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FREQUENCY OF INTRAUTERINE GROWTH RESTRICTION ASSOCIATED WITH HYPERTENSIVE DISORDERS OF PREGNANCY.

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ABSTRACT:

OBJECTIVE: To determine the frequency of intrauterine growth restriction associated with hypertensive disorders of pregnancy presenting to Hayatabad Medical Complex, Peshawar **MATERIALS AND METHODS:** This cross-sectional study was carried out on 89 women with hypertensive disorders of pregnancy between 11-07-2020 and 11-01-2021 to assess the frequency of IUGR at birth at the Department of Gynecology and Obstetrics at Hayatabad Medical Complex, Peshawar. **RESULTS:** Age ranged between 20-45 years. The mean age was 32.5±12.5 years. Age group was analyzed as 46(51.7%) mothers belongs to age group of 20-35 years, while 43(48.3%) belongs to age group of 35-45 years. Male neo born were 60(67.4%) while 29(32.6%) neo born were females. Family history of hypertension was noted in 29(32.6%), history of previous abortion in 27(30.3%) cases and history of previous Caesarian section (CS) noted in 16(18%) cases **CONCLUSION:** Women with gestational hypertension are more likely to suffer from IUGR. Research on larger sample sizes is needed to identify factors associated with IUGR before devising future research and prevention strategies.

KEY WORDS: hypertensive disorders of pregnancy, Pre-eclampsia, eclampsia, gestational hypertension, intrauterine growth restriction,

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INTRODUCTION

Hypertensive disorders in pregnancy (HDP) is a major global health concern, not just because of the adverse outcomes in pregnancy, but also because of the significant perinatal morbidity and mortality associated with it [1]. The risk of perinatal death is more daunting when mothers suffer from hypertensive disorders during pregnancy. However, most obstetricians are more concerned about maternal mortality. A mother with severe preeclampsia has a risk of death of less than 1%, while a child has a risk of death of 13% [2]. Moreover, in

eclampsia there is an increased risk of maternal and perinatal deaths of about 5% and 28%, respectively [3]. On the other hand, the surviving newborns may develop serious short- and long- term complications, including neurodevelopmental deficits, especially in countries with inadequate resources.

There are complications associated with hypertension in approximately 10% of all pregnancies, with preeclampsia-eclampsia accounting for approximately 4% of these cases [4]. Both preeclampsia and gestational hypertension are currently considered separate disorders affecting similar organs or different severities of the same disorder. Alternatively, gestational hypertension could merely be a mild stage of preeclampsia, preceding renal involvement and thus proteinuria. An intrauterine growth restriction (IUGR) occurs when the rate of fetal growth is below normal considering the race and gender of the fetus and the growth potential of the fetus. "Normal" neonates are defined by their birth weight falling within the 10th to 90th percentile as per their gestational age, gender, and race, and not suffering from malnutrition or growth retardation. IUGR is a clinical term used to describe neonates born with malnutrition and in-utero growth retardation, regardless of their birth weight. Fetal growth restriction occurs more frequently in lower gestational age groups and varies among populations. Resources-limited countries appear to be more affected by fetal growth restriction [5]. The percentage of term infants with SGA in developed countries is about 10%, while in developing countries it is about 20% [6].

The purpose of this study was to determine the frequency of IUGR in pregnancies complicated by hypertension. Among obstetric and pediatric healthcare professionals, hypertensive disorders of pregnancy are generally known to account for a high proportion of perinatal adverse events, although there is limited scientific evidence to support this clinical impression. In this study, we aim to determine perinatal outcomes, especially intrauterine growth restriction, in pregnant women receiving maternity and childbirth services at our hospital with hypertensive disorders in pregnancy.

MATERIALS AND METHODS

In July 2020 and January 2021, this cross sectional study was conducted at the Gynecology Unit Hayatabad Medical Complex Peshawar. All pregnant women who delivered at Hayatabad Medical Complex between 30-42 weeks of gestation with hypertensive disorder of pregnancy, aged between 20-45 years, women with gestational hypertension, eclampsia, or pre-eclampsia, and singleton pregnancies were included. The study excluded pregnant women who have a history of hypertension before pregnancy or 20 weeks of gestation, severe anemia defined as hemoglobin level >9g/dl, and pregnant women who smoke or use drugs.

We reviewed the patient's antenatal care, gestational age, prior abortions or C-sections, and family history of high blood pressure. Each patient was examined thoroughly on a general and systemic level. The location and grading of the placenta as well as the amount of liquor were all confirmed with ultrasonography in all cases. After delivery, all babies were resuscitated by pediatricians. A pediatric weight scale was used to measure the newborn's weight and a weight chart was used to determine the percentile. A birth weight that was lower than the 10th percentile was considered intrauterine growth restriction (IUGR). SPSS 21.0 was used for statistical analysis. P-value ≤ 0.05 was considered as statistically significant.

RESULTS

Total 89 women presenting with hypertensive disorders of pregnancy were included in the study. Age ranged between 20-45 years. The mean age and standard deviation of the sample was 32.5±12.5 years. Age group was analyzed as 46(51.7%) mothers belongs to age group of 20-35 years, while 43(48.3%) belongs to age group of 35-45 years. Male neo born were 60(67.4%) while 29(32.6%) neo born were females. Family history of hypertension was noted in 29(32.6%), history of previous abortion in 27(30.3%) cases and history of previous Caesarian section (CS) noted in 16(18%) cases. Table-1

Gestational age of 44(49.4%) newborn were <33-37 weeks while 45(50.6%) had gestational age of >37-40 weeks with a mean gestational age of 36.5±2.4 weeks. According to mode of delivery, normal vaginal delivery (NVD) was performed in 29(32.6%) cases while 60(67.4%) patients underwent caesarian section (CS). According to hypertensive disorders, gestational hypertension was recorded in 35(39.3%) patients, pre-eclampsia in 37(41.6%) cases and eclampsia in 17(19.1%) cases. Table-2 Frequency of intrauterine growth restriction **(**IUGR) was noted in 13(14.6%) newborns. Figure-1

Table-1: Patient demographics and other characteristics

Characteristics	Frequency	Percentage
Age group		
20-35 years	46	51.7%
35-45 years	43	48.3%
Gender of neo born		
Male	60	67.4%
Female	29	32.6%
Previous history		
Hypertension	29	32.6%
Abortion	27	30.3%
Caesarian section	16	18%

Table-2: Gestational age, delivery mode & hypertensive disorders

Gestational age of neo born		
33-37 weeks	44	49.4%
37-40 weeks	45	50.6%
Mode of delivery		
NVD	29	32.6%
CS	60	67.4%
Hypertensive disorders		
Gestational HTN	35	39.3%
Pre-eclampsia	37	41.6%
Eclampsia	17	19.1%

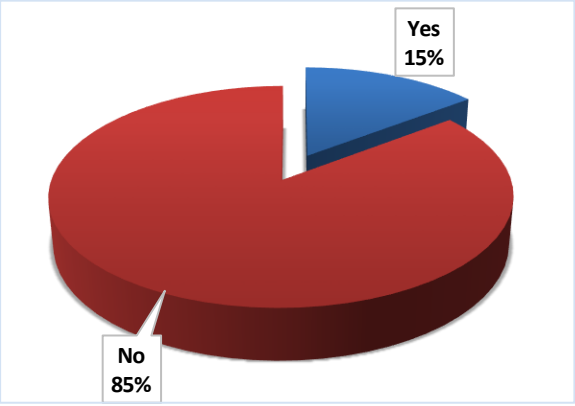

Figure-1: Frequency of IUGR

DISCUSSION

Blood pressure above 140 mmHg during pregnancy or blood pressure above 90 mmHg during pregnancy is considered pregnancy hypertension. expansion in systolic pulse and diastolic circulatory strain during pregnancy can be utilized as signs of pregnancy-actuated hypertension. Following 20 weeks of pregnancy, pregnancy-prompted hypertension (PIH) happens in ladies with previously normal blood pressure. Hypertension that results from pregnancy can be classified as preeclampsia, eclampsia, or gestational hypertension. Diastolic circulatory strain more prominent than 110 mmHg or systolic pulse more prominent than 160 mmHg might demonstrate extreme toxemia during pregnancy. This is an extreme type of pregnancy-prompted hypertension that happens in around 1 out of 1,600 pregnancies. Pregnancy-actuated hypertension is portrayed by hypertension, protein in the pee, and pathologic edema.

Maternal and perinatal mortality are greatly exacerbated by pregnancy-induced hypertension. Mothers with severe hypertension are at greater risk of heart attack, cardiac failure, kidney failure, and cerebral vascular accidents. As well as unfortunate placental oxygen move, development limitation, preterm birth, placental unexpectedness, stillbirth, and neonatal passing, the fetus is at increased risk for complications during pregnancy [7]. It has been reported that hypertensive disorders account for 5–10% of all medical complications in pregnancy [8]. In developing countries, preeclampsia causes one of the highest rates of maternal and

neonatal mortality and morbidity. High blood pressure and proteinuria along with edema or proteinuria are usually symptoms of this disorder in late pregnancy. In order to prevent any disease process, we must understand its pervasiveness, etiology, and pathogenesis. World Wellbeing Association gauges that a lady kicks the bucket at regular intervals because of pregnancy-induced hypertension. The risks of adverse fetal, newborn, and maternal outcomes are increased during pregnancy complicated with hypertensive disorder [9]. An analysis of maternal mortality in South Africa found that hypertensive disorders of pregnancy accounted for 12% of all maternal deaths [10].

Based on Birnin Kudu et al analysis of patient distribution by age, the majority (51.7%) of patients were between 25 and 35 years old [11]. The reason for this is that pre-eclampsia affects nulliparous women. Preeclampsia has a diverse etiology. This higher incidence of preeclampsia can be attributed to immune maladaptation of primigravidae. Consequently, preeclampsia rates in multiparous women decrease with subsequent pregnancies. Preeclampsia is also associated with pregnancy by a new partner in parous women. **In contrast, Liaquat University Hospital Hyderabad reported a high incidence (38.4%) among patients under 20 years of age [12].** The prevalence of gestational hypertension, PE, and eclampsia in this study was 39.3%, 41.6%, and 19.1%, respectively. **In two local studies, HDP, chronic HTN, PE and eclampsia have been detected in 5.34%, 0.56%, 3.3%, and 1.04% respectively in one study, and in the second study, HDP, PE and eclampsia have been detected in 8.9%, 1.97% 0.85% respectively [13,14].** Globally, HDP prevalence varies by geography. In Sweden, it varies between 1.5% and 7.5%, whereas in Brazil and India, it varies between 7.5% and 18.0% [15]. In Turkey, chronic HTN, PE and eclampsia prevalence is 0.56%, 4.34% and 0.54% [16], respectively. PE and eclampsia are prevalent in India at 3.7% and 0.79 percent, respectively [17]. In Agha Khan University Hospital Karachi, 22.1% of patients had IUGR [18]. IUGR was detected in 46 cases (23%) from 200 patients in Jinnah hospital Lahore [19]. Both the mother and the fetus are at risk from pre-eclampsia. Women with severe early growth restriction who have fetal growth restriction do not have an increased risk of maternal disease severity. This sub-population, however, suffers from significantly higher rates of stillbirths and perinatal deaths. The incidence of IUGR in pre-eclampsia patients was 16.2% in our study. IUGR rates were found to be 22.8% in PIH and 50.7% in preeclampsia studied at Catholic University of the Sacred Heart, Rome Italy [20], which is comparable to our findings.

CONCLUSION

Women with gestational hypertension are more likely to suffer from IUGR. Research on larger sample sizes is needed to identify factors associated with IUGR before devising future research and prevention strategies.

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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CONFLICT OF INTEREST: No competing interest declared.

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