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ORIGINAL ARTICLE

Perinatal Outcome in Idiopathic Polyhydramnios

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About the Author

Meenakshi Lallar presently working as senior resident in SHKM Medical college Mewat, Haryana. Passed out MBBS in 2009 as university topper and gold medalist. Passed MS OBGYN in 2013 in first attempt from PGIMS Rohtak, Haryana. Presented prize winning paper in yuva FOGSI and several others in AICOG and RCOG. Published several case reports in national and international journals. Has a keen interest in fetal medicine, high risk pregnancy and genetics.

Abstract

Objectives To study perinatal outcome in idiopathic polyhydramnios.

Methods Case–control study was conducted in 500 pregnant women with idiopathic polyhydramnios (study group) and 500 normal pregnant women (control group) attending the outpatient department of SHKM Medical College, Haryana. Perinatal outcomes were recorded in both the groups.

Results Out of 500 cases with idiopathic polyhydramnios, maximum cases were diagnosed between 28 and 36 weeks of pregnancy (84.6 %), and maximum presented with mild polyhydramnios (82 %). In the study and control groups, there were no statistically significant differences in preeclampsia and gestational hypertension ($p = 0.445$ and $p = 0.230$). In the study and control groups, 74.6 and 79.6 % women, respectively, had normal vaginal delivery ($p = 0.250$). The study group recorded much higher number of preterm deliveries than the control group (54 %) ($p = 0.000$). In the study group, 51.8 % women had maternal complications, while in the control group, 13.6 % women had obstetrical complications. The study group recorded higher perinatal mortality (10.4 %) than the control group.

Conclusions Idiopathic polyhydramnios is associated with higher perinatal morbidity and mortality than normal pregnancy.

Keywords Idiopathic · Polyhydramnios · Perinatal · AFI

The study was conducted in SHKM Medical College, Mewat, Haryana.

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Introduction

The amniotic fluid surrounds the fetus and is essential for its continuous development and protection. The volume of amniotic fluid changes constantly during pregnancy, increasing from 35 ml at 12 weeks' gestation to 250 ml at 17–18 weeks, and to 800 ml at term. After 38 weeks, the quantity of fluid decreases to about 250 ml by 43 weeks. Amniotic fluid balance is a consequence of complex interactions between fetal and maternal systems. Polyhydramnios develops as a consequence of disturbed equilibrium between production, fetal resorption, and secretion of amniotic fluid. Polyhydramnios is generally defined as amniotic fluid volume of 2000 ml or more at term. It is also defined as a state where the deepest vertical pocket of amniotic fluid measures more than or equal to 8 cm, or amniotic fluid index (AFI) of equal to or more than 24 cm, or above the 95th percentile for gestational age on ultrasound. The incidence of polyhydramnios has been estimated to range between 0.4 and 3.3 % [1]. Maternal disorders, such as diabetes, in utero infections, drug usage, placental abnormalities, and fetal conditions like congenital and chromosomal abnormalities, Rh isoimmunization, and multiple gestations, are generally associated with half of the cases with polyhydramnios. However, in about half of the cases, none of the aforementioned etiologies is found, and it is referred to as idiopathic polyhydramnios.

Thus, idiopathic polyhydramnios can be defined as polyhydramnios that is not associated with congenital anomalies (especially of the central nervous system or gastrointestinal tract), maternal diabetes, isoimmunizaton, fetal infection (Cytomegalovirus or toxoplasmosis), placental tumors, or multiple gestations. A thorough investigation of the mother and the fetus is mandatory to rule out all these conditions in order to refer to a case of polyhydramnios as "idiopathic" polyhydramnios. Various studies have proven adverse perinatal outcomes with cause-specific polyhydramnios [2]. However, perinatal outcome in idiopathic polyhydramnios is a matter of debate in obstetric practice, and despite a relative lack of data on idiopathic polyhydramnios, many obstetricians regard it as a high risk pregnancy and therefore recommend continuous surveillance in advanced settings and comprehensive invasive or noninvasive examinations to evaluate the risks to pregnancy [3].

Also there are no well-defined universal guidelines for the management of women with idiopathic polyhydramnios. The aim of this present study was to record perinatal outcome in idiopathic polyhydramnios.

Materials and Methods

The present study was a case–control study conducted in 500 pregnant women with idiopathic polyhydramnios and 500 normal pregnant women attending the outpatient department of SHKM Medical College, Haryana during the period, 2012–2014. Ultrasound was done to determine the AFI. Polyhydramnios was defined as AFI greater than or equal to 24 using four-quadrant technique [1]. Polyhydramnios was classified as mild, moderate, and severe according to AFI of 24.0–30.0 cm, 30.1–35.0 cm, and >35.0 cm, respectively [4]. Level II ultrasound (3.5-MHz transducer) was done to detect the presence of any congenital fetal anomalies, hydrops, multiple gestation, and placental anomalies; if any of these were found in any of the women, such women were excluded from the study. 75 g oral glucose tolerance test was done to exclude women with gestational diabetes mellitus from the study. Thus, 500 pregnant women with idiopathic polyhydramnios in second and third trimesters, irrespective of age and parity were included in the study as cases and 500 normal pregnant women without polyhydramnios who presented in second and third trimesters were included in the control group. Associated obstetrical complications like gestational hypertension, preeclampsia, preterm labor, premature rupture of membranes (PROM), malpresentations, abruptio placenta, and postpartum hemorrhage were recorded in both the study and the control groups. In asymptomatic polyhydramnios, no treatment was needed. In cases with polyhydramnios with maternal distress and pregnancy less than 37 weeks, amnioreduction (therapeutic amniocentesis) was done to relieve maternal distress. In cases with pregnancy more than 37 weeks, induction of labor/cesarean section was done (depending on obstetric indication). The mode of delivery, maturity (preterm or full term), fetal weight, and neonatal outcome were recorded. Neonates were followed for up to one month after birth. Metric data were described as mean + SD, and its comparison was done by Student's t test. Non-metric data were described as percentage where intergroup variance was measured by Chi square and Mann–Whitney-U test. Significance of the results was checked at 95 % confidence interval (CI). p value <0.05 was considered statistically significant. MS Excel and SPSS software program for Windows, version 10.1 (SPSS, Chicago, Illinois) were used for data analysis.

Results

The mean age of a woman in the study group was 28.7 ± 4.2 (range 18–38 years) and in the control group, it

was 27.8 ± 4.5 (range 18–38 years). The difference was not statistically significant between the two groups ($p = 0.052$).

Out of 500 cases with idiopathic polyhydramnios, 20 (4 %) pregnant women presented between 24 and 27 weeks of pregnancy, 238 (47.6 %) between 28 and 32 weeks, 185 (37.0 %) and 57 (11.4 %) pregnant women presented between 33 and 36 weeks and >37 weeks of gestation, respectively. Maximum cases were diagnosed between 28 and 36 weeks of pregnancy (84.6 %).

Out of 500 pregnant women in the study group, 154 (30.8 %) were primigravida, 167 (33.4 %) were second gravida, 116 (23.2 %) were third gravida and 63 (12.6 %) women were gravida four and above. In the control group, 175 (35 %) pregnant women were primigravida, 135 (27 %) second gravida, 125 (25 %) were third gravida and 65 (13 %) were gravida four and above. Maximum cases in both the groups, i.e., the study and control groups were second gravida and above. The difference was statistically insignificant ($p = 0.816$).

In the study group, 397 pregnant women (79.4 %) had gradual onset of polyhydramnios, whereas 103 (20.6 %) had acute onset of polyhydramnios.

Out of 500 pregnant women in the study group, 410 (82 %) presented with mild polyhydramnios, 44 (8.8 %) with moderate polyhydramnios, while 46 pregnant women (9.2 %) presented with severe polyhydramnios.

Out of 500 pregnant women in the study group, 373 (74.6 %) had vaginal delivery, and 127 (25.4 %) had cesarean section. In the control group, 398 pregnant women (79.6 %) had vaginal delivery, and 102 (20.4 %) had cesarean section. The difference was statistically insignificant ($p = 0.250$) (Table 1).

In the study group, 270 (54 %) women had preterm deliveries, and 230 (46 %) had term deliveries.

In the control group, 28 (5.6 %) women had preterm deliveries, and 472 (94.4 %) women had full-term deliveries. The difference was statistically significant ($p = 0.000$) (Table 1).

In the study group, 259 pregnant women (51.8 %) had obstetrical complications, among which 54 (10.8 %) women had preterm labor; cephalo-pelvic disproportion (CPD) was present in 9 (1.8 %) women; PROM was present in 18 (3.6 %); 56 (11.2 %) pregnant women had malpresentations; abruptio placenta was seen in 35 (7 %) women; and postpartum hemorrhage was seen in 33 (6.6 %) women. In the study group, 13 women (2.6 %) had preeclampsia, and 23 women (4.6 %) had gestational hypertension.

In the control group, 68 pregnant women (13.6 %) had maternal complications, out of which 9 (1.8 %) women had PROM, 4 (0.8 %) women had preterm labor, 18 (3.6 %) had malpresentations, abruptio placenta was seen in 8 (1.6 %) and postpartum hemorrhage was seen in 10 (2 %) pregnant women. The difference was statistically significant ($p = 0.0000$) (Table 2).

In the control group, 10 women (2 %) presented with preeclampsia, and 9 women (2 %) presented with gestational hypertension. The difference was statistically insignificant ($p = 0.445$ and $p = 0.230$) (Table 2).

In the study group, the mean fetal weight in the study group was 2.97 ± 0.32 g, and mean fetal weight in the control group was 2.61 ± 0.28 g. The difference between the two groups was statistically significant ($p = 0.03$). Macrosomia was found in 15 % neonates in the study group and 6.6 % neonates in the control group.

In the study group, 448 (89.6 %) babies were alive, and 52 (10.4 %) were born dead. In the control group, there were two deaths. The difference was statistically significant ($p = 0.0000$) (Table 3).

In the study group, 218 (48.7 %) neonates were admitted in neonatal intensive care unit (NICU), and in the control group, 33 (6.6 %) neonates were admitted in NICU. The difference was statistically significant ($p = 0.000$) (Table 4).

In the study group, 335 out of 448 (77.8 %) neonates were alive, and 98 (22 %) died, and 15 were lost to follow up one month post delivery. Out of 98 deaths, 81(18 %) died due to prematurity associated complications and birth asphyxia, while 17 (3.8 %) died due to congenital anomalies detected postnatally (missed on antenatal scans). These included cardiac anomalies ($n = 5$), CNS anomalies ($n = 3$), Down syndrome ($n = 3$), and the remaining anomalies were unclear subtle dysmorphologies ($n = 6$). In the control group, 495 out of 500 (99 %) neonates were alive on follow up till one month, and 3 (0.6 %) neonates

Table 1 Distribution of women with idiopathic polyhydramnios according to different parameters of delivery

Parameters of delivery	Study		Control		*p* value
	n	%	*n*	%	
Vaginal	373	74.6	398	79.6	0.250
CS	127	25.4	102	20.4	
Preterm	270	54.0	28	5.6	0.000
Term	230	46.0	472	94.4	

Table 2 Distribution of women with idiopathic polyhydramnios in relation to maternal complications

Maternal complications	Study		Control		*p* value
	n	%	*n*	%	
Cephalopelvic disproportion	9	1.8	0	0.0	0.000
Pre-eclampsia	13	2.6	10	2.0	0.445
Pregnancy induced hypertension	23	4.6	9	1.8	0.230
Premature rupture of membranes	18	3.6	9	1.8	0.000
Preterm labour	54	10.8	4	0.8	0.000
Transverse lie	31	6.2	10	2.0	0.000
Breech	18	3.6	8	1.6	0.000
Compound presentation	25	5.0	0	0.0	0.000
Abruptio placenta	35	7.0	8	1.6	0.000
Postpartum hemorrhage	33	6.6	10	2.0	0.000
Total	259	51.8	68	13.6	

Table 3 Fetal outcome in women with idiopathic polyhydramnios

Fetal outcome	Study		Control		*p* value
	n	%	*n*	%	
Live	448	89.6	498	99.6	0.001
Dead	52	10.4	2	0.4	

Table 4 Distribution of cases in relation to perinatal outcome

	Study		Control		*p* value
	n	%	*n*	%	
Neonatal intensive care unit (NICU) admission	218	48.7	33	6.6	0.000
Perinatal outcome					
Live	335	74.8	495	99.0	0.000
Dead	98	22	5	1.0	
Total	448	96.8	100	100.0	

died due to congenital cardiac anomalies, and the rest ($n = 2$) died due to prematurity-associated complications. The difference between the two groups was statistically significant ($p = 0.000$) (Table 4).

In the study group, 454 (90.8 %) pregnant women required no treatment of polyhydramnios, while 56 (9.2 %) pregnant women underwent amnioreduction.

Discussion

In the present case–control study, 500 women with idiopathic polyhydramnios and 500 normal pregnant women were studied. Maximum cases of idiopathic polyhydramnios were mild polyhydramnios (82 %) and were diagnosed after 28 weeks of gestation (84.6 %) indicating that idiopathic polyhydramnios is usually mild and develops gradually later in the gestation. The incidences of pre-eclampsia and gestational hypertension were similar in both the groups. Other obstetrical complications recorded more often in pregnancy complicated with idiopathic polyhydramnios than in normal pregnancy included preterm labor, CPD, PROM, malpresentations, abruptio placenta, and postpartum hemorrhage. Preterm labor and PROM can be explained by the early initiation of uterine contractility by over distension of uterus in polyhydramnios. CPD can be explained by macrosomia encountered in idiopathic polyhydramnios.

Cesarean section rate was 25.4 % in pregnant women with idiopathic polyhydramnios, and the main indications were fetal distress, CPD, unstable lie, compound presentation, and previous cesarean section. The rate of macrosomia was also higher in the study group. The perinatal outcomes, in terms of NICU admissions and neonatal

deaths, were significantly adverse in pregnancies with idiopathic polyhydramnios. Neonatal deaths in the study group were 98 (22 %), mainly due to prematurity, birth asphyxia, and postnatally detected congenital anomalies. However, in the control group, neonatal deaths were 5(1 %). Thus, in the present study, idiopathic polyhydramnion was associated with both maternal and fetal complications and increased perinatal morbidity, thus underlying the fact that pregnancies complicated by idiopathic polyhydramnios are at a higher risk and thus need to be followed up closely.

Panting- Kemp et al. in 1999 reported that idiopathic polyhydramnios was not significantly associated with a greater risk of preterm delivery and adverse neonatal outcome. However, they found a significant increase in macrosomia and a higher number of incidences of Cesarean section [5]. Malas et al. studied perinatal outcomes in idiopathic polyhydramnios in 69 women in 2005. This study showed that apart from the increased incidences of macrosomia, malpresentations, and cesarean section, idiopathic polyhydramnios does not seem to have an adverse perinatal outcome [6].

In a study by Kuang –Chao Chen et al. in 2005, idiopathic polyhydramnios carried a higher incidences of adverse perinatal outcomes, such as low Apgar scores, fetal death, fetal distress in labor, NICU transfer, and neonatal death [7].

In a study by Abele H et al. in 2012, it was concluded that in about 40 % of pregnancies, polyhydramnios remains unexplained during the course of pregnancy, and in 10 % of these cases, an anomaly will only be found after birth [8]. In the present study also, 17 (3.8 %) cases were diagnosed with congenital anomalies postnatally which, were missed on antenatal scans. However, these data from the present study and other studies are not sufficient to recommend routine amniocentesis in the setting of isolated polyhydramnios without sonographic evidence of other abnormalities [2].

In another study, it was concluded that in neonates with idiopathic polyhydramnios, abnormalities were detected during the first year of life in 28.4 % [9]. However, our study had a limitation that follow up postnatally was just maintained for one month and 15 neonates were lost to follow up. In another study by Taskin et al., a significantly higher preterm labors and low 1- and 5-min APGAR scores were noted in the idiopathic polyhydramnios group compared with the control group, and they concluded that although perinatal outcomes are conflicting in the literature, idiopathic polyhydramnios warrants close surveillance especially near term [10].

Conclusion

Although maximum cases of idiopathic polyhydramnios have mild polyhydramnios and are detected in later gestations, there is a high incidence of obstetrical complications and poor neonatal outcome associated with it compared with normal pregnancies. Thus, idiopathic hydramnion is an independent risk factor for perinatal morbidity and mortality. Also, congenital anomalies missed on level II scans can present as idiopathic polyhydramnios which are then detected postnatally. So, based on the present study, it can be advised that idiopathic polyhydramnios be considered a high risk pregnancy and managed in tertiary care settings with a detailed ante-partum fetal well-being surveillance, intensive intrapartum fetal monitoring, and postpartum attention by an expert neonatologist.

Compliance with ethical requirements and Conflict of interest The study was ethically approved by the hospital ethical committee and informed consent was taken from all the women participants in the study. There is no conflict of interest.

References

1. Lapaire O, Holzgreve W, Zanetti-Daellenbach R, et al. Polyhydramnios: an Update. Donald Sch J Ultrasound Obstet Gynecol. 2007;1(1):73–9.
2. Pri-paz S, Khalek N, Fuchs KM, et al. Maximal amniotic fluid index as a prognostic factor in pregnancies complicated by polyhydramnios. Ultrasound Obstet Gynecol. 2012;39:648–53.
3. Magann EF, Chauhan SP, Doherty DA, et al. A review of idiopathic hydramnios and pregnancy outcomes. Obstet Gynecol Surv. 2007;62(12):795–802.
4. Dashe JS, McIntire DD, Ramus RM, et al. Hydramnios:anamoly prevention and sonographic detection. Obstet Gynecol. 2002;100:134–9.
5. Panting-Kemp A, Nguyen T, Chang E, et al. Idiopathic polyhydramnios and perinatal outcome. Am J Obstet Gynecol. 1999;181:1079–82.
6. Malas NOM, Jayousi TMM, Miqdadi MF, et al. Perinatal outcome in idiopathic polyhydramnios. Bahrain Medical Bulletin. 2005;27:1.
7. Chen KC, Liou JD, Hung TH, et al. Perinatal outcomes of polyhydramnios without associated congenital fetal anomalies after the gestational age of 20 weeks. Chang Gung Med J. 2005; 28(4):222–8.
8. Abele H, Starz S, Hoopmann M, et al. Idiopathic polyhydramnios and postnatal abnormalities. Fetal Diagn Ther. 2012;32(4):251.
9. Dorleijn DM, Cohen-Overbeek TE, Groenendaal F, et al. Idiopathic polyhydramnios and postnatal findings. J Matern Fetal Neonatal Med. 2009;22(4):315–20.
10. Taskin S, Pabuccu EG, Kanmaz AG, et al. Perinatal outcomes of idiopathic polyhydramnios. Interv Med Appl Sci. 2013;5(1):21–5.