

To Evaluate the Relationship between Amniotic Fluid Volume as Determined by Ultrasound Studies and Perinatal Outcome

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Abstract

Background: Amniotic fluid is easily identified by current diagnostic ultrasound methods. Accurate antepartum estimation of amniotic fluid volume by clinical means alone is exceedingly difficult. The purpose of the study is to determine the relationship between amniotic fluid volume as determined by ultrasound studies and perinatal outcome. **Subjects and Methods:** The present study was conducted on 100 cases of Polyhydramnios in the Department of Obstetrics and Gynaecology, Mahila Chikshalya, Jaipur during the period of one year. The amniotic fluid index (AFI) is a semiquantitative technique to assess the amniotic fluid volume. Possibility of Polyhydramnios will be concerned when the AFI was more than 95th percentile for the gestational age. Gestational age was established by a reliable last menstrual period or the patient's ultrasound examination. **Results:** Majority of the cases was diagnosed at term and these were mild polyhydramnios. Majority of severe polyhydramnios were diagnosed at less than 37 weeks. Mild polyhydramnios is most commonly associated with alive babies (55 cases), after that perinatal death (23 cases) are common with mild polyhydramnios. **Conclusion:** We concluded that ultrasonography is the best means for early detection of polyhydramnios. Simple observer judgement of an excessive amount of amniotic fluid by an experienced sonographer is a useful means for identification of high risk cases and may often lead to a successful search for congenital anomalies.

Keywords: Oligohydramnios, polyhydramnios, Gestational age, Perinatal death.

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Introduction

Perinatal morbidity and mortality are significantly increased with polyhydramnios. Fetal conditions that are associated with polyhydramnios include major congenital anomalies (open neural tube defects, upper gastrointestinal tract obstruction or malformation etc.) and both the immunologic and non-immunologic forms of hydrops foetalis. Maternal medical conditions are also known to be associated with polyhydramnios and subsequent altered perinatal outcome (eg. Diabetes mellitus). Pre-eclampsia, malpresentation, premature rupture of membrane, preterm labour and accidental haemorrhage are the very well-known complications of polyhydramnios during pregnancy and cord prolapse, uterine inertia, retained placenta and postpartum haemorrhage are the expected complications of polyhydramnios during labour. So by diagnosing these cases as early as possible, we can prevent these maternal complications. If maternal complications are associated with foetal anomalies, we can even terminate the pregnancy as early as possible. Accurate antepartum estimation of amniotic fluid volume by clinical means alone is

exceedingly difficult. Amniotic fluid is easily identified by current diagnostic ultrasound methods. By application of ultrasound method it is now possible to measure the amount of amniotic fluid present, particularly the amniotic fluid index (AFI).^[1]

According to Chamberlain PF et al,^[2] perinatal outcome varied significantly in relation to qualitative amniotic fluid volume estimates before delivery. The gross and corrected perinatal mortality was 4.65/1000 and 1.97/1000, respectively, in patients with normal qualitative amniotic fluid volume; in patients with increased volume it was 32.9/1000 and 4.12/1000 respectively. The incidences of both major congenital anomalies and total macrosomia were significantly higher in patients with increased qualitative amniotic fluid volume.

Hashimoto B et al, from January 1983 to December 1984, ten of 75 twin pregnancies demonstrated elevated amniotic fluid volume that persisted throughout pregnancy. Total intrauterine volumes were elevated in these cases, and nine of the ten pregnancies abnormal. In addition, it was noted that elevation of the amniotic fluid volume alone did not explain the high rate of preterm labour and delivery in twin

gestations.^[3]

The purpose of the study is to determine the relationship between amniotic fluid volume as determined by ultrasound studies and perinatal outcome.

Subjects and Methods

The present study was conducted on 100 cases of Polyhydramnios in the Department of Obstetrics and Gynaecology, Jaipur during the period of one year. Several pregnancies were evaluated in our institution during second and third trimester period. A thorough obstetric ultrasound examination done using a linear or curvilinear transducer. For routine obstetric ultrasound examination, a 3.5-5 MHZ transducer was used. Assessment of amniotic fluid volume was done by using ultrasound method. The amniotic fluid index (AFI) is a semiquantitative technique to assess the amniotic fluid volume. Possibility of Polyhydramnios will be concerned when the AFI was more than 95th percentile for the gestational age. In addition, standard fetal biometric data were obtained. The fetal lie, presentation, position, assessment of gestational age and placental site were determined. A systematic fetal organ review then were performed in an attempt to detect any gross congenital abnormalities. Pregnancy outcome was recorded for patients who were classified as having an excess amount of amniotic fluid. Gestational age was established by a reliable last menstrual period or the patient's ultrasound examination.

Inclusion Criteria

- Pregnancy associated with excess of amniotic fluid ie. if the amniotic fluid index (AFI) is greater than the 95th percentile for the gestational age.
- Irrespective of age and parity.
- Second and third trimester period.
- Multiple pregnancy with polyhydramnios.

Exclusion Criteria

- Pregnancy associated with over distended abdomen other than hydramnios.
- Pregnancy with huge ovarian cyst.
- Ascites.
- Multiple pregnancy without polyhydramnios.

Results

Our study showed that the gestational age and their severity, 84 cases were mild polyhydramnios, 8 cases moderate and another 8 cases were severe polyhydramnios. Majority of the cases were diagnosed at term and these were mild polyhydramnios. Majority of severe polyhydramnios were diagnosed at less than 37 weeks [Table 1]. The most of the congenital anomalies were associated with mild polyhydramnios [Table 2].

The Present study showed that the association between

foetal outcome and severity of polyhydramnios. Mild polyhydramnios is most commonly associated with alive babies (55 cases), after that perinatal death (23 cases) are common with mild polyhydramnios [Table 3].

Table 1: Gestational Age Associated With Severity of Polyhydramnios

Gestational Age (Weeks)	No. of Cases	Severity of Polyhydramnios		
		Mild N (%)	Moderate N (%)	Severe N (%)
24-27	8	6 (75)	-	2 (25)
28-32	19	15 (79)	1 (5)	3 (16)
33-37	10	6 (60)	2 (20)	2 (20)
>37	63	57 (90)	5 (8)	1 (2)
Total	100	84	8	8

Table 2: Severity of Polyhydramnios Associated With Congenital Anomalies

Congenital Anomalies	Severity of Polyhydramnios		
	Mild	Moderate	Severe
1. Anencephaly	5		2
2. Anencephaly + spina bifida	1		
3. Hydrocephalus	1		
4. Hydrocephalus + lumbar meningocele + cervical spina bifida + club foot	1		
5. Cleft palate and cleft lip	1		
6. Hydrocephalus + lumbar meningocele	1		
7. Hydrops foetalis	1		
8. Foetal ascites		1	
9. Nonimmune hydrops foetalis	3		1
10. Diaphragmatic hernia	1		
11. Multicystic kidney	1		
12. Club foot	1		
13. Ambiguous genitalia + oesophageal Atresia	1		
14. Oesophageal atresia + tracheo-oesophageal fistula	2		1
15. Thanatophoric dysplasia	1		
16. Tracheo oesophageal fistula			1
17. Short neck + short limb	1		
18. Oesophageal atresia + imperforate anus	1		
19. Tracheo oesophageal fistula + anal Atresia	1		

Table 3: Foetal Outcome Associated With Severity Of Polyhydramnios

Foetal Outcome	Severity of polyhydramnios		
	Mild	Moderate	Severe
Alive	55	5	1
Perinatal death	23	3	5
Dead abortus	6	-	2
Total	84	8	8

Discussion

In the present study, 84%, 8%, 8% patients were mild, moderate and severe polyhydramnios respectively as compared to Ariel Many et al⁴ where 82.3%, 10% and 7.7% patients were mild, moderate and severe polyhydramnios respectively. Majorities of the severe polyhydramnios were diagnosed at less than 37 weeks whereas majority of mild polyhydramnios were diagnosed at term in present study.

According to present study, the most common congenital anomaly was anencephaly followed by nonimmune hydrops foetalis. According to S.Vaid et al,⁵ anencephaly was the commonest congenital anomaly compared to other congenital anomalies.

The present study, 18% cases were induced because of foetal congenital anomalies (14 cases), maternal distress (3 cases) and severe pre-eclampsia (one case) as compared to S.Vaid et al where induction rate was 16%.⁵

M. Zamah et al,⁶ where caesarean section rate was 22.8%. Preterm labour (14%), cephalopelvic disproportion (10%) and premature rupture of membrane (3%) were the major complications during pregnancy as compared to S.Vaid et

al,⁵ where cephalopelvic disproportion was the major complication (5%). In the present study, most of the perinatal deaths were associated with mild polyhydramnios.

Conclusion

We concluded that ultrasonography is the best means for early detection of polyhydramnios. Simple observer judgement of an excessive amount of amniotic fluid by an experienced sonographer is a useful means for identification of high risk cases and may often lead to a successful search for congenital anomalies.

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