

Fetal Outcomes of Preeclampsia

Asma Irfan, Irfan Afzal Mughal, Amna Faruqi, Saima Latif Qureshi and Tooba Zafar

ABSTRACT

Objective: To evaluate different factors which effect preeclampsia and fetal outcomes in this condition.

Study Design: Case control study

Place and Duration of Study: This study was conducted at the Holy Family Hospital and Rawalpindi General Hospital Islamabad from January 2017 to November 2019.

Materials and Methods: One hundred and sixty pregnant women were included. Out of those, 110 were preeclamptic who developed hypertension and protein urea after 20th week of gestation. The remaining fifty pregnant women who had normal blood pressure during the whole tenure of their pregnancy were taken as the control group.

Results: Majority (40.9%) of cases, who developed preeclampsia were younger (16-20 year) women, and this frequency gradually decreased with advancing age. Only (18.14%) of pregnant women beyond 31-35+ years of age developed preeclampsia. Moreover, weight of baby at the time of delivery was significantly lower among cases as compared to controls. In the present study there were 89% live births, 10% still births due to growth retardation and 1% cases of still birth due to fetal distress in preeclamptic patients. As a consequence of severe hypertension during pregnancy, a maximum number of still births (22.2%) were observed in primigravida patients of age group 16-20 which were due to growth retardation.

Conclusion: Preeclampsia is a worsening clinical condition and if not monitored carefully may result in complications of pregnancy, thus affecting the baby.

Key words: Preeclampsia, Pregnancy, fetal outcome

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INTRODUCTION

Of all complications of pregnancy, preeclampsia accounts for 5%.¹ It is the main cause of death of both mother and fetus.² It is reported that 50,000 women die annually worldwide from preeclampsia. This condition is commonly seen in first pregnancies in one out of ten women.³

The incidence of Preeclampsia is double of normotensive pregnancies and it is responsible for 35-300 deaths per 1000 births. It is rare in developed countries, its incidence being one in every 2,000 deliveries. The progression of preeclampsia to eclampsia accounts for more than 50,000 maternal deaths annually around the globe and its incidence is 20 times more in developing countries.⁴

Department of Physiology Islamabad Medical and Dental College, Islamabad.

Correspondence: Prof. Asma Irfan, Professor and Head, Department of Physiology Islamabad Medical and Dental College, Islamabad.

Contact No: 0321--5016605

Email: asmairfan@gmail.com

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In a study in Pakistan, frequency of fetal loss was 82.75% in preeclampsia pregnancies, while 7.14% mothers died of eclampsia.⁵ In preeclamptic women the infant mortality rate is much higher.⁵ The common cause of intrauterine death and prematurity in infants results from placental abruption or uteroplacental vascular insufficiency.⁷ When the mother is suffering from preexisting hypertension, the perinatal outcomes are worse in preeclampsia. The severity of increasing maternal blood pressure is found to be proportional to the increased incidence of growth retardation in infants of preeclamptic mothers.⁸

These findings emphasize the need for prevention of eclampsia by identifying cases of preeclampsia from the community at the earliest possible stage, providing them with vigilant antenatal care, performing maternal stabilization before and during transfer to the specialized unit as well as, intensive care monitoring at the hospital. In order to improve maternal and fetal outcome, good antenatal practices, education and awareness policies, provision of better health facilities and their utilization is mandatory.

MATERIALS AND METHODS

This case control study was conducted in the Obstetric Department of Holy Family Hospital and Rawalpindi General Hospital Rawalpindi Holy Family Hospital and

Rawalpindi General Hospital Islamabad from 1st January 2017 to 30th November 2019 on 110 preeclamptic patients visiting the out-patient department, admitted in the obstetric wards (pre-delivery and post-delivery) and from the labour room. The cases were followed up at paediatric department regarding the fate of delivered babies.

All pregnant women who signed the consent to participate in the study & with normal blood pressure level or with a family history of hypertension and preeclampsia were included. Women who had hypertension before 20th week of gestation & those women who had gestational diabetes or other major diseases were excluded. For the description of different criteria the control and preeclamptic patients were distributed according to age. These groups were 16-20 yrs, 21-25 yrs, 26-30 yrs, and 31-35+ yrs. The control group in age bracket of 16-20years comprised of ten normal pregnant women and cases were forty-five preeclamptics. The age group 21-25 the consisted of twenty pregnant females in the control group and twenty-nine preeclamptics. In the age group of 26-30 years, the control comprised of ten pregnant females and sixteen preeclamptics, while in the oldestage group 31-35+ years ten pregnant females were controls and twenty preeclamptics were cases. Record of systolic and diastolic blood pressure (mmHg) was maintained at four weeks interval starting from twentieth week of gestation, onwards till thirty-two weeks and then at weekly interval till delivery Arterial blood pressure was measured by sphygmomanometer and the technique was standardized to get consistent results.

The data was recorded by making a proforma which included age, parity and medical history (molar pregnancy, renal disease, diabetes mellitus, connective tissue disease). Prior history of hypertension and family history of preeclampsia was ruled out. Record of complications in the mother such as abruptio placenta, renal insufficiency, HELLP syndrome i.e. (hemolysis-elevated liver enzymes-low platelet count), eclampsia, cerebral hemorrhage, or death was noted. The weeks of gestation at which the patient delivered was important as it was directly related with the maturity of the baby, and the condition of the cervix was noted by Bishop Scoring. Induction was necessary in cases of poor bishops score and for this purpose artificial rupture of membranes, syntocinon I/V infusion or prostaglandin vaginal pessary was used. In cases of failed induction or fetal distress caesarean sections were performed. Apgar score was recorded for newborns, after one minute and again after five minutes. Weights of the babies were noted in grams by digital weight machine. Live births or deaths of the fetuses were also noted. Distressed babies were admitted in the extensive care unit, so regular monitoring of the babies was done to assess fetal outcome. In case of expiry of the babies, the duration of survival and causes of expiry were noted. Mean and

standard deviation were calculated for quantitative data. Student's t-test was used to study significance for comparison of control and preeclamptic group. A p<0.05 was taken as statistically significant.

RESULTS

The total number of patients who developed preeclampsia was 110, out of 1105 cases (9.95% incidence). The distribution of preeclamptic patients depicted that majority of patients (40.9%) were in the age group of 16-20 yrs (mean age 18.4±0.20 yrs). The age group 21-25 consisted of 26.3% of patients with preeclampsia (mean age 22±0.17 yrs), while 14.5% patients were in the age group 26-30 (mean age 25.6±0.15 yrs) and age group 31-35+ years comprised 18.1% preeclamptic patients (mean age 34.6±0.71 years) [Fig. 1].

Table No.1: Weight of baby at birth of control and preeclamptic patients of different age groups

Age (Years)	Weight of babies (grams)	Mean±SE	P value
16 – 20			
Control (n=10)	2421.0-3628.0	3250.0±256	P<0.001
P.E (n=45)	1714.0-3056.0	2720.0±285	
21-25			
Control (n=20)	2267.0-3845.0	3320.0±378	P<0.001
P.E (n=29)	2114.0-3100.0	2960.0±205	
26-30			
Control (n=10)	2721.0-3628.0	3120.0±490	P<0.001
P.E (n=16)	2314.0-3195.0	2996.0±315	
30-35+			
Control (n=10)	2721.0-3528.0	3152.0±482	P<0.001
P.E (n=20)	2254.0-2956.0	2898.0±368	

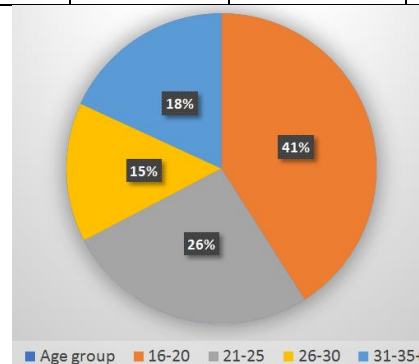


Figure No. 1: Frequency of preeclamptic patients of different age groups

Out of 110 patients, 68(61.8%) were primigravidas who had conceived for the first time. A total of 26 patients (23.6%) were second gravida and 16 patients (14.5%) were multigravidas. The weight record of the baby at the time of birth for control and preeclamptic patients of various age groups is given in Table 1.

Table No.2: Birth weight less than 2500gms of babies born to control and preeclamptic patients of different age groups

Age (years)	Weight of babies N (%)	Mean±SE
16-20		
Control (n=10)	2 (20%)	2497±0
P.E (n=45)	14 (31.1%)	2376±267
21-25		
Control (n=20)	4 (20%)	2495±310
P.E (n=29)	6 (20.6%)	2387±325
26-30		
Control (n=10)	-	-
P.E (n=16)	3 (18.75%)	2410±411
31-35*		
Control (n=10)	-	-
P.E (n=20)	5 (25%)	2494±

*P<0.05

Table No.3: APGAR score at 1 min and 5 min in babies born to control and preeclamptic patients of different age groups

Age (years)	APGAR Score 1 Minute	APGAR Score 5 Minutes
16-20		
Control (n=10)	7.0-10.0	8.2±0.12
P.E (n=45)	3.0-8.0	6.3±0.03***
21-25		
Control (n=20)	6.0-9.0	7.5±0.05
P.E (n=29)	4.0-7.0	5.8±0.06***
26-30		
Control (n=10)	4.0-8.0	7.2±0.14
P.E (n=16)	4.0-8.0	6.6±0.12
31-35*		
Control (n=10)	4.0-8.0	6.8±0.15
P.E (n=20)	3.0-8.0	6.7±0.10

*P<0.05

**P<0.01

***P<0.001

In the age group 16-20 years there was significant decrease in the mean values of weight of babies born to preeclamptic patients (P<0.001). The weight of the baby at birth of less than 2500gms of control and preeclamptic patients is given in Table 2. The maximum number of babies with decreased weight were born to the age group 16-20 years. In the new born Apgar score (A-appearance, P-pulse rate, G-grimace, A-activity-respiratory rate) was noted after one and five minutes. The Apgar score at 1 min and 5 min of control and preeclamptic patients of different age groups is given in Table 3. The values were found to be better after 5 min as compared to 1 min in both controls and preeclamptic patients.

DISCUSSION

The incidence of preeclampsia in this study was 9.95% in Islamabad. The incidence in Chinese (9.0%)⁹ and the English population (10.5%) was found to be similar.¹⁰ However, in the South African population a higher incidence of preeclampsia (15.7%) was reported.¹¹ Our study indicated that majority (40.9%) of preeclampsia cases developed in younger (16-20yrs) pregnant women. This incidence gradually decreased with advancing age of women and as low as 18.14% was observed in pregnant women beyond 31-35+ years of age. Similar results have been reported in South African young primigravidas (<20 years) who have increased incidence of preeclampsia.¹¹ Another analysis of 62239 singleton deliveries in the Cape Peninsula Maternity and neonatal service region in 1979-81 showed that primigravidas have approximately double the incidence of preeclampsia, hypertension and proteinuric hypertension.¹²

In the present study, weight of baby at the time of delivery was significantly lower in cases as compared to controls. Similar findings were given by different studies which recorded lower birth weights of babies born to preeclamptic mothers.¹³⁻¹⁹ The incidence of low birth weight amongst newborns was highest in the youngest age group. Another study showed similar results¹⁴. In the present study in preeclamptic patients there were 89% live births, 10% still births due to growth retardation and 1% due to fetal distress. In age group 16-20 years in primigravida patients' maximum number of stillbirths occurred due to growth retardation as a consequence of severe hypertension in pregnant mothers. 3.4% of stillbirths occurred in age group 21-25, and 5% in age group 31-35+ due to growth retardation. The perinatal death rate in preeclampsia depends upon whether the eclampsia occurred antenatal or in labour and it varies from 213/1000¹⁶ to 136/1000¹⁷ and 50/1000 births.¹⁸ In Pakistan the perinatal mortality due to preeclampsia in Holy Family Hospital Rawalpindi was recorded as 8.34%¹⁹ while in Quetta it was 82.75%⁵. Hypertensive disorders of pregnancy (HDP) tend to recur from one pregnancy to the next.²⁰

Preeclampsia has been found to be the most common obstetric complication after renal transplant and is associated with prematurity of fetus.²¹

CONCLUSION

Preeclampsia occurs after twentieth week of gestation in all age groups and it is accompanied by low hemoglobin and a low platelet count. Low birth weight prevalence was found to be highest amongst newborns of younger age females and 11% stillbirths occurred due to growth retardation and fetal distress.

Author's Contribution:

Concept & Design of Study: Asma Irfan
 Drafting: Irfan Afzal Mughal, Amna Faruqi
 Data Analysis: Saima Latif Qureshi, Tooba Zafar
 Revisiting Critically: Asma Irfan, Irfan Afzal Mughal
 Final Approval of version: Asma Irfan

Conflict of Interest: The study has no conflict of interest to declare by any author.

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