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Maternal and Fetal Outcome in Pre-Eclampsia in a Tertiary Care Hospital in Tamil Nadu

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Abstract: ***Objectives: The objective of the study was to assess the effect of pre-eclampsia on mother and fetus in Tamil Nadu. Materials and Methods: A descriptive study was conducted in a tertiary level hospital in Tamil nadu. A total of 200 antenatal women were screened for pre-eclampsia during the period October 2018 to December 2018 to assess the effects on the mother and fetus. Results: Of the 200 women screened 90 were detected with pre-eclampsia. Among these, 45% were primi gravida, 40.1% belonged to low socio-economic status 4 and 49.8% were among those with BMI 26-30.The common maternal complication of preeclampsia was ante partum hemorrhage (15%) and neonatal complication was prematurity (29%). Conclusions: Treating anemia, antenatal care, educating women on preeclampsia and improving socioeconomic status will improve maternal and neonatal outcome in pre-eclampsia. Significance of symptoms will markedly improve perinatal morbidity and mortality.***

Keywords: Fetal Outcome, Maternal Outcome, Pre-Eclampsia

1. Introduction

Hypertensive disorder is one of the major reasons for perinatal and maternal mortality and morbidity in both developing and developed countries. Pre-eclampsia is a multisystem disorder that complicates about 3-8% pregnancies. The incidence is high in developing countries due to hypoproteinemia, malnutrition, anemia and poor antenatal care. 10-15% of maternal deaths are directly associated with pre-eclampsia and eclampsia. [1] The risk of pre-eclampsia is two to five times more in women with previous history. Based on ethnicity, the incidence of pre-eclampsia ranges from 3% to 7% in nulliparas [2] and 1% to 3% in multiparous. [3]

Pre-eclampsia is a specific, pregnancy-related hypertensive disorder with reduced organ perfusion associated with vasospasm and activation of the coagulation cascade affecting multiple systems. The nervous system is commonly affected and is a cause of significant morbidity and mortality in antenatal women. [4] The major complication to the fetus results from decreased placental perfusion leading to decreased blood supply of oxygen and nutrients necessary for fetal growth and wellbeing. The aim of the study was to assess the effect of pre-eclampsia on mother and fetus in Tamil nadu.

2. Materials and Methods

A descriptive study was conducted in a tertiary level hospital in Tamil nadu. A total of 200 antenatal women were screened for pre-eclampsia during the period October 2018 to December 2018 to assess the effects on the mother and fetus. All antenatal women with pre-eclampsia were included. This includes 90 women of the 200 women admitted for safe confinement .Pre-eclampsia is defined as high blood pressure of 140/90 mmHg or more along with proteinuria or any derangement in platelet count, liver enzymes or renal function tests. [5] Mild pre-eclampsia is defined as diastolic blood pressure of 90 mmHg or more on two different occasions at least 6 h apart combined with proteinuria (two or more occurrences of protein on dipstick, >300 mg total protein in 24 h urine collection, or ratio of protein to creatinine >30 mg/mmol). [6] Severe pre-eclampsia is defined as a blood pressure more than or equal to 160/110 mmHg, proteinuria 3+ or more on dipstick or more than 5 g in 24 h, impaired renal or liver function, neurological signs or symptoms, microangiopathic hemolytic anemia, thrombocytopenia or fetal complications such as fetal growth restriction. [7] Statistical analysis was done using the SPSS.

3. Results

Women (n = 200) were screened and 90 women detected with pre-eclampsia. Out of 90 mothers with pre-eclampsia, the distribution according to age was as follows: 26-30 (45%), remaining 15.12%, 20.65%, 14.75%, 4.46% are in the age groups of 15- 20 yrs, 21 - 25 yrs, 31 - 35 yrs, >36 yrs, respectively [Table 1].

Table 1: Distribution of pre-eclampsia according to age

Age	Frequency	Percentage
16-20	14	15.12%
21-25	19	20.65%
26-30	40	45%
31-35	13	14.75%
>36	4	4.46%

Distribution according to parity was as follows: Primi-gravida (60%). Remaining 20.7% were second gravida, 17.05% were third gravida and 2.15% were fourth gravida [Table 2].

Table 2: Distribution of pre-eclampsia according to parity

Parity	Frequency	Percentage
Primi	54	60%
Second	19	20.7%
Third	15	17.05
Fourth	2	2.15%

Table 3: Distribution of pre-eclampsia by socio economic status

Socioeconomic Status	Frequency	Percentage
Class 1	5	5.15%
Class 2	17	19.03%
Class 3	19	21.65%
Class 4	36	40.1%
Class 5	13	14.05%

Table 4: Distribution of pre-eclampsia according to BMI

BMI	Frequency	Percentage
<18	4	4.35%
18-25	31	34.55%
26-30	45	49.88%
31-35	10	11.22%

Table 5: Distribution of severity of pre-eclampsia according to whether registered or unregistered

	Mild Preeclampsia	Severe Preeclampsia	Total	Percentage
Registered	20	24	44	48.8%
Unregistered	8	38	46	51.1%
Total	28	62	90	-
Percentage	31.1%	68.8%	-	100%

Out of the 44 registered patients, 55% of the patients had more than nine antenatal visits, while 5% had less than three antenatal visits. The factors associated with pre-eclampsia in the study were anemia (52.90%), diabetes (4.20%), twins (5.3%) and previous history of pre-eclampsia (8.55%). However, there were no associated factors in 33.89% of the women with pre-eclampsia.

In labor, 44.9% went into spontaneous labor while in the remaining were induced. Among those who delivered, 49.3% underwent caesarean section while the remaining delivered vaginally .The most common complication associated with pre-eclampsia in this study was antepartum hemorrhage (15%). Other complications associated were post partum hemorrhage (10.75%) and eclampsia (3.37%). There were no cases of maternal mortality.

From the study it was found that the most common neonatal complication was pre-maturity (29%), low birth weight (9.52%) and intra uterine growth restriction (8.67%). The perinatal mortality constitutes about 5%, which includes intra uterine demise of the fetus (2.1%), still births (1.15%) and neonatal deaths (2.3%).

4. Discussion

Advanced maternal age is been found to be an independent risk factor for pre-eclampsia, in this study majority of the cases were in the age group 26-30. The parity also has a similar pattern reported in existing literatures with pre-eclampsia which is common among the primigravida. Hernandez *et al.* found that the risk of pre-eclampsia was 4.1% in the first pregnancy and 1.7% in later pregnancies overall. The risk for multiparous women without a history of pre-eclampsia was around 1%. [9] 60% of the patients with pre-eclampsia fall under socioeconomic classes 3-5, which is similar to the cohort study conducted by Silva *et al*., [10] which examined data of 3547 pregnant women. Mothers with low educational level were more likely to develop pre-eclampsia than women with high educational level. Another study done in Sudan shows low socioeconomic status as a risk factor for pre-eclampsia. [11]

This study proved that the incidence of pre-eclampsia increases with BMI which also increases the incidence of induction of labor, caesarean section, pre-term labor and macrosomia. So, educate pregnant women to maintain a normal BMI of 20-24.

There is also an increase of incidence in severe pre-eclampsia in unregistered women. This indicates that women who are registered have pre-eclampsia diagnosed earlier and treated and could also indicate that women with pre-eclampsia were being referred to our institution for further management. Anemia, diabetes mellitus, previous history of pre-eclampsia and multiple pregnancies were associated with pre-eclampsia. Mothers who have pre-eclampsia in a first pregnancy have increased risk of pre-eclampsia in a second pregnancy. [12]

An important factor associated with pre-eclampsia was anemia which is similar to the study done in Sudan where women with severe anemia were found to have a 3.6 times higher risk of pre-eclampsia than women with no anemia. It was recently observed that 17 (17.7%) of 97 women with severe anemia had gestational hypertension or pre-eclampsia and 2 (2.1%) had eclampsia. [13] The susceptibility of women with severe anemia to pre-eclampsia could be explained by a deficiency of micronutrients and antioxidants. Recent results indicate that reduction in serum levels of calcium, magnesium and zinc during pregnancy might be possible contributors to the development of pre-eclampsia. [14]Factors determining perinatal mortality was the lack of regular antenatal checkups, complicated cases of pre-eclampsia and lack of awareness regarding significance of symptoms like decreased fetal movements etc. [17]The incidence of perinatal mortality is low in the study when compared to other studies. This shows that effective neonatal care with NICU will bring out better fetal outcome.

In conclusion, pre-eclampsia tends to threaten maternal health and fetal viability adding to maternal and neonatal mortality and morbidity. Patient education is needed in recognizing the warning symptoms of severe pre-eclampsia before the intrauterine demise of fetus occurs or mother develops one of the grave complications. Antenatal care, treatment of anemia and educating the women on significance of symptoms will go a long way in improving maternal and perinatal morbidity and mortality. Reversing the present trend in maternal health-seeking behavior is therefore an issue that needs to be effectively addressed if significant improvement in maternal health is to be achieved.

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