ORIGINAL ARTICLE OPEN ACCESS

Frequency of Polyhydramnios in Pregnancy Complicated with Gestational Diabetes Mellitus

Madina, Basanara Bibi, Bakhtawar Aziz, Nayyab Qayyum*, Saira Andleeb

Post Graduate Resident-Department of Obstetrics & Gynecology, MTI/Khyber Medical College/Teaching Hospital Peshawar, *Corresponding Author

Objective: To find out the frequency of polyhydramnios in pregnancy complicated with gestational diabetes mellitus.

Study Design: Cross-sectional study.
Setting: Department of Obstetrics & Gynaecology, MTI/Khyber Medical College/Teaching Hospital Peshawar
Duration of Study: Four months: May 2023 to August September 2023
Subjects and Methods: A total of 110 females with gestational diabetes mellitus were included in the study. All pregnant women had developed gestational diabetes. Ultrasound scan was performed for all study participants

Results: Patients had a mean age of 23.15 ± 3.15 years and a mean gestational age of 32.14±2.12 weeks. 15% of the patients Polyhydraminos was seen in 20% patients.

Conclusion: The frequency of polyhydramnios in pregnancies complicated by gestational diabetes was 20%.

Keywords: Polyhydramnios; Gestation; Diabetes Mellitus; Obstetrics

INTRODUCTION

The screening for GDM, that was established 50 years ago, demonstrates the increased risk of hyperglycemia during pregnancy, and the evidence supporting that effective treatment may reduce

hyperglycemia related adverse pregnancy outcomes [1]. However, the decision of whether the screening for GDM should be performed in all pregnant women or selectively in women at high risk of developing T2DM was controversial.

Early screening for GDM is of particular importance, especially in women from population endemic in T2DM. However, early screening for GDM and increased rate of diagnosis is expected to increase psychological stress [2].

In the first antenatal visit, IADPSG recommends either universal or selective screening for women at high risk, to identify women with overt diabetes. In the second phase at 24-28 wk' gestation the IADPSG recommends screening for GDM for all women, *i.e*., universal screening using 2-h 75g OGTT. Performing selective screening, as recommended by the IADPSG, in early pregnancy is uncontroversial among various expert groups. However, universal screening for all women, using a 75-g OGTT in late pregnancy, remains controversial. The ADA [3] and the ADIPS [4] support universal screening, while the National institute for health and Clinical excellence (NICE) [5] and the Scottish Intercollegiate Guidelines Network (SIGN)[15], recommend selective screening for women with risk factors. Moreover, NICE recommends early screening with a 75-g OGTT in women with previous history of GDM, and at 24-28 wk' gestation for those with risk factors [5].

Polyhydramnios occurs in 1% of pregnancies, whereas oligohydramnios occurs in about 11% of pregnancies. No age variables are recognized.

In pregnancies affected by polyhydramnios, approximately 20% of neonates are born with a congenital anomaly of some type; therefore, the delivery of these newborns in a tertiary care setting is preferred. This article presents the causes, outcomes, and treatments of polyhydramnios and oligohydramnios, as well as their effects on the developing fetus and neonate. [6]

The underlying cause of the excessive amniotic fluid volume is obvious in some clinical conditions and is not completely understood in others. Causes include the following:

- Twin gestation with twin-to-twin transfusion syndrome (increased amniotic fluid in the recipient twin and decreased amniotic fluid in the donor) or multiple gestations
- Fetal anomalies, including esophageal atresia (usually associated with a tracheoesophageal fistula), tracheal agenesis, duodenal atresia, and other intestinal atresias

- Central nervous system abnormalities and neuromuscular diseases that cause swallowing dysfunction
- Congenital cardiac-rhythm anomalies associated with hydrops, fetal-to-maternal hemorrhage, and parvovirus infection
- Poorly controlled maternal diabetes mellitus (Oligohydramnios may also be seen if severe vascular disease is present.)
- Chromosomal abnormalities, most commonly trisomy 21, followed by trisomy 18 and trisomy 13.
- Fetal akinesia syndrome with absence of swallowing

In a study by Kollmann et al of 860 singleton pregnancies complicated by polyhydramnios, 68.8% of the polyhydramnios cases were idiopathic, whereas maternal diabetes was found in 19.8% of cases; congenital anomalies, in 8.5%; and a positive TORCH (toxoplasmosis, other [such as syphilis, varicella-zoster, parvovirus B19], rubella, cytomegalovirus, herpes infection) serology, in 2.9%. [7]

The present study is planned to find out the frequency of polyhydramnios in pregnancy complicated with gestational diabetes mellitus.

MATERIAL & METHODS

Study Design: Cross-sectional study.

Setting: Department of Obstetrics & Gynaecology, MTI/Khyber Medical College/Teaching Hospital Peshawar

Duration of Study: Four months: May 2023 to August September 2023

Subjects and Methods: A total of 110 females with gestational diabetes mellitus were included in the study. All pregnant women had developed gestational diabetes. Ultrasound scan was performed for all study participants.

Data was analyzed with statistical analysis program (IBM-SPSS-V-22). Frequencies and percentage were computed for categorical variables like polyhydramnios. Mean ±SD was presented for quantitative variables like age and gestational age.

RESULTS

Patients had a mean age of 23.15 ± 3.15 years and a mean gestational age of 32.14±2.12 weeks. 15% of the patients Polyhydraminos was seen in 20% patients. Table 1.

Demographics		**Mean±SD**
1	Age (years)	23.15 ± 3.15
2	Gestational age (weeks)	32.14±2.12

Table-I: Mean±SD of patients according to age and gestational age

Polyhydramnios	**Frequency**	**%age**
Yes	22	20%
No	88	80%
Total	110	100%

Table-II: Frequency and %age of patients according to Polyhydramnios

DISCUSSION

In our study 20% of polyhydramnios was associated with gestational diabetes. In a study by Sunar L, et al. has reported that frequency of polyhydramnios was 27.17% in patients with gestational diabetes mellitus [8]. In another study by Aktün HL, et al. has showed that frequency of polyhydramnios was 5% in patients with gestational diabetes mellitus as compare to 1% in non GDM pregnant women [9].

Our goal was to evaluate gestational diabetes associated polyhydramnios. This may indicate that anomalies are more common than diabetes at extreme levels of polyhydramnios. To our knowledge no local study has looked at the quantity of polyhydramnios associated with diabetes in comparison to other causes.

Kmjak et al demonstrated increased fetal urine production, as determined by the hourly fetal urine production rate, to levels above the 95th percentile in 38.1% of their pregnant diabetics [10] However, interestingly enough, polyhydramnios was not associated with these findings. In contrast, Van Otterlo et al. [11] could not demonstrate elevated hourly fetal urine production rates in 10 of 11 diabetic patients with polyhydramnios. Similarly, Rabinowitz et al. [12] were unable to demonstrate an obvious relationship between the hourly fetal urine production rate and either amniotic fluid volume or maternal glucose level [13].

CONCLUSION

The frequency of polyhydramnios in pregnancies complicated by gestational diabetes was 20%. This may indicate that anomalies are more common than diabetes at extreme levels of polyhydramnios. To our knowledge no local study has looked at the quantity of polyhydramnios associated with diabetes in comparison to other causes.

REFERENCES

1. ACOG technical bulletin. Diabetes and pregnancy. Number 200-December 1994 (replaces No. 92, May 1986). Committee on Technical Bulletins of the American College of Obstetricians and Gynecologists. Int J Gynaecol Obstet. 1995;48:331–339.

2. Chamberlain C, McNamara B, Williams ED, Yore D, Oldenburg B, Oats J, Eades S. Diabetes in pregnancy among indigenous women in Australia, Canada, New Zealand and the United States. Diabetes Metab Res Rev. 2013;29:241–256.

3. American Diabetes Association. Standards of medical care in diabetes--2014. Diabetes Care. 2014;37 Suppl 1:S14–S80.

4. Nankervis A, McIntyre HD, Moses RG, Ross GP, Callaway LK. Testing for gestational diabetes mellitus in Australia. Diabetes Care. 2013;36:e64.

5. National Collaborating Centre for Women's and Children's Health (UK) Diabetes in Pregnancy: Management of Diabetes and Its Complications from Preconception to the Postnatal Period. London: National Institute for Health and Care Excellence (UK); 2015

6. Queenan JT, Gadow EC. Polyhydramnios: chronic versus acute. Am J Obstet Gynecol. 1970;108:349–355.

7. Hill LM, Breckle R, Thomas ML, Fries JK. Polyhydramnios: ultrasonically detected prevalence and neonatal outcome. Obstet Gynecol. 1987;69:21–25.

8. Sunar L, Yan Z. Evaluation of pregnancy outcomes in gestational diabetes mellitus. Med J Pokhara Acad Health Sci. 2018;1(2):66-9.

9. Aktün HL, Uyan D, Yorgunlar B, Acet M. Gestational diabetes mellitus screening and outcomes. J Turk Ger Gynecol Assoc. 2015;16(1):25–29

10. KUJ:jak A, Kirkinen P, Latin V; Ivankovic D. Ultrasonic assessment of fetal kidney function in nonnal and complicated pregnancies. AM J OBSTET GYNECOL 1981;141:266- 70.

11. Moore TR. Diabetes in pregnancy. In: Creasy RK, Resnik R, eds. Maternal fetal medicine, principles and practice. Philadelphia: WB Saunders, 1994:934-78.

12. Van Otterlo LC, Wladimiroff Jw, Wallenburg HCS. Relationship between fetal urine production and amniotic fluid volume in nonnal pregnancy and pregnancy complicated by diabetes. Br J Obstet Gynaecol 1977;84:205-9.

13. Rabinowitz R, Rosen DJ, Nicolaides KH, Wladimiroff JW. Fetal urine production. In: Chervenak FA, Isaacson GC, Campbell S, eds. Ultrasound in obstetrics and gynecology. Boston: Little, Brown, 1993:547-54