# FREQUENCY, CAUSES AND FETAL OUTCOME OF POLYHYDRAMNIOS

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**ABSTRACT:**

Polyhydramnios is an important obstetric complication, though an uncommon problem but very distressing for patient.

**Objective:** this study was carried out to know its frequency, causes and fetal outcome.

**Study design:** prospective study was conducted in obstetric department of Al- Mawany General Hospital, Basra. From October 2011- October 2012.

**Patients and Methods:** Total 83 diagnosed cases of polyhydramnios in 3rd trimester were included in this study. History, clinical examination and relevant investigation were carried out. Amniotic fluid volume was calculated by measuring amniotic fluid index (AFI) through ultrasound and type of fetal anomaly was diagnosed on ultrasonography.

**Result:** During the study period 11600 patients needed admission in obstetric and labor word, out of them (83) (0.7%) patients had polyhydramnios. Period of gestation ranged from 28 -40 weeks. Age range was 20 – to more than 40 years. Among these (15) (18%) were primigravida, (62) (74.6%) multigravida and (6) (7.2%) were grandmultigravida. Causative factors were mainly idiopathic after which the most important was fetal anomaly. (42) (50.6%) patients with no cause could be identified. In (28) (33.7%) patients, there were different congenital anomalies in the fetus. Diabetes is also associated finding with polyhydramnios in (8) (9.6%) cases, multiple pregnancy was complicated with polyhydramnios in (5) (6%) cases. In (6) (7.2%) patients, fetuses were hydropic. The impact of polyhydramnios on neonatal outcome is the most of the babies were born without any significant effect. A live birth were (58) (69.9%) and (19) (22.9%) were still birth. Early neonatal deaths were (6) (7.2%).

**Conclusion:** Idiopathic polyhydramnios were the most common type and its more common in multigravida. Improved prenatal and antenatal screening and early detection of congenital anomalies may help to minimize the morbidity of the patients.

## Introduction:

Amniotic fluid provides the fetus a protective environment suitable for fetal growth and development. Polyhydramnios is though an un common problem but very distressing for patients. Polyhydramnios defined as amniotic fluids largest vertical pool is more than 8 cm or amniotic fluid index (AFI) equal or greater than 25 cm on linear –array real –time obstetric ultrasound or AFI above the 95th

Centile for gestational age (1,2). In older studies, the incidence of polyhydramnios was 3.5 % but more recent studies give an incidence of 0.2% due to earlier diagnosis and better management of pregnancies with fetal

congenital abnormalities. In majority of cases the fetus is normal and there is no causative factor in the mother as well as the prognosis for such cases is good (3). AFI is determined by directly measuring the vertical pocket (free of any fetal part) in four quadrants of abdomen in pregnant women (4). Polyhydramnios is ranked as mild, moderate and sever according to AFI; 25-30 cm, 31-35cm and more than 35cm respectively (5).

Intrauterine status of the fetus can be readily and confidently assessed by using a wide range of diagnostic facilities including ultrasound, Doppler study, echo-cardiograph, amniocenthesis, cordocenthesis to check the fetal chromosomal pattern and serological test (6). There are various etiological factors of polyhydramnios and this condition may complicate maternal and fetal problems (7). Congenital fetal anomalies constitute one of the important etiological factors associated with polyhydramnios and have an influence on the management and prevalence of adverse pregnancy outcome (8). Polyhydramnios may occur with gestational diabetes but there was no significance difference in prenatal complication. Hydramnios in women with gestational diabetes was associated with increased risk of prenatal morbidity and mortality (9). There is increase risk of preterm labor in polyhydramnios . Preterm delivery related to multiple gestations. Polyhydramnios was associated with enhanced amniotic expression and activity of cylooxygenase type-2.The babies being delivered near term have better prognosis than the babies of less gestation. These patients need hospital admission (10).

Polyhydramnios is an important obstetric complication so this study was conducted to determine its frequency, common causes and perinatal outcome in this region. Causative factors can be identified by the facilities for detailed investigations of mother and fetus, this help in counseling of parents regarding the etiology of polyhydramnios, fetal prognosis, recurrence risk and different management options for the baby if it needs surgical or medical care after birth.

## Patients and methods:

This prospective study was conducted in obstetrical and gynecological department of Al Mawany General hospital ,Basrah, over the period of one year from October 2011 – October 2012 .All pregnant women with clinically diagnosed polyhydramnios admitted to labor and obstetric word in third trimester were sent for ultrasound confirmation of polyhydramnios by measuring amniotic fluid index (AFI) OF 25cm or more and deepest vertical pole of amniotic fluid of 8 cm or more ,for determine of severity of polyhydramnios as well as to exclude the congenital anomalies in fetus ,after which were included in this study. These patients were evaluated according to special designed forma included the detailed history, clinical examination and relevant investigations. Regarding to the history included; maternal age, parity, gestational diabetes, Rh isoimunization ,heamoglobinopathy (sickle disease and thalacimia) ,polyhydramnios in previous pregnancy ,past medical and surgical history in details.family history of twins and , abnormal babies and blood dyscrasias was taken. Regarding to clinical examination included general physical and abdominal examination. Pelvic examination was also done in pregnant women in labor. Invistigations included complete blood picture ,blood group, time random blood sugar and lastly serological test for toxoplasma ,rubella, cytomegalo virus and herps simplex virus (TORCH screen) all these blood test were done at hospital laboratory . Complete labor record was made along with mode of delivery and duration. Complete physical examination of baby by obstetrician and pediatrician with recording of apgar score and any anomalies found. Data collected was analyzed for results and compared with international as well as local studies.

## Result:

During the study period of one year (11600) pregnant women in labor and obstetric word, out of them (83) (0.7%) patients had polyhydramnios. Period of gestation ranged from 28 weeks to 40 weeks.Tabel 1 shows that maximum number of (60 ) patients (72.2 %) presented between 28-36 weeks of pregnancy .

In this study there were ( 51) ptients (61.4%) pregnant women belonged to age 30-39 years with next majority between 20-29 years i.e. (29) (34.9%). Only 3 pregnant women (3.6%) were more than 40 years of age as shown in table 2 .It was also seen that the majority of pregnant women having polyhydramnios were multigravida (62) (74.6%) and only (15) (18%) pregnant women were primigravida while 6 pregnant women were grand multigravida (7.2%) these showed in table 3 . Distribution of mild, moderate and sever polyhydramnios as determined by AFI and its causes are shown in table -4.

Mild polyhydramnios was found in majority of cases, 45 patients (54.3 %) in which there was no definitive cause could be identified in (40) (88.9%) patients. Moderate polyhydramnios was (26) (31.2%) , there was underlying cause in majority of cases with moderate polyhdraminous, only 2 cases with normal fetus and no maternal cause. Sever polyhydramnios was only in (12) patients (14.5%) and all had underlying fetal cause and majority were detected at early gestation Table -4**.** In our study ,regarding to the fetal outcome (58) patients (69.9%) delivered alive ,while( 19) patients (22.9%) were still birth and early neonatal death was seen in 6 babies , which mainly caused by prematurity. As risk of preterm labor is common in polyhydramnios. The perinatal mortality was( 27) mainly due to neural tube defect . Details of fetal outcome and perinatal mortality were shown in tables (5 and 6 ). Regarding maternal causes and polyhydramnios ,table -7 shows that in (62) cases (74.7 %) there was no associated maternal disease with polyhydramnion ,while gestational diabetes was present in 8 cases only.In our study 2 cases were Rh- iso immunization and viral infection (TORCH test +ve) were only in 6 cases as shown in table – 7.

**Table 1.** Maternal gestation of polyhydramnios at presentation

| Weeks | No. of cases | % |
|---|---|---|
| 28- 36 | 60 | 72.2% |
| 37- 40 | 23 | 27.8% |

**Table 2.** Maternal Age distribution with polyhydramnios

| Age (year) | Numbers of cases | % |
|---|---|---|
| 20-29 | 29 | 34.9% |
| 30-39 | 51 | 61.5% |
| >40 | 3 | 3.6% |

**Table 3.** Maternal Parity and Polyhydramnios

| Parity | Numbers of cases | % |
|---|---|---|
| Primigravida | 15 | 18.2% |
| Multigravida | 62 | 74.6% |
| Grandmultip | 6 | 7.2% |

**Table 4.** Severity of polyhydramnios , its causes and frequency of congenital abnormality.

| Severity of polyhydramnios | Total no. of cases | Causes |
|---|---|---|
| Mild polyhydramnios (AFI=25-30) | 45 (54.3%) | No cause = 40<br>Hydrocephaly = 2<br>Gestational Diabetes =3 |
| Moderate polyhydramnios(AFI=31-35) | 26(31.2%) | No cause =2<br>Multiple gestation = 5<br>Hydrops fetalis = 6<br>Rh incompatability = 2<br>fetal ascitis = 4<br>Gestational Diabetes = 5<br>Congenital abnormality = 8<br>Anencephaly = 6<br>Hydrocephaly = 2 |
| Sever polyhydramnios (AFI > 35) | 12 (14.5%) | Anencephaly and Spina pifida = 8<br>Encephalocele and Spina pifida=2<br>Multiple congenital abnormalities = 2 |

**Table 5.** Fetal Outcome

| Outcome | No. of cases | % |
|---|---|---|
| Alive birth | 58 | 69.9% |
| Still birth | 19 | 22.9% |
| Early neonatal death | 6 | 7.2% |

**Table 6.** Causes of Perinatal mortality

| Causes | No. |
|---|---|
| Neural tube defect | 16 |
| Hydrocephaly | 3 |
| Multiple congenital abnormalities | 2 |
| Early neonatal death | 6 |
| Total perinatal mortality | 27 |

**Table 7.** Maternal condition associated polyhydramnios

| Maternal condition | No. of cases | % |
|---|---|---|
| No disease | 62 | 74.7% |
| Diabetes | 8 | 9.6% |
| Rh Isoimunization | 2 | 2.5% |
| Viral infection TORCH +ve | 6 | 7.2% |
| Multiple gestation | 5 | 6% |

## Discussion:

Polyhydramnios is an uncommon complication associated with pregnancy. Although pregnancies complicated by polyhydramnios are high risk and need to be thoroughly investigated. Polyhydramnios of mild to moderate degree usually associated with good perinatal outcome especially where there is no cause found in the mother or in the fetus. The clinical problems associated with polyhydramnios apart from fetal anomaly, are maternal discomfort, difficult clinical examination of fetus and premature labor , it is diagnosed accurately by clinical examination and confirmed by ultrasonograghy. While if there are serious congenital abnormalities in fetus, polyhydramnios is sever, resulting in maternal morbidity and perinatal mortality (11, 12).

In our study the incidence of polyhydramnios was found to be (0.7 %) compared with study done by Anisa et.al (2001)and Sadia T (2005) which gave an incidence of polyhydramnios (2%) (13, 14). While Hill et al provide incidence of (0.9 %) after an ultrasonic assessment of more than (9000) case in a study spread over span of 10 year (15).

In our study the majority of congenital anomaly was found in sever polyhydramnios similar to the result of other study (13) in which the congenital anomaly was (31.7%). Holta et al concluded that sever polyhydramnios does not alwayes result in lethal abnormalities (16). Most of serious structural abnormalities like ,neural tube defect and anterior abdominal wall defects can be easily diagnosed by mid trimester scan , maternal morbidity can be reduced if early diagnosed by offering termination of pregnancy at an earlier gestation when it is psychologically and physically less traumatic to the mother (17).

Our study showed that (42) (50.6%) of no fetal cause (no congenital anomaly) are detected on ultrasound however the maternal and fetal morbidity and mortality can occur by excessive abdominal distention ,sudden premature rupture of membrane , placental abruption ,cord prolaps ,fetal malpresentation ,postpartum hemorrhage and high risk of operative deliveries with consequence risk of emergency anesthesia and surgery . so ultra sound examination at 18-20 weeks is mandatory to exclude mojor congenital abnormalities (18,19).

Regarding to the premature labor due to the cause of polyhydramnios ,Many et al concluded in his study that it is the underlying cause of polyhydramnios rather than the relative excess of amniotic fluid which is responsible for premature labor. He founded the incidence of preterm labor (22.2%) in diabetes mellitus, (39%) with congenital malformation and (12.6%) in un explained polyhydramnios (2). While in our study (6) (7.2%) babies underwent early neonatal death mainly due to prematurity.

Uncontrolled gestational diabetes was an etiological factor in (8) (9.6%) in our cases of polyhydramnios presented at 32-34 weeks gestation with mild – moderate polyhydramnios and macrosomia , these cases achieved diabetic control with help of physician within one to two weeks ,although these cases delivered by elective caesarean section at 36-37 weeks due to fetal macrosomia ,all of them were saved . In contrast to our study , Simth et al founded higher percentage of gestational diabetes in mild idiopathic polyhydramnios without other adverse effects on the fetus (20). Strict diabetic control in pregnancy under supervision of physician is need to ovoid congenital malformation of the fetus in early pregnancy and polyhydramnios later on (21). Association of polyhydramnios with multiple gestations makes it further complication. Multiple pregnancies is associated with 4-5 fold increase in perinatal mortality than singleton pregnancies mainly due to prematurity (22). In our study (5)(6%) of multiple pregnancies were included with mild –moderate polyhydramnios . There were no gross congenital abnormalities in these fetuses and in most of them were managed conservatively and perinatal outcome was good after delivery at term one set of twin had early neonatal death due to prematurity. Fetal hydrops affected (6) fetus in this study .The main cause of hydrops was non immune hydrops (23). Due to effectiveness of immune – prophylaxis against rhesus incompatibility, non immune hydrops is now more common than immune hydrops. Advances in ultrasound make the diagnosis of hydrops easy and early (24).

## Conclusion:

Polyhydramnios though an uncommon problem associated with pregnancy, can be very distressing for the patient. The study proved the idiopathic cause of polyhydramnios being the most common causative factors .Improved prenatal and antenatal screening, early detection of congenital anomalies and early detection of causative factors might help to minimize the morbidity of the patient .The study also give us an understanding of the impact of this condition on the fetus, which can be effectively managed if early detection and regular follow up are carried out.

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## الخلاصه

د. وئام المحفوظ

يعتبر ازدياد حجم السائل الامنيوني عن معدله الطبيعي من المضاعفات المهمه والنادرة لدى النساء الحوامل في الثلاثة اشهر الاخيره من الحمل . اجريت هذه الدراسه لمعرفة نسبة حدوث واسباب ونتائج ولادة الجنين عند الحوامل المصابات بأزدياد حجم السائل الامنيوني في م. الموانئ العام \البصره في قسم النسائيه والولاده من اكتوبر-2011ولغاية اكتوبر-2012وكان عدد النساء الحوامل المصابات بأزدياد حجم السائل الامنيوني 83 خلال مدة الدراسه.تم قياس حجم السائل الامنيوني وكشف التشوهات الخلقيه للجنين عن طريق جهاز السوناروكانت نسبة وجود ارتفاع حجم السائل الامنيوني (0,7%)فقط.كان عمر الحمل عند النساء التي تضمنتهم الدراسه يتراوح بين 28-40 اسبوع وعمر النساء الحوامل يتراوح بين 20-واكثر من 40 سنه وغالبيتهم من متعددي الولادات (74,6%).أزدياد حجم السائل الامنيوني مجهول السبب كان بنسبة (50,6%)بينما نسبة التشوهات الخلقيه للجنين كان(33,7%)بالاضافه الى مصاحبة ازدياد حجم السائل الامنيوني عند حمل التوأم والحوامل المصابات بالسكري بنسبة (6%و9,6%)على التوالي.
معظم الاطفال الذين ولدوا كانوا بصحه جيده وبدون مضاعفات (69,9%) وفقط(22,9%)ولاده ميته اما نسبة الاطفال الذين توفوا خلال الايام الاولى (7,2%).
نستنتج من هذه الدراسه أن أزدياد حجم السائل الامنيوني مجهول السبب هو النوع السائد ويحدث عند الحوامل المتعددي الولادات .نقترح تحسين وتفعيل الكشف المبكر لأزدياد حجم السائل الامنيوني ووجود التشوهات الخلقيه المصاحبه لازدياد حجم السائل الامنيوني قبل وأثناء الولاده يساعد في تقليل المضاعفات والتأثيرات الخطيره عند النساء الحوامل.