

Clinical and Ultrasonographical Evaluation of Polyhydramnios

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ABSTRACT

Evaluation of amniotic fluid volume is a component of every second or third – trimester sonogram, and volumes vary with gestational age. Amniotic fluid volume is usually assessed semi-quantitatively. Measurements include either the single deepest vertical pocket or the sum of the deepest vertical pockets of four equal uterine quadrants.⁵ The Amniotic Fluid Index (AFI) is the sum of the single deepest pocket from each quadrant. A useful guidelines is that the depth of single deepest pocket is 8cm or more or if AFI approximates three times the single deepest pocket of fluid or the sum of all the four vertical deepest quadrants, which is more than 25cm⁶. Polyhydramnios may be further categorized according to degrees. Such categorization is primarily used in research studies to stratify risks. Several groups have termed hydramnios as mild if the AFI is 25 to 29.9cm; moderate if AFI is 30 to 34.9cm; and severe if AFI is 35cm or more.⁷

Keywords: Polyhydramnios, amniotic fluid index (AFI), premature rupture of membrane (PROM), pre-maturity, caesarean section, APGAR score, antenatal complications, intra-uterine growth restriction (IUGR), Bi-lateral tubectomy (BLTL), cephalo-pelvic disproportion (CPD), pregnancy induced hypertension (PIH), low birth weight (LBW).

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I. Introduction

Anatomically, Polyhydramnios is defined as a state where the liquor amnii (amniotic fluid) exceeds 2000ml. Clinically, it is defined as the excess accumulation of amniotic fluid causing discomfort to the patient.¹ Amniotic fluid volume increases from approximately 30 ml at 10 weeks to 200ml by 16 weeks and reaches 800ml by the mid trimester.² The fluid is approximately 98-percent water. A full term fetus contains roughly 2800 mL of water and the placenta another 400mL, such that the term uterus holds nearly 4 litres of water.³ An important source of amniotic fluid regulation is the respiratory tract. Approximately 350 mL of lung fluid is produced daily late in gestation, and half of this is immediately swallowed. Last, fetal swallowing is the primary mechanism for amniotic fluid resorption and averages 500 – 100 mL per day.^{4s}

OBJECTIVES

1. To diagnosed and detect the cause of pregnancy with polyhydramnios.
2. To analyze the Maternal and Perinatal outcome in pregnancy with polyhydramnios.

II. Materials And Methods

The study was conducted at Regional Institute of Medical Sciences (RIMS) during October 2018 – August 2020. Cross sectional study was used as study design. The study population consist of 110 pregnant women⁸ attending Ante-natal OPD were selected for the study. The criteria for the study were, 1) Singleton pregnant with ≥ 34 weeks of gestation. 2) Pregnancy with AFI more than 25 cms. 3) Age ≥ 18 years and above to give consent for the study. The study variables for the study includes age, address, gravida, parity. Maternal outcome variables were studied by period of gestation (term / pre term), cause of polyhydramnios, associated antenatal complications, ultrasonography at 34 weeks of gestation for measurement of AFI and congenital anomaly, mode of delivery, indication of induction of labor, indication of CS, PROM, Post partum maternal morbidity. And outcome variables used for the baby were screening of congenital anomaly by ultrasound and for estimation of age, IUGR, birth weight, apgar score at 1 and 5 minute, congenital deformities at birth, Neonatal intensive care unit (NICU) admission and perinatal mortality.

III. Result And Observation

The total number of deliveries during the study period was 14381. Out of the total deliveries during the study period, the total number of vaginal deliveries was 10,518 which were 73.14%. The total number of deliveries by caesarean section was 3,863 which comprises of 26.86%. The total number of pregnancy with polyhydramnios was 113 out of the total deliveries. Thus, the incidence rate of pregnancy with polyhydramnios was 0.78%. The calculated sample size was 101, but due to excess number of cases and for better calculation, permission was taken from the guide and co-guide and the sample size was increased to 110 cases. In this study, the incidence of polyhydramnios was 0.78%, which nearly correlates with the study done by Dashe JS et al⁹ with (0.9%). The commonest age group was 25 – 30 years (37.26%). The mean age of the study population was 28.03 years, with standard deviation (SD) of 5.691 followed by 30 – 35 years (24.55%) while age group of < 20 years is only (7.27%) and age group > 40 years is (0.90%). Delivery was highest (38.1%) at 38 – 39 weeks of gestation, then 37 – 28 weeks of gestation with (30.30 %), and least were observed among those with more than 40 weeks of gestation (2.73%). Pre term delivery (< 37 weeks POG) was observed with (9.19%). The highest AFI was observed at 29 – 30 cms (35%), followed by 28 – 29 cms (32.71%), 27 – 28 cms (10.93%), 26 – 27 cms (8.12%), > 30 cms (10.90%) and the least at 25 – 26 cms (1.82%). The commonest cause was unknown or idiopathic (68.12%), Gestational Diabetes with 7.2%, Congenital anomaly with 7.26%. 22 (20.00%) cases were diagnosed with fetal anomaly by ultrasonography at or after 34 weeks POG was seen. Out of which the most cases was IUGR with 12.72%, anencephaly (2.21%), fetal macrosomia (1.82%), and anterior abdominal defect (0.91%).

There are 36 cases (32.73%) with maternal or antenatal complications. The most number of case was anaemia (22.00%), PIH (5.52%), breech presentation (1.82%), pre term labour (0.91%), Placenta previa (0.91%), PROM (1.82%) and (16.76%) mal-presentation, (3.06%) pre term labor and (2.56%) with placenta previa. 22 cases (20.00%) needs induction of labor. 75 cases (65.45%) delivered vaginally and 38 cases (34.54%) by caesarian section. It has been maintained that polyhydramnios leads to uterine inertia and prolonged labour and causes uterine atonicity after delivery causing primary PPH. In this study group, 9.28% had PPH during 3rd stage of labor out of which one has to undergo internal iliac artery ligation and another cases has to undergo sub-total hysterectomy.

Perinatal mortality was high with polyhydramnios. Increased prevalence of pre-term delivery and congenital anomalies were attributed to this cause. APGAR score at one 1 minute after birth, majority shows normal score (70.00%), while (11.55%) has minor distress and need minor resuscitation, and (4.55%) have moderate distress and were admitted at NICU, and 4 (3.47%) perinatal mortality. Five (5) minutes after birth (90.91%) has normal score, (5.45%) has moderate distress and admitted at NICU. Totally, 8 (7.27%) perinatal mortality was noted. Out of this half (3.64%) was due to pre maturity and the other half (3.64%) were due to congenital anomalies. Maternal death is not encountered. The 110 cases were discharged with advice and are in stable. However, 8 cases (7.27%) of perinatal mortality were noted. 11 neonates (11.00%) needed NICU admission and further treatment by pediatrician.

IV. Summary

In this study the incidence of pregnancy with polyhydramnios is 0.78%. The commonest age group is 25 – 30 years and majority of the patient were diagnosed between 37 – 40 weeks of pregnancy. The most common associated antenatal complications found in this study is anaemia (22.00%), followed by PIH (5.42%), breech presentation and PROM being 1.82% each. It is also associated with increased incidence of caesarean section (34.54%) with majority indication being CPD (11.00%), Post CS / Post twice CS (6.36%), IUGR (4.54%) and fetal distress with 3.63%. Polyhydramnios is also associated with increased maternal complications after birth, mainly due to PPH (9.28%). Among these PPH, one Internal Iliac Artery ligation and Sub-total hysterectomy was done. Polyhydramnios is also associated with increased incidence of peri-natal mortality (7.27%) and morbidity, which is due to Pre-maturity and congenital anomalies both with 3.64%.

V. Conclusion

Polyhydramnios is common obstetrical complications with a high incidence of neonatal mortality and morbidity with frequent maternal complications. In the study, 22 (20.0%) cases of fetal anomaly were diagnosed after 24 weeks ultrasonography. Higher incidence of PIH, anaemia, gestational diabetes, malpresentation, placenta previa etc..was found in the study. Total 8 (7.27%) cases of perinatal mortality were detected and 10 (9.1%) neonates needs NICU admission. Totally, 41 (37.3%) neonates were LBW. Estimation of AFI is an important part of routine obstetric sonography as polyhydramnios plays a major role in determining perinatal mortality and intrapartum complications. Successful management of polyhydramnios depends upon appropriate diagnostic evaluation.

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