Original Article

FREQUENCY OF ADVERSE PERINATAL OUTCOME IN WOMEN WITH POLYHYDRAMNIOS ADMITTED AT TERTIARY CARE HOSPITAL

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ABSTRACT:

Polyhydramnios refers to the excessive accumulation of liquor amnii more than 2 liter, which is likely to influence the course of pregnancy and labour.
The maintenance of amniotic fluid volume within normal limits is an important indicator of fetal well-being, so when polyhydramnios is detected during pregnancy, it should be investigated thoroughly because of its association with several maternal and fetal complications. Although, 60% of cases are idiopathic. The most common causes are fetal anomalies maternal diabetes and twin pregnancy.
The aim of the study is to find out the frequency of an adverse perinatal outcome. The adverse perinatal outcome was determined by the presence of congenital anomalies and other neonatal adverse parameters which are solely caused by polyhydramnios.
OBJECTIVE: To determine the frequency of an adverse perinatal outcome in women with Polyhydramnios.
STUDY DESIGN: Descriptive-Cross sectional.
SETTING: The study was conducted at the Department of Gynecology and Obstetrics, Unit-I Liaquat University of Medical and Health Sciences, Hyderabad / Jamshoro (LUMHS).
DURATION OF STUDY: This study was carried out for the period of 6 months, i.e. from 25th Dec 2009 to 25th June 2010.
RESULTS: Study outcome was measured by immediate neonatal assessment after birth. Out of 79 patients, 19(24.05%) women delivered with congenitally malformed babies. Among that CNS system involvement was more frequent, i.e. anencephalus 6(7.59%) and Hydrocephalus 8(10.13%). GIT anomalies were 5(6.33%). 13(16.46%) babies were born with low Apgar score, 4(5.06%) had low birth weight and most of the babies were preterm i.e. 50 (63.29%).
The categorical data is presented via different tables and pie charts and the possible confounding variable i.e. age, gestational age, and parity, that could affect the outcome were analyzed.
CONCLUSION: It is concluded that polyhydramnios carries a higher incidence of adverse perinatal outcomes like congenital anomalies, low birth weight, low Apgar score and preterm gestation. It is imperative to make efforts to antenatally detect as many cases as possible to provide proper perinatal care. So these women should have early antenatal booking visits and should be fully investigated for the cause of polyhydramnios and need to be encouraged to take folic acid supplementation.
KEYWORDS: Polyhydramnios, amniotic fluid index, congenital anomalies, perinatal outcome.

INTRODUCTION:

Polyhydramnios refers to the excessive accumulation of liquor amnii i.e. more than 2 liters which are likely to influence the course of pregnancy and labour. It is defined as deeper vertical Pool (DVP) more than 8 cm and amniotic fluid index above the 95th centile for gestational age.[1] Polyhydramnios is sub-classified into three categories, it is considered

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mild if the deepest vertical pool is 8-12 cm, moderate when DVP is 12-15 cm, severe if the DVP is more than 15 cm[2].

The amniotic fluid volume is an obstetric parameter of current fetal well-being[3]. The assessment of amniotic volume is essential for evaluation of the fetal and maternal condition. Patient with polyhydramnios often have critical fetal disorder resulting in intrauterine death, so careful observation and perinatal managements are required[4]. It is a common obstetric complication, which complicates approximately 1-3% of all pregnancies with the same prevalence among different population and is associated with several maternal and fetal problem[5,6].

Although the etiology of most of the cases remains unclear, commonly considered causes include maternal diabetes mellitus, (gestational and pregestational) chromosomal aberration, congenital anomalies, like esophageal and duodenal atresia / stenosis neural tube defects, hydrocephalus anencephalus, cleft lip and palate, musculoskeletal anomalies and multiple gestations[7].

Pregnancy with polyhydramnios should be investigated thoroughly. It carries a poor fetal prognosis with an expected neonatal death rate of nearly 30% and one fourth of this perinatal mortality is due to prematurity[8].

While in a study by Akram H et al KEMC the incidence of GIT anomalies was 21% and preterm birth was 22%[9].

The perinatal mortality due to polyhydramnios is at 10 to 30%, the degree of polyhydramnios is directly associated with increased frequency of preterm prelabour rupture of membrane which leads to an increase the rate of morbidity and mortality[10].

The congenital malformation has a major contribution to perinatal mortality. A study was done by Waheed N et. al. Rawalpindi showed the incidence of central nervous system malformation in 74% babies out of which more than half had anencephalic fetuses. While the incidence of low birth weight babies were20.93%[11].

Maternal complications are mostly attributed to uterine distention and include abdominal discomfort, uterine irritability, postpartum hemorrhage and compromised respiratory function. The incidence of caesarean section is also increased due to unstable lie and placental abruption[5].

It is important to evaluate each case thoroughly in a systemic manner. A careful history, with attention to maternal symptoms, diseases such as diabetes mellitus or red cell alloimmunization or recent viral infection is important. High-resolution ultrasound should be performed to assess the degree of polyhydramnios, identify multiple pregnancies and target assessment of fetal congenital anomalies. Karyotyping should be offered, particularly in association with structural anomalies.

The therapeutic aim is to relieve maternal symptoms and prolonged gestation in pregnancies with healthy fetuses. The treatment is usually warranted only in moderate to severe polyhydramnios during the mid or early third trimester. The criteria for intervention include severe maternal symptoms or an AFI above 40 cm or DP over 12 cm (moderate) above which threshold intra-amniotic pressure may increase[5].

The treatment options include pharmacological management with cyclooxygenase inhibitors i.e. indomethacin and sulindac.

Serial amnioreduction in singleton pregnancies has been advocated but carries the risk of precipitating preterm labour and rapid re-accumulation of liquor. Prostaglandin. Synthase inhibitors and more recently selective cyclooxygenase (Cox-2) inhibitors may also be used to decrease fetal urine output and hence reduce polyhydramnios[12].

OBJECTIVES

- The find out the frequency of an adverse perinatal outcome in women with Polyhydramnios.
- Adverse perinatal outcome was determined by certain parameters the like presence of congenital anomalies and presence of other neonatal adverse parameters.

OPERATIONAL DEFINITIONS:

Adverse perinatal outcome was determined by certain parameters like the presence of congenital anomalies and type of anomaly and presence of other neonatal adverse parameters.

HYPOTHESIS

Different independent variables like Anencephaly, Hydrocephalus, Duodenal Atresia, Low Birth Weight were statistically tested with dependent variable (gestational age) to observe association between them.

FETAL OUTCOMES

Congenital anomalies: Detected on detailed ultrasound during pregnancy and on gross examination after delivery.

CNS ANOMALIES

Anencephalic Baby: Absence of fetal calvaria, the dome-like portion of the cranial vault on the scan, and confirmed by gross examination after birth.

Hydrocephalus: Dilated lateral ventricles >1 cm and cortical thickness < 1 cm on ultrasound during pregnancy and head circumference more then 35 cm measuring after birth.

GIT ANOMALY: Duodenal atresia, non-canalization of duodenum diagnosed by a double bubble (dilated bowel loop) sign on ultrasound.

NEONATAL OUTCOME

- Low birth weight i.e. <2.5 kg
- Preterm: Babies with signs of prematurity and their gestational age < 37 completed weeks.
- Low Apgar score <5

MATERIAL AND METHOD:

Study Design:

Descriptive –Cross-sectional

Setting:

This study was conducted at gynecology and obstetrics Department of Unit-I LUMHS, Hyderabad.

Duration of study

6 months after approval of synopsis i.e: from 25th December 2009 to 25th June 2010.

Sample size

Total 79 pregnant women with Polyhydramnios were included in this study.

Sample technique

Technique was non-probability convenient type.

SAMPLE COLLECTION

Inclusion Criteria

Patients of any age with a gestational age more than 28 weeks with Polyhydramnios diagnosed by ultrasound showing DVP > 8 cm or an AFI more than 24 cm.

Exclusion Criteria

All pregnant women with following complications were excluded

1. Multiple gestation
2. Diabetes mellitus
3. Abruptio placentae
4. Infection like TORCH

DATA COLLECTION PROCEDURE:

Women fulfilling the inclusion criteria will be selected for data collection on predesign proforma. Informed consent will be taken. The biodata of patient will be noted. Gestational age at delivery will be noted. Diagnosis of Polyhydramnios was made on clinical feature (sign and symptoms) and confirmation of diagnosis was done with an ultrasound scan, paediatric detailed receiving notes, detailed physical examination of neonate, including the parameters like Apgar score, birth weight, anencephalus and hydrocephalus diagnosed by ultrasound, was done immediately after birth by neonatologist in collaboration with researcher.

DATA ANALYSIS

Data will be analyzed by SPSS version 23. Data like gestational age, the weight of the baby, low Apgar score <5, CNS anomalies like anencephalus and hydrocephalus, GIT anomalies like duodenal atresia and preterm birth < 37 weeks will be presented in percentages.

Age, gestational age, and parity will be stratified for control of confounding variable. Furthermore, Fisher's test was employed to find out statistical association between different variables because the number of respondents were meager.

Questionnaire

The study questionnaire was simple and comprehensive. It includes name, age, address, gestational age by dates and by scan and parity. The fetal outcome, congenital anomalies, CNS anomalies (anencephalus and hydrocephalus), GIT anomalies (Duodenal atresia) and neonatal outcome (preterm, low birth weight, and low Apgar score).

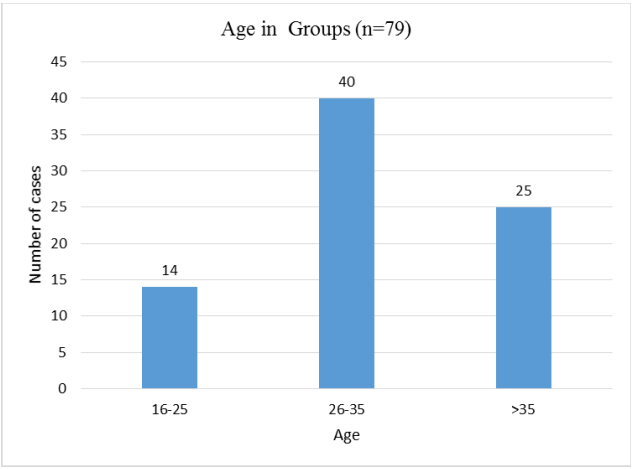


Figure I: Age of Respondents

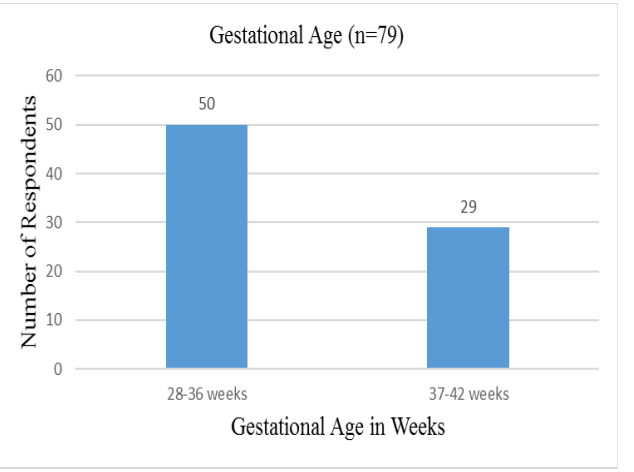


Figure II: GESTATIONAL AGE

Table I: Obstetrical Data

Mean & Standard Deviation of Obstetrical Data		
	Mean	Std. Deviation +
Age	31.13	6.138
Gestational Age	34.27	3.547
Parity	2.90	2.023

Table II: PARITY

Parity Groups (n=79)		
	Frequency	Percentage
0	3	3.8%
1	17	21.5%
2-5	52	65.8%
>5	7	8.9%
Total	79	100.0%

Table III: Frequency of Adverse Perinatal Outcome in Patients with polyhydramnios (n=79)

Adverse perinatal outcome	Frequency	
	Yes	No
Anencephaly	6 (7%)	73 (93%)
Hydrocephalus	8 (10.13%)	71 (89.87%)
Duodenal Atresia	5 (6.33%)	74 (93.67%)
Low Birth Weight	4 (5.06%)	75 (94.94%)
Preterm	50 (63.29%)	29 (36.71%)
Low APGAR Score	13 (16.46%)	66 (83.54%)

Table IV: Frequency of adverse perinatal outcome associated with polyhydramnios

	Frequency	Percentage
Fetal outcome (N=19)		
CNS Anomalies		73.6%
• Anencephaly	6	31.6
• Hydrocephalus	8	42.1
GIT Anomalies		
• Duodenal Atresia	5	26.3
Neonatal outcome (n=67)		
Low Birth Weight	4	6%
Preterm	50	75%
Low APGAR Score	13	19%

Table V: Results of Fisher's Exact Test

Independent Variable	Dependent Variables	P-Value
Gestational age	Anencephaly	<0.0001
	Hydrocephalus	<0.0001
	Duodenal Atresia	<0.0001
	Low Birth Weight	<0.0001

DISCUSSION:

Polyhydramnios is the condition having too much amniotic fluid[13]. It is usually associated with congenital fetal anomalies.8 The polyhydramnios has a variety of causes affecting mother and fetus. The presence of polyhydramnios should prompt a search for other fetal anomalies. Some of the anomalies can be diagnosed with sonography while other requiring karyotyping. Polyhydramnios is suspected clinically and is confirmed by ultrasound. The clinical problem associated with polyhydramnios apart from fetal anomalies are maternal discomfort, preterm labour and many other[14]. There is a dominant role of anomalous fetal development in the production of polyhydramnios but discrepancy still exists regarding the reported frequency of anomalies among fetuses from pregnancies complicated by polyhydramnios. About 50-60% of polyhydramnios is idiopathic. In most of the cases, the polyhydramnios develop late in the second and 3rd trimester. There are so many studies which are conducted worldwide to find out the association of congenital anomalies and adverse neonatal outcomes in polyhydramnios. This study was conducted in the department of obstetrics and gynecology Unit-I at LUMHS hospital to determine the frequency of an adverse perinatal outcome in women with polyhydramnios. In this study, the mean maternal age + standard deviation was 31.3+6.13, which is similar to the study in Japan, shows the mean maternal age + standard deviation of 30.7+ 4.3. The mean gestational age +SD in this study was 34.2 + 3.547, while Dorlejin et al18 reported slightly high mean+Standard deviation of i.e.37.9+3.7. The maximum number 50(63.3, n=79) of patients were found with gestational age in between 28-36 weeks. The same prevalence was seen in a study where higher numbers of women were in between 28-36 weeks of gestation. Most of the studies have found that fetal abnormalities occur in approximately 20%

of pregnancies complicated by polyhydramnios. In this study, the frequencies of fetal anomalies were 24.05%, in contrast, the other study conducted at the holy family hospital in Rawalpindi which shows higher incidence of anomalies i.e. 31.3%20. There is a wide range of frequency of fetal anomalies, 13.8% to 56.2% (13.8%).

So the prevalence is also high in our setup (Pakistan) as compared to western countries due to lack of antenatal visits and improper fetal surveillance. The frequency of CNS anomalies among all anomalous babies were 73%, n=19 where anencephalus was 6(31.6%, n=19) and hydrocephalus was 8(42.1%, n=19) shows the same prevalence of CNS anomalies i.e. 74% out of 27 anomalies in her study. CNS anomalies were most common in the present study as well as in the study. In the present study, it was found that the most common age group in relation to congenital anomalies was 26-35 years, it shows no significant association of increased maternal age on congenital anomalies in polyhydramnios and also there was no effect of increasing parity in association with congenital anomalies. While gestation had a significant effect on congenital anomalies, as most of the congenital malformed babies were delivered in between the gestation of 28-36 weeks.

It might be possible that congenital malformed babies increase the severity of polyhydramnios and more polyhydramnios leads to preterm labour, ultimately the delivery of premature babies. The frequency of GIT anomalies, duodenal atresia was found 5(26.3%, n=19). In another study conducted in Spain shows the high prevalence of esophageal intestinal atresia, CNS malformation, hydrocephalus, anencephalus and CVS malformations. The frequency of neonatal outcome i.e. low birth weight in this study was 4 (5.06%, n=79). Almost same results 5(7.2%) were found in study in Jorden. In contrast, the study showed a very high frequency, i.e. 20.93% of low birth weight.

In this study when stratification of maternal age, gestational age, and parity with low birth weight was done it was found that there was no significant association of increased maternal age, gestational age and increasing parity on low birth weight in association with polyhydramnios study showed that 22% of pregnant ladies (without polyhydramnios) having an age of more than 40 years, delivered extremely low birth weight babies. But in our study, we did not find any association so we can say that low birth weight was solely caused by polyhydramnios. In the present study neonate which had low Apgar score were 13 (16.46%, n=79) which is similar to the study shows the prevalence of 16.1% out of 279 cases. The common maternal age at which we found low Apgar score was 26-35 years, so no effect of increased maternal age on low Apgar score was noticed in association with polyhydramnios. Similarly, no effect of parity was found in these babies. While gestational age was a significant confounding factor as most of the babies 62% were having low Apgar score were found to be preterm. There was a high frequency of preterm babies in our study 50(63.29%, n=79) in contrast in his study found 25.5% of preterm deliveries. The prevalence of preterm delivery in polyhydramnios was higher than in general population. The preterm deliveries were found significantly high in the middle age group 26-35 years in this study and most commonly in the parity group of 2-5. So, we postulate that both variables (increase maternal age and increasing parity) have no any confounding effect on prematurity in relation to polyhydramnios. Polyhydramnios is a high-risk pregnancy, however, efforts have still to be made in the identification and search for those quantitative and qualitative alterations of amniotic fluid, for their potential implications on neonatal outcome.

CONCLUSION:

Polyhydramnios is very high-risk pregnancy. The present research showed the strong association of polyhydramnios with adverse perinatal outcome. It is concluded that polyhydramnios carries a higher incidence of adverse perinatal outcomes like congenital anomalies, low birth weight, low Apgar score and preterm gestation. It is imperative to make efforts to antenatal detect as many cases as possible to provide proper perinatal care.

So these women should have early antenatal

booking visits and should be fully investigated for the cause of polyhydramnios and need to be encouraged to take folic acid supplementation. Based on our finding we suggest counseling with polyhydramnios, that targeted sonography may reduce their risk of an anomalous infant. Many cases will benefit from bed rest, tocolysis and induction of lung maturation.

RECOMMENDATION:

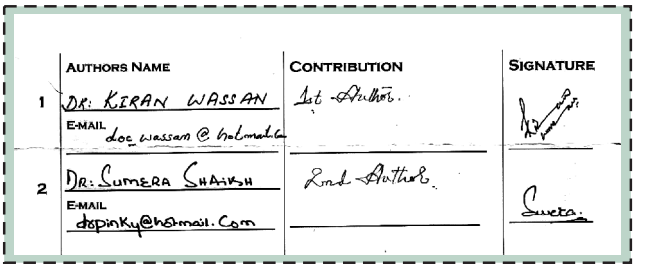
- Polyhydramnios has an impact on perinatal morbidity and mortality based largely on the amount of amniotic fluid present and when in gestation it presents.
- Knowledge of fetal abnormalities and the potential risk in the basis for counseling parents about the pregnancy. Early intervention is frequently essential in the management of anomalies that are amenable to correction or palliation.
- Knowledge of potential risk is also helpful is making the decision and planning for maternal transport, understanding the likelihood of neonatal survival and handicaps and anticipating difficulties during labour.
- A specialist in maternal-fetal medicine should be consulted when significant Polyhydramnios is present.
- Genetic counseling may be helpful in cases in which congenital anomalies are identified.
- Consult a neonatologist pediatric surgeon, pediatric cardiologist, pediatric nephrologist as required to care for an infant.

This is a very high-risk pregnancy so strict perinatal follow-up preferably in tertiary care centre should be done.

REFERENCES:

1. Shetty Anil. Perinatal Outcome and Congenital Anomalies in Polyhydramnios A Prospective Study ISSN: 0976-9633 (Online) Journal DOI:10.7439/ijbrCODEN: IJBRFA IJBR (2013) 04 (10).
2. Legrand A, Treard C, Vargas-Poussou R Prevalence of Novel MAGED2 Mutations in Antenatal Bartter Syndrome. Clin J Am Soc Nephrol 2017 Nov 16.
3. Berger VK, Sparks TN, … Gonzalez JM Non-Immune Hydrops Fetalis: Do Placentomegaly and Polyhydramnios Matter? J Ultrasound Med 2017 Oct
4. Taskin S, Pabuccu EG, Kanmaz AG, Kahraman K, Kurtay G. Perinatal outcomes of idiopathic polyhydramnios.Interv Med Appl Sci. 2013 Mar;5(1):21-5. doi: 10.1556/IMAS.5.2013.1.4. Epub 2013 Mar 19.
5. A. Hamza,1 D. Herr,1 E. F. Solomayer,2 and G. Meyberg-Solomayer. Polyhydramnios: Causes, Diagnosis and Therapy Geburtshilfe Frauenheilkd. 2013 Dec; 73(12): 1241–1246. doi: 10.1055/s-0033-1360163.
6. Ron Beloosesky Polyhydramnios Literature review current through: Oct 2017. This topiclast updated: Mar 03, 2017.
7. A systematic review of amniotic fluid assessments in twin pregnancies. AU Ippolito DL, Bergstrom JE, Lutgendorf MA, Flood-Nichols SK, Magann EF SOJ Ultrasound Med. 2014;33(8):1353.
8. Kumar S. Aberrant liquor volume In: Luesley DM, Baker PN, editors. Obstetrics and Gynaecology: an evidence-based text for MRCOG London: Arnold; 2004; 252-6.
9. Hill LM, Breckle R, Thomas ML, Fries JK: Polyhydramnios: Ultrasonically detected prevalence and neonatal outcome. Obstet Gynecol 1987;69(1):371-377.
10. Erez O, SV allana, Sheiner E, Dulker D, Bashiri A, Mazor M. Hydramnios and small for gestational age are an independent risk factor for neonatal mortality and maternal morbidity Arch Gynecol Obstet 2005;271:296-301.
11. Hara K, Kikuchi A, Miyachi K, Sunagawa S, Takagi K. Clinical features of polyhydramnios associated with fetal anomalies. Congenital Anomalies (Kyoto) 2006;46(4):177-9.
12. Taylor MJO, NM Fisk. Hydramnios and oligohydramnios In: James DK, steer PS, Weiner CP, Gonik B. High-risk pregnancy. Philadelphia: Elesevier Inc;2006;272-8.
13. Barkin SZ, Pretorius DH, Beckette, Manchester DK, Nelson TR, Manco-Johnson ML. Severe polyhydramnios: incidence of

anomalies. AJR 1987;148:1555-9.
14. Vink JY, Poggi SH, Ghidini A, Spong CY. Amniotic fluid index birth weight: Is there is a relationship in diabetes with poor glycemic control? Obstet Gynecol 2006;195(3):848-50.



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"UNFORTUNATE IS HE WHO CANNOT GAIN A FEW SINCERE FRIENDS DURING HIS LIFE AND MORE UNFORTUNATE IS THE ONE WHO HAS GAINED THEM AND THEN LOST THEM (THROUGH HIS DEEDS). "

Hazrat Ali (Karmulha Wajhay)