 h or $\geq 1+$ dipstick. It affects 3-8% of all pregnancies worldwide.^{1,2} About 10-15% of maternal deaths are directly associated with pre-eclampsia and eclampsia.³

Although the disorder is known for centuries, exact pathophysiology still remains unclear. Many theories have been proposed to explain mechanism including abnormal trophoblastic invasion of uterine blood vessels, immunological maladaptation between maternal and fetoplacental tissues, inflammatory changes of normal pregnancy, genetic causes, etc. However, none of them could fully explain the disease. Various complications including eclampsia, disseminated intravascular coagulation (DIC), HELLP syndrome, fetal growth retardation, and maternal and fetal mortality

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are known to occur. However, still we lack methods to predict and prevent pre-eclampsia. Delivery appears to be the only definitive and curative treatment. Hence, the present study was conducted to improve clinical knowledge of pre-eclampsia among variable group of patients and rationalize the strategies to improve perinatal and maternal care.

AIMS AND OBJECTIVES

1. To study the distribution pattern of pre-eclampsia among different group of patients with special reference to age, parity, booked/unbooked status, and gestational age at presentation.
2. To study maternal outcomes in terms of severity, complications of pre-eclampsia, and maternal mortality.
3. To study fetal morbidity and mortality.

MATERIALS AND METHODS

This was a descriptive, retrospective study done during the period 2012-2014 at a tertiary care hospital of Delhi. The study was done by analysis of hospital records of patients admitted with diagnosis of pre-eclampsia. The study was approved by the Ethical Committee of the Institution. Blood pressure was measured using standard parameters with a proper size cuff with patient in sitting position. Proteinuria was measured using dipstick method and $\geq 1+$ on at least two occasions was taken as positive. Inclusion criteria were patients with diagnosis of pre-eclampsia. Exclusion criteria were patients with chronic renal disease, systemic lupus erythematosus, connective tissue disorder, molar pregnancy, thyroid disorder, and diabetes. All patients were evaluated for fetal and maternal condition using various biochemical and radiological test. Biochemical test includes complete blood count, liver function test, kidney function test, urine for proteins with dipstick/24 h urine collection, and fundus examination. Fetal state was assessed using ultrasonography and non-stress test wherever required. Patients were managed as per clinical protocols, progression of disease, and fetomaternal condition.

RESULTS

A total of 224 patients were analyzed in this study. Out of them, 60% were unbooked and 40% were booked cases. In the present study, pre-eclampsia was observed among patients of different age group ranging from 18 to 40 years of age, but highest percentage was seen in the age group of 21-30 years (76.8%) (Figure 1).

It was also found that most of the cases (82.1%) presented at advanced gestational age (>34 weeks) as compared to early gestational age.

Patients were also classified according to the severity of pre-eclampsia at the time of presentation into mild and severe variety.

Mode of delivery was also studied in relation to severity of pre-eclampsia (Figure 1).

Various maternal complications arising due to pre-eclampsia were also studied, and it was found that Partial HELLP was seen in 37.5% patients, DIC in 3.6%, eclampsia in 1.8%, pulmonary edema in 3.6%, whereas maternal mortality occurred in 1.8% of patients (Figure 2).

In all cases, fetal outcome was also observed in the form of prematurity, neonatal intensive care unit admission and perinatal mortality. It was seen that prematurity was present in 67.9% of patients, 21.4% of babies had birth asphyxia, whereas perinatal mortality was seen in 12.5% of patients (Figure 3).

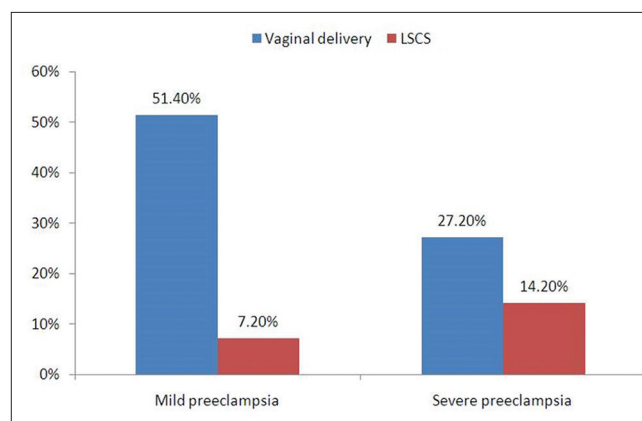


Figure 1: Mode of delivery in relation to severity of pre-eclampsia

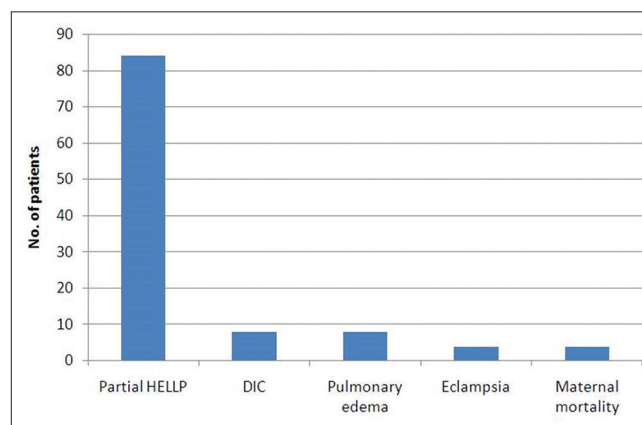


Figure 2: Incidence of maternal complications

DISCUSSION

We observed that chances of pre-eclampsia were significantly higher in younger age group (21-30 years) (Table 1). Similar results have also been obtained by various authors Saxena *et al.* (2014)⁴ and Yadav *et al.*⁵ However, in contrast to our findings, Sahu *et al.*⁶ reported maternal age to be significantly higher in pregnancy-induced hypertension associated pregnancy. Results in our study could be because of a large number of younger age group of pregnant patients as girls in our country get married at an early age.

Nulliparity has also been found to be associated with pre-eclampsia. We also observed that pre-eclampsia occurred more frequently in primigravida (58.9%) as

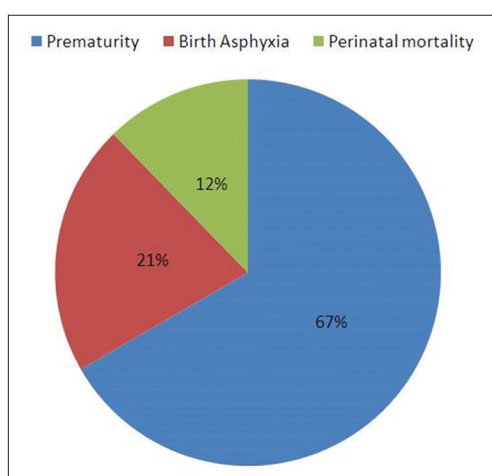


Figure 3: Fetal outcome in relation to pre-eclampsia

Table 1: Incidence of pre-eclampsia according to age group of patients

Age group (years)	Number of patients (%)
18-20	11 (4.9)
21-30	172 (76.8)
>30	41 (18.3)

Table 2: Distribution of cases according to gestational age of presentation

Gestational age (weeks)	Number of cases (%)
<30	13 (5.4)
30-34	28 (12.5)
>34	184 (82.1)

Table 3: Distribution of cases according to severity of pre-eclampsia

Severity	Number of cases (%)
Mild	131 (58.48)
Severe	93 (41.5)

compare to multigravida (41.1%). Sibai and Cunningham⁷ reviewed a number of worldwide studies and concluded that the incidence of pre-eclampsia in nulliparous populations was more than that for multiparous. Many other studies have also reported nulliparity as a risk factor for severe pre-eclampsia.⁸⁻¹⁰ It could be because of the failure of normal invasion of trophoblastic cells that leads to maladaptation of the spiral arterioles.¹¹

We also studied distribution of pre-eclamptic cases according to gestational age of presentation and severity. It was observed that most of the cases (82.1%) occurred at advanced gestational age (>34 weeks) (Table 2) and incidence gradually increases with increase in gestational age (<30 weeks 5.4% vs. 12.5% at 30-34 weeks), and most of the cases belong to mild variety (58.48% vs. 41.5%) (Table 3). Similar results have also been observed by Sajith *et al.*¹² However, in contrast to our findings, few authors Abubakar *et al.*¹³ recorded no difference in gestational age among pregnant non-hypertensive and pre-eclamptic group.

We also observed that 32 out of 93 (34.4%) patients of severe pre-eclampsia were delivered by lower segment cesarean section (LSCS), whereas in mild pre-eclampsia group 16 patients out of 131 delivered by LSCS. The LSCS rate in our institution in pre-eclamptic group was 21.4%. Similar results have also been observed by Yelmizaitun *et al.* (2010).¹⁴ This finding was in contrast with other authors Chaim *et al.*¹⁵ (2008) in Brazil (64.5%), Yücesoy *et al.*¹⁶ (2005) in Turkey (58.8%), and Yadav *et al.*¹⁷ (1997) in India (14.8%). This difference in LSCS rate may be due to difference in medical facilities and quality of antenatal care (ANC) in different parts of the world.

The present study showed that among all partial HELLP and HELLP syndrome were the most common maternal complications seen in 37.5% of patients, whereas DIC and pulmonary edema each was seen 3.6% and maternal mortality rate was 1.8%. Similar results have also been obtained by Murphy and Stirrat (2000).¹⁸ In their study, 21% had developed HELLP/ELLP syndrome, 13% had renal failure, 1.4% had eclampsia. In another study conducted by Minire *et al.* (2013),¹⁹ different and lower complications rate were reported. In their study, 3.2% patients had eclampsia, 4.2% had HELLP syndrome, and 5.58% had pulmonary edema, whereas DIC was seen in 0.46% of patients. Higher complication rates in our study could be because of larger number of unbooked patients who present late for medical care.

Prematurity was the most common complication associated with pre-eclampsia, which was seen in 67.9% cases. Similar results have also been observed by Tuffnell *et al.*²⁰ (65.3%)

and Singhal *et al.*²¹ (66%). Birth Asphyxia and perinatal mortality were observed in 21.4% and 12.5% patients, respectively. Similar results were also observed by Singhal *et al.* (2009)²¹ who found the risk of birth asphyxia (21.43%) and perinatal mortality (36.73%). However, lower perinatal mortality rates were reported by Tuffnell *et al.*²⁰ and Al Inizi *et al.*²² who reported 4.7% and 14.6% rates, respectively. It could be because these studies are conducted in different countries where patient's socioeconomic background and medical facilities are better.

CONCLUSION

Pre-eclampsia is one of the most common medical complications of pregnancy. Since it cannot be completely prevented, timely diagnosis of high-risk patients and prompt treatment in mild stage is the key to prevent complications. In conclusion, this study highlights various risk factors for pre-eclampsia. Unbooked, young primigravida in advanced period of gestation are at a greater risk for pre-eclampsia-related morbidity and mortality. Early registration, improving ANC care and access to medical facilities may help to diagnose the complications well in time and help in reducing adverse outcome. Since exact etiopathology is still unknown; therefore, the study advocates more research into the field of pre-eclampsia to develop effective strategy for prediction and prevention of adverse outcomes.

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