



Original Article

Evaluation of Pregnancies with Pre-existing Hypertension and Diabetes

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ABSTRACT

The complications in pregnancy can happen due to diabetes and hypertension which may affect the mother or the fetus. **Objective:** To evaluate pregnancy in hypertensive and diabetic pregnant women to detect associated risk factors and complications. **Methods:** The research was a cross-sectional method of study, conducted over 4 months from December 2021 to March 2022 in a private hospital in Gujranwala, Pakistan. A sample size of 50 was considered as per convenience. The data was analyzed using SPSS V20 software. The age of patients considered was minimum 18 years to maximum 50 years. The scan was done using greyscale type 2D Mindary ultrasound equipment. A written consent form was also taken from patients. **Results:** The results showed that 15(30%) patients were presented with diabetes mellitus, 32(64%) has hypertension and 3(6%) has both hypertension and diabetes mellitus. The complications included low lying placenta and placental abruption in 1(2%), polyhydramnios in 3(6%) and oligohydramnios in 1(2%). Microcephaly was found in 1(2%) and hydrocephalus was seen in 2(4%). Fetal abortion was found in 7(14%) and only 3(6%) have chance of having a fetus with abnormalities due to hypertension and diabetes whereas most of them have normal birth 43(86%) with no complications. **Conclusion:** In conclusion, the majority of women with diabetes mellitus and hypertension can have a normal pregnancy and birth, but some may face difficulties such as intrauterine fetal mortality, fetal congenital abnormalities and defects and stillbirth.

INTRODUCTION

The duration of pregnancy is 280 days, 40 weeks, or 9 months. It is divided into three periods. The 1st period is the 1st trimester which begins from the 1st week to 12 weeks in which the oogenesis is going on [1]. The 2nd period is the 2nd trimester which begins from 13 to 26 weeks, and the last period is the 3rd trimester which begins from 27 till delivery [2]. Pregnancy is a critical duration for both mother and fetus due to several problems and complications that may occur during this period [3]. These problems include diabetes mellitus, gestational diabetes, hypertension, and induced hypertension [4]. Hypertension is thought to complicate nearly 10% of all pregnancies around the world [5]. These problems lead to reverse outcomes even for mother and fetus such as abortions, malformations, preeclampsia, stillbirth and intrauterine

fetal restrictions [6]. One of the most common central nervous system congenital malformations owing to hypertension and diabetes in pregnancy is congenital hydrocephalus [7,8]. Hypertension in pregnancy is defined as having a systolic blood pressure (BP) of 140 mmHg or higher and a diastolic blood pressure (BP) of 90 mmHg or higher on at least two occasions more than four hours apart when resting [9]. A systolic blood pressure of 160 mmHg or higher and diastolic blood pressure of 110 mmHg or higher reported on two separate occasions is considered severe hypertension [10]. Pregnancy induced hypertension are classified into 4 categories: gestational hypertension, preeclampsia/eclampsia, chronic hypertension and preeclampsia superimposed on chronic hypertension [11]. In the United States, hypertension is the most prevalent

pregnancy problem, affecting 8-10% of pregnancies [12]. The hypertensive disorders of pregnancy continue to be one of the leading causes of pregnancy-related maternal mortality, accounting for 7-12% of all pregnancy-related maternal fatalities each year in United States [13,14]. Diabetes is linked to an increased probability of maternal and newborn morbidity in pregnant women, [15] and it remains a substantial medical problem [16]. It raises the risk of delivery trauma, and cesarean section by increasing the prevalence of macrosomia [17]. Obesity, family history of diabetes, impulsive abortions, and previous pregnancies with gestational diabetes had a increased rate of gestational diabetes mellitus in current pregnancy [18]. In addition, gestational diabetic patients have increased risk of perinatal death, neonatal hypoglycemia, hyperbilirubinemia, gestational hypertension and pre-eclampsia [19]. Perinatal outcomes, linked to inadequate glycemic management in mothers, have a 42.9 percent motility rate [20]. When it comes to assessing the fetus during pregnancy, ultrasound has become a necessary component [21]. It is a simple, non-invasive process that can be used to determine whether or not a woman is pregnant [22,23]. It was previously used to confirm pregnancy in the first trimester, whether positive or negative, gestational age, and the number of children [24]. Ultrasound evaluates gender, number of gestational sacs, anticipated delivery date, amniotic fluid volume, placenta site and size and fetal anomalies [25]. This study was used to assess pregnancy in hypertensive and diabetic pregnant women, as well as the detection of hypertension and diabetes-related complications like abortion, polyhydramnios, oligohydramnios, placental site abnormalities and fetal malformations. The importance of ultrasound as an early diagnostic tool and prediction of hypertension and diabetes related problems in pregnancy will be highlighted in this study.

METHODS

The research was a cross-sectional method of study, conducted over 4 months from December 2021 to March 2022. A sample size of 50 was considered as per convenience. The age of patients for this study was minimum 18 years to maximum 50 years who had undergone ultrasonography. This study was conducted in the department of radiology in a private hospital in Gujranwala, Pakistan. The scan was done using greyscale type 2D Mindary ultrasound equipment. A written consent form was also taken from patients. The data were analyzed using SPSS version 20.0.

RESULTS

This study was conducted by dividing patients into three age groups, ranging from under 20 to above 43 years old.

Table 1 shows that the second group (25-40 years) with maximum frequency 39(78%) of the sample as compared to the first group (under 25 years) with 8(16%) of the sample and the third group (40 years and more) with minimum frequency 3(6%) of the sample.

Age Groups	Frequency	Percent
<25	8	16.0
25-40	39	78.0
>40	3	6.0
Total	50	100.0

Table 1: Frequency distribution of age group

Table 2 shows that there is a higher incidence of hypertension 32(64%), followed by 15(30%) of diabetes mellitus and the least incidence of having both hypertension and diabetes mellitus that is only 3(6%).

Incidence of diabetes mellitus and hypertension	Frequency	Percent
Hypertension	32	64.0
Diabetes Mellitus	15	30.0
Diabetes And Hypertension	3	6.0
Total	50	100.0

Table 2: Frequency distribution of incidence of diabetes mellitus and hypertension

Table 3 shows that there is a higher incidence of having normal placental site 48(96%), but only 1(2%) are presented with the low lying placenta and 1(2%) with placental abruption.

Placental Site	Frequency	Percent
Normal	48	96.0
Low Lying	1	2.0
Abruption	1	2.0
Total	50	100.0

Table 3: Frequency distribution of placental sites

Table 4 shows that normal amniotic fluid volume was found in 46(92%), with polyhydramnios present in 3(6%) and least were presented with oligohydramnios in 1(2%).

The Volume of Amniotic Fluid	Frequency	Percent
Normal	46	92.0
Polyhydramnios	3	6.0
Oligohydramnios	1	2.0
Total	50	100.0

Table 4: Frequency distribution of volume of amniotic fluid

Table 5 shows that there is less chance of fetal abortion 7(14%) due to hypertension and diabetes whereas most have normal birth 43(86%).

Incidence of Abortion	Frequency	Percent
Yes	7	14.0
No	43	86.0
Total	50	100.0

Table 5: Frequency distribution of incidence of abortion

Table 6 shows that patients with diabetes and hypertension had an 3(6%) chance of having a fetus with abnormalities:

Microcephaly was found in 1(2%) and hydrocephalus was seen in 2(4%).

Incidence of Fetal Anomaly	Frequency	Percent
Normal	47	94.0
Hydrocephaly	2	4.0
Microcephaly	1	2.0
Total	50	100.0

Table 6: Frequency distribution of incidence of fetal anomalies

DISCUSSION

This study was conducted using ultrasonography to analyze pregnancy in diabetic and hypertensive women in Gujranwala, Pakistan, by analyzing amniotic fluid volume, placenta site, abortions, and fetal malformations. A total of 50 pregnant diabetic and hypertensive women were scanned to determine their pregnancy status from the perspective of the prior issues. The current study showed that 39 (78%) of the pregnant women affected by hypertension and diabetes mellitus are from 25-40 years of age while only 8 (16%) of female below 25 years of age and 3 (6%) of female above 40 years were affected with diabetes and hypertension in the current study, it was proved that pregnant women in the adult age group most commonly affected with complications due to hypertension and diabetes. A previous study was done by Bener et al 2011 also mentioned that adult age pregnancy also affected by complications due to gestational diabetes [15]. Among these most of the women were affected by hypertension i.e.- 32(64%), 15(30%) had diabetes mellitus and only 3(6%) of women are affected by both diabetes and hypertension. A previous study done by Mahmoud 2019 also found that most of the pregnant women were affected by hypertension. It is also shown in this study that 48 (96%) of women with diabetes and hypertension have a normal placental site and only 1 (2%) are presented with the low-lying placenta and 1 (2%) placental abruption [2]. The volume of amniotic fluid was normal in 46 (92%) of women with 3 (6%) having polyhydramnios and 1 (2%) having oligohydramnios. Mahmoud 2019 also proved that there were more normal placental sites but can cause low lying and placental abruption in very less cases [2]. He also mentioned that there are more normal amniotic fluid volume due to hypertension and diabetes and has very less polyhydramnios and oligohydramnios in a few cases. There are only 7 (14%) abortions due to diabetes and hypertension in pregnancy whereas in 43 (86%) there is normal birth. 47 (94%) of pregnant women with hypertension and diabetes had no incidence of any fetal anomaly while 2 (4%) of a fetus is presented with hydrocephaly and 1 (2%) of the fetus is presented with microcephaly. Mahmoud 2019 also proved that there are fewer abortions due to hypertension and diabetes and had lesser incidence of fetal anomalies [2].

CONCLUSION

This study concluded that the majority of women with diabetes mellitus/ hypertension can have a normal pregnancy and birth, but some may have difficulties such as fetal congenital abnormalities and defects, and stillbirth. Age is a continuous risk factor for diabetes/ hypertension during pregnancy. The diabetes and hypertension-related problems include abortions, placenta site abnormalities, polyhydramnios, oligohydramnios, and fetal malformations. The Complications in the mother can lead to later diabetes and hypertension, as well as an increased risk of death and morbidity, whereas fetal complications include abnormalities and congenital deformities.

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