Perinatal Outcome in Explained and Unexplained Polyhydramnios

Maliha Sadaf, Sobia Nawaz Malik, Jehan Ara, Sadaf Tufail, Shagufta Saeed Sial
Department of Gynae /Obs, District Headquarters Teaching Hospital and Rawalpindi Medical College, Rawalpindi

Abstract

Background: To compare the perinatal outcome between explained and unexplained (idiopathic) polyhydramnios.

Methods: In this descriptive study, 50 women with singleton pregnancies with idiopathic polyhydramnios, delivered in a period of one year, were compared with 45 pregnant women with known causes of polyhydramnios. Outcome measures studied were preterm delivery (<37 weeks of gestation), low birth weight (<2.5 kg), macrosomia (>4.0 kg), malpresentations, APGAR score at 5 minutes <7, rate of cesarean section, neonatal hospitalization, congenital anomalies and perinatal death.

Results: Incidence of polyhydramnios was found to be 1.36%. In 52.63% of cases no cause of polyhydramnios was found, while 47.37% of cases were found to have underlying causes of polyhydramnios. There was a statistically significant increased incidence of preterm delivery (31%, p-value < 0.05), cesarean section (44.4%, p-value=0.05), NICU admission (33%, p-value < 0.05), congenital anomalies (22%, p-Value < 0.05) and perinatal death (20%, p-value < 0.05) in explained polyhydramnios group as compared to unexplained polyhydramnios group. There was also an increased incidence of malpresentations (24.4%) and low APGAR score (33%) in explained polyhydramnios group.

Conclusion: Antenatal diagnosis of polyhydramnios requires careful search for associated underlying maternal and fetal conditions. Idiopathic Polyhydramnios is not associated with adverse perinatal outcome.

Key Words: Polyhydramnios, Perinatal Outcome,

Introduction

Amniotic fluid provides the fetus, a protective environment suitable for growth and development. Polyhydramnios (amniotic fluid more than 200 ml), complicates approximately 1 to 3.5% of pregnancies. It is defined as deepest vertical pool of 8 cm or greater or an amniotic fluid index above 95th centile for gestational age.14 The definition of polyhydramnios also includes an Amniotic Fluid Index (AFI) of 24 cm or greater or a single deepest pocket (SDP) of greater than 8 cm.5 Polyhydramnios can be divided into three groups: mild (amniotic fluid index 25-30 cm or SDP of 8–11 cm), moderate (AFI 30 – 35 cm or SDP of 11 – 15 cm) and severe (AFI>35 cm or SDP of > 15 cm).6,7

Polyhydramnios can occur as a result of variety of fetal, maternal and placental abnormalities. These include major congenital abnormalities, chromosomal aberrations, multiple gestations, maternal diabetes and Rh. isoimmunisation. In about 65% of cases, none of these can be identified (idiopathic polyhydramnios).1 Pregnancy complications, associated with polyhydramnios, include preterm delivery, pre-labour, rupture of membranes, abnormal fetal presentation, cesarean section, intrauterine demise and neonatal death.

Most cases of idiopathic or unexplained polyhydramnios are of mild variety and carry a low risk of undiagnosed anomalies which may not be detected in antenatal period.1,8 It may be associated with fetal macrosomia and an increased risk of delivery complications such as preterm labour and fetal mal-presentation.9,12 In one report, polyhydramnios with a normal fetus carried a 10–20% risk of preterm birth and a 3–5% risk of fetal death.5 On the other hand, explained polyhydramnios is associated with even higher rate of perinatal complications which are related to the underlying cause. Perinatal mortality is also higher in explained polyhydramnios.

Patients and Methods

This descriptive study was carried out from January 2011 – December 2011, in DHQ Teaching Hospital, Rawalpindi. Ninety eight patients with polyhydramnios and more than 24 weeks of gestation were included in the study. Amniotic fluid volume of these patients was assessed ultrasonographically using the 4-quadrant method. For the determination of AFI, the uterus was divided into four equal segments and the largest vertical pocket of fluid void of fetal parts or umbilical cord was measured in each quadrant. All four measurements were then added to calculate the index. Patients whose AFI was greater than 24 cm were diagnosed as having polyhydramnios. They were further classified as having mild (AFI 25 – 30cm),
moderate (AFI 30 – 35cm) and severe polyhydramnios (AFI > 35cm). These patients were advised to get their blood groups checked, detailed anomaly scan and whole day sugar profile to detect congenital anomalies and diabetes mellitus. Those found to be Rh negative were checked for Rh antibody titre. The patients were followed up fortnightly to identify any cause of polyhydramnios. The patients were then divided into two groups. Group ‘A’ included patients with no detectable cause of polyhydramnios (unexplained or idiopathic polyhydramnios). The patients having congenital anomalies, multiple gestation, diabetes mellitus, and Rh isoimmunisation were included in Group ‘B’ (explained polyhydramnios).

Apgar score of baby was noted immediately after delivery and then at five minutes. The record of any detectable congenital anomalies and any resuscitation carried out on the baby was made. Outcome measures studied were macrosomia (>4.0 kg), low birth-weight (<2.5kg), pre-term delivery (<37 weeks), malpresentation at delivery, caesarean section rate, perinatal death, any detectable congenital anomalies, Apgar score at five minutes <7 and admission to Neonatal Intensive Care Unit (NICU). Statistical significance was taken as p<0.05.

Results

Total deliveries conducted during the study period were 7184. Amongst them, 98 patients (1.36%) were found to have polyhydramnios. Three patients were lost to follow up. Idiopathic polyhydramnios was detected in 50 patients (52.63%) while 45 patients (47.37%) had underlying causes of polyhydramnios (explained polyhydramnios). Diabetes mellitus (44.44%) was the commonest cause in explained polyhydramnios (Table 1). Majority (71.1%) had mild polyhydramnios (Table 2). No case of Rh isoimmunisation was reported.

There was an increase in the incidence of preterm delivery and caesarean section in Group ‘B’ (explained polyhydramnios) which was almost double than that of Group ‘A’ (31% vs 14%) & (44.40% vs 24%) respectively (p value <0.05 statistically significant) (Table 3). The rate of low birth-weight was found to be more common in Group ‘A’ (idiopathic polyhydramnios) as compared to Group ‘B’ (explained polyhydramnios) (20% vs 13.30%) but was not statistically significant (Table 3).

There was statistically significant increase in NICU admission and perinatal death in Group ‘B’ as compared to Group ‘A’ (33% vs 12%) & (20% vs 4%) respectively (p value < 0.05). There was no case of detectable congenital anomalies in Group ‘A’ while 22.22% cases in Group ‘B’ had congenital abnormalities in the babies (p Value < 0.05). There were 2 cases (4%) of macrosomia in each group. Malpresentation and low APGAR score were found to be more common in Group ‘B’ as compared to Group ‘A’ (24.40% vs 14%) & (13.30% vs 6%) respectively but was not statistically significant.

Table 1: Causes of Explained Polyhydramnios (n=45)

<table>
<thead>
<tr>
<th>Cause</th>
<th>No (%)</th>
</tr>
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<tbody>
<tr>
<td>Diabetes Mellitus</td>
<td>20 (44.44%)</td>
</tr>
<tr>
<td>Multiple gestations</td>
<td>15 (33.33%)</td>
</tr>
<tr>
<td>Congenital abnormalities</td>
<td>10 (22.22%)</td>
</tr>
</tbody>
</table>

Table 2: Severity of Polyhydramnios

<table>
<thead>
<tr>
<th>Severity</th>
<th>Group A- Unexplained Polyhydramnios (n=50)</th>
<th>Group B- Explained Polyhydramnios (n=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>42 (84%)</td>
<td>32 (71.1%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>6 (12%)</td>
<td>8 (17.77%)</td>
</tr>
<tr>
<td>Severe</td>
<td>2 (4%)</td>
<td>5 (11.11%)</td>
</tr>
</tbody>
</table>

Table 3: Maternal Complications in explained and unexplained Polyhydramnios

<table>
<thead>
<tr>
<th>Outcome measures</th>
<th>Group A (n=50) No (%)</th>
<th>Group B (n=45) No (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malpresentation</td>
<td>7 (14)</td>
<td>11 (24.4)</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>12 (24)</td>
<td>20 (44.4)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Pre-term delivery (&lt;37 weeks)</td>
<td>7 (14)</td>
<td>14 (31)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

p-value <0.05 significant; p-value >0.05 Not significant

Discussion

Pregnancies complicated by polyhydramnios are high risk and need to be thoroughly investigated. In cases where polyhydramnios is of mild to moderate degree and no cause is found in the mother as well as in fetus, perinatal outcome is good. While if there are serious congenital abnormalities in the fetus or polyhydramnios is severe, it results in maternal morbidity and perinatal mortality.4, 13 Cases of polyhydramnios in 3rd trimester, where no fetal congenital anomalies are detected on ultrasound, maternal and fetal morbidity and mortality can occur due to excessive abdominal distention, sudden premature rupture of membrane, placental abruption, cord prolapse, fetal malpresentation, preterm labor, postpartum hemorrhage and high risk of operative deliveries. 14
with higher rate of both maternal and perinatal complications and also found an increased incidence of pre-term delivery in patients with polyhydramnios. However, neither of these studies was specifically related to idiopathic polyhydramnios. Various studies concluded that it is the underlying cause of polyhydramnios rather than the relative excess of amniotic fluid which is responsible for maternal complications and perinatal mortality.

### Conclusion

Explained polyhydramnios is associated with higher rates of perinatal complications and deaths while idiopathic polyhydramnios does not seem to have adverse perinatal outcome. Even then, pregnancies with idiopathic polyhydramnios should be considered as high risk and should be managed in high risk clinics.

### References