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Idiopathic polyhydramnios-its magnitude and association with maternal outcomes

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Abstract

Aim: The aim of this study is to analyze maternal outcomes occurring in pregnant women with idiopathic polyhydramnios.

Material and methods: This is a comparative study done on 35 pregnant women with idiopathic polyhydramnios and 35 pregnant women with normal liquor volume. All the intrapartum and antepartum complications are thoroughly scrutinized to elucidate the importance of thorough pregnancy care.

Result: Mean age in case and control group was 25.97 and 25.74 years. Both groups were comparable in terms of religion, literacy, residential area and gravid status. Majority of women of both groups belonged to lower middle and middle class. Range of period of gestation in case and control group was 29.5-40.71 and 36.2-41.5 weeks respectively indicating preterm deliveries in case group (p value 0.012). Antenatal complications like malpresentation, premature rupture of membranes, antepartum hemorrhage were more in case group. There were 34.2% preterm deliveries in case group while only 2.8% in control group which is significant (p value <0.001). Need of LSCS was also higher in case group i.e.,42.8% vs 22.8% in control group. Risk of post-partum hemorrhage was also higher in case group.

Conclusion: Idiopathic Polyhydramnios is an obstetric risk factor. Mother is at increased risk for morbidity due to increased chances of complications, increased need of surgical intervention and increased risk of post-partum hemorrhage. Managing such cases at tertiary care center will allow in decreasing such adverse incidents as well improve maternal and fetal health.

Clinical significance: With the advent of newer technologies the detection rate of idiopathic polyhydramnios has increased. These cases should be considered high risk and proper care is necessity of the hour.

Keyword: idiopathic, polyhydramnios, preterm, antenatal complications.

Introduction

Amniotic fluid is an integral part of normal fetal development. Adequate amount of amniotic fluid is necessary for protection of the fetus from traumatic forces, cord compression and infection. It is also helpful in normal development of fetal organs .[1] Amniotic fluid also helps in making elusive diagnosis of certain genetic conditions like down's syndrome, fetal infection, paternity test, fetal lung maturity via amniocentesis.

Polyhydramnios is defined as Single Deepest Vertical Pocket (SDVP) more or equal to 8cm or Amniotic Fluid Index (AFI) more or equal to 24cm or AFI above 95th centile for that gestational age.[2] The incidence of polyhydramnios has been recorded in 0.2-3.9% of pregnancies[3] and various adverse maternal and perinatal outcomes associated with polyhydramnios have been noted.[3]

Maternal conditions such as multiple gestation, gestational diabetes mellitus (GDM)[4], pregestational diabetes mellitus, maternal infections, Rh isoimmunization, placental abnormalities etc. contribute to excess liquor volume. Polyhydramnios is also seen in fetal congenital abnormalities such as Gastro intestinal, obstructive defects, CNS (central nervous system) anomalies mainly open neural tube defects, TORCH infections (Toxoplasmosis or cytomegalovirus) chromosomal abnormalities, both immunologic and nonimmunologic abnormalities, fetal body wall defects.[5]

Thus, idiopathic Polyhydramnios[6] is defined as excess of amniotic fluid volume in absence of aforementioned conditions and because of this fact there is necessity of thorough and careful monitoring of both mother and fetus antepartum, intrapartum and postpartum. This constitutes 60% of cases of polyhydramnios. According to latest theory increased aquaporin 8 and 9 expression in fetal membranes through alterations in aquaporin 1 has been associated with the development of idiopathic polyhydramnios.[7]

No transparent management guidelines have yet been elucidated till date. Aim of this study is to analyze maternal outcomes which may occur in pregnant women with idiopathic polyhydramnios.

Material and methods

This comparative study was done between 35 Pregnant Women with idiopathic polyhydramnios (cases) and 35 pregnant women with normal liquor volume(controls) beyond 28weeks period of gestation attending ANC OPD in department of Obstetrics and Gynaecology, SMS medical college, Jaipur with written informed consent after fulfilling inclusion and exclusion criteria. A detailed history was taken and thorough antenatal examination and routine investigations were performed.

Ultrasound was done to determine the Amniotic fluid index. LEVEL 2 SCAN was documented to detect the presence of any congenital fetal anomalies, hydrops, multiple gestation, and placental anomalies.75 g oral glucose tolerance test (DIPSI)was done to detect women with gestational diabetes mellitus. Blood group typing to detect Rh isoimmunization. TORCH profile testing to detect in utero infection was done.

Inclusion criteria

1. Pregnant women willing to participate in study.
2. Singleton live pregnancy of beyond 28weeks.
3. Pregnant women with raised AFI(>24cms) or SDVP (>8cms).
4. Pregnant women with normal AFI(8-24cms) or SDVP(2-5cms).

Exclusion criteria

1. Maternal diabetes
2. Rh isoimmunization
3. TORCH infections
4. Congenital anomalies

Antenatal complications like mal-presentations, Premature Rupture Of Membranes, preterm delivery, cord prolapse, abruptio placentae were recorded in both groups. Postpartum complications such as uterine atony, postpartum haemorrhage were studied in both groups. Onset of labour was studied in both groups whether it was spontaneous or not. Induction of labour and cesarean delivery was done only for obstetric indications. Period of gestation at time of delivery was also compared in both the groups.

Statistical analysis

Data collected was entered in MS Excel sheet. Continuous variables were summarized as mean and standard deviation, while nominal/categorical variables as proportions (percentage). Parametric test like unpaired t test was used for analysis of continuous variables, whereas chi-square test/Fisher Exact test and other non- parametric test were used for nominal/categorical variables as per data yield. If the data was found to be non-normally distributed, appropriate non- parametric tests in the form of Wilcoxon test were used. p value <0.05 was be taken as significant**.** SSPS (Statistical package for the social science) Epi info version 7.2.1.0 was used for all statistical calculations.

Results

Table 1 shows the sociodemographic characteristics of both the groups. The mean Age in the study group was 25.97 years while in the control group was 25.74 years which is statistically insignificant(p value 0.737).In our study68.6% women in the study group while 74.3% in the control group belonged to Hindu religion while remaining were Muslim(p value 0.597).In study group 77.1% women and in control group 74.3% were literate(p value 0.780).In study group 71.4% women and 82.9% of control group resided in urban area and remaining belonged to rural area (p value 0.255). Majority of the population of both groups belonged to lower middle and middle class.

In our study,42.9% of women of study group and 40% of control group were primigravida and remaining were multigravida. But since p value is 0.808 which is not significant.

Variable	Case	Control	P value
Age(mean in years)	25.97 years	25.74years	0.737
Religion			0.597
Hindu	24 (68.6%)	26 (74.3%)	
Muslim	11 (31.4%)	9 (25.7%)	
Literacy			0.780
Literate	27 (77.1%)	26 (74.3%)	
Illiterate	8 (22.9%)	9 (25.7%)	
Residence			0.255
Urban	25 (71.4%)	29 (82.9%)	
Rural	10 (28.6%)	6 (17.1%)	
Socioeconomic status			0.784
Lower	3 (8.6%)	2 (5.7%)	

Lower middle	11 (31.4%)	11 (31.4%)	
Middle	17 (48.6%)	20 (57.1%)	
Upper middle	4 (11.4%)	2 (5.7%)	
Lower	3 (8.6%)	2 (5.7%)	
Gravida status			0.808
Primigravida	15 (42.9%)	14 (40.0%)	
Multigravida	20 (57.1%)	21 (60.0%)	

Table 1: sociodemographic factors

Table 2 summarizes the antepartum, intrapartum and postpartum characteristics. The range of period of gestation in study group at the time of delivery was 29.5-40.71 weeks while in control group it was 36.2-41. 5weeks.The mean of gestational age at the time if delivery was 37.15 and 38.73 weeks for case and control group. p value is 0.012 which is statistically significant. This manifested that there were increased preterm deliveries in women of study group.

Variable	Case	Control	P value
Period of gestation at delivery(mean)	37.15	38.73	0.012
Antenatal complications			
Prom	6 (17.1%)	2 (5.7%)	0.259
Antepartum hemorrhage	2 (5.7%)	0 (0.0%)	0.493
Malpresentation	3 (8.6%)	1 (2.9%)	0.694
Onset of labour			0.569
Spontaneous	26 (74.3%)	28 (80.0%)	
Induced	9 (25.7%)	7 (20.0%)	
Fetal maturity			<0.001
Preterm	12 (34.3%)	1 (2.9%)	
Term	22 (62.9%)	29 (82.9%)	
Post-term	1 (2.9%)	5 (14.3%)	
Mode of delivery			0.075
Vaginal delivery	20 (57.1%)	27 (77.1%)	
LSCS	15 (42.9%)	8 (22.9%)	
Post-partum hemorrhage	6 (17.1%)	2 (5.7%)	0.259

Table 2: antepartum, intrapartum and postpartum characteristics.

In study group premature rupture of membranes was in 6(17.1%) women while in control group was only in 2(5.7%) women. As p value is 0.259 which is not statistically significant but it shows that risk of premature rupture of membranes is more with study group. None of the case of study and control group had cord prolapse. In study group 2(5.7%) women had antepartum hemorrhage while none in control group. In study group 3(8.5%) women had fetal malpresentation while only 1(2.8%) had in control group (p value 0.614).

In 9(25.7%) women of study group labour was induced while 26(74.2%) women underwent spontaneous labour, while in control group 28(80%) women had spontaneous labour and 7(20%) were induced (p value 0.569). This shows that result was comparable in both the groups. Out of 35 women of study group 12 had preterm (34.2%) ,22 term (62.8%) and 1(2.8%) post term births while in control group 1 had preterm (2.8%),29 term (82.8%) and 5 post term (14.2%) deliveries. p value <0.001 which is statistically significant. The average gestational age at the time of delivery was earlier in women with idiopathic polyhydramnios than women with normal liquor volume. In our study 20 women (57.14%) of study group delivered through vaginal route and remaining 15(42.8%) underwent LSCS. While in control group 27(77.14%) delivered vaginally and only 8(22.8%) needed LSCS. Postpartum hemorrhage was seen in 6(17.1%) women of study group while in only

2(5.7%) women of control group. This depicts that risk of PPH was more in idiopathic polyhydramnios.

Discussion

In the present study,35 women with idiopathic polyhydramnios and 35 women with normal liquor volume were studied. Sociodemographic factors like maternal age, religion, literacy, residential area, socioeconomic status and parity were not statistically significant. This data is indicator of the population analysis of the catchment area of our hospital.

The range of period of gestation in study group at the time of delivery was 29.5-40.71 weeks while in control group, it was 36.2-41. 5weeks.p value is 0.012 which is statistically significant. This manifested that there were increased preterm deliveries in women with idiopathic polyhydramnios.

Antenatal complications like premature rupture of membranes, antepartum hemorrhage and fetal malpresentation were seen in 17.1%,5.7% and 8.6% in study group while in 5.7%, none and in 2.9% of cases in control group. None of the case in both groups had cord prolapse. It is due to better feto-maternal surveillance at the tertiary level care centre.

Therefore, it is determined that idiopathic poly hydramnios is related with many antenatal complications like preterm labour and premature rupture of membranes which may be due to overdistention of uterus. Antepartum hemorrhage may be due to sudden decompression of uterus at the time of membrane rupture. Fetal malpresentations in idiopathic polyhydramnios are also more due to abundance of amniotic fluid. The results of our study are in compliance with study done by Rajgire AA et al[2](2017) who also observed that polyhydramnios was associated with complications like malpresentation, preterm labour, PROM, abruption and cord prolapse.

Spontaneous labour was seen in 74.3% cases in study group while in 80% of cases in control group. This shows that result was comparable in both the groups but the indication for induction were different .In study group induction was mainly done because of premature rupture of membranes while in control group it was done for postdatism.

Rate of preterm delivery was 34.3% in study group and 2.9% in control group. p value <0.001 which is significant. The average gestational age at the time of delivery was earlier in women with idiopathic polyhydramnios than women with normal liquor volume. Same results were obtained by Nasrin Asadi et al [8]who concluded that idiopathic polyhydramnios was related with increased preterm delivery.

The rate of cesarean section was 42.9% and 22.9% in study and control group respectively. Indication for larger number of cesarean sections in study group were fetal macrosomia, cephalopelvic disproportion, malpresentation, abruptio placentae.

Bakhsh et al (2021)[9]also evaluated that cesarean delivery rate were more in polyhydramnios group (p value 0.008).

Postpartum hemorrhage was seen in 17.1% and 5.7% cases of study and control group respectively. This depicts that risk of PPH was more in idiopathic polyhydramnios. It is due to uterine atony in the post-partum period because of its overdistention.

Conclusion

Polyhydramnios has significant association with increased maternal morbidity. Chances of adverse maternal outcome are raised because of higher risk of antenatal complications such as premature rupture of

membranes, antepartum hemorrhage, increased need of labour induction, increase in rate of cesarean section and risk of postpartum complications such as post-partum hemorrhage.

It is concluded that idiopathic polyhydramnios is an obstetric risk factor. As per our study it can be instructed that idiopathic polyhydramnios should be managed at a tertiary health care center with comprehensive antenatal care, scrutiny, in depth intrapartum monitoring and vigilant postpartum care.

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