

A Prospective Clinical Study of FETO-Maternal Outcome in Pregnancies with Abnormal Amniotic Fluid Index

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Abstract

Background: We report a clinical study of fetomaternal outcome in pregnancies with abnormal liquor volume managed at a tertiary care hospital

Methods: This study was conducted in the Department of Obstetrics and Gynaecology, S.P Medical College, Bikaner

Results- In. In oligohydramnios group 90.8% babies were healthy while 8.4% were died in NICU and 0.8% were still birth while in polyhydramnios group 76% babies were healthy while 4% were died in NICU and 20% babies were still birth. Still birth rate in very high in polyhydramnios group. This difference was found statistically highly significant ($p < 0.001$).

Conclusion: Development of abnormal liquor volume during pregnancy signals danger to the foetus. It is associated with an increased incidence of caesarean section, labour complications and adverse perinatal outcome. But isolated oligo and polyhydramnios in term gestation has better perinatal outcome compared to early onset and with associated conditions like hypertensive diseases of pregnancy, GDM, IUGR. Ultrasound is the ideal method to detect any abnormality in liquor volume. If any abnormality is detected during the ultrasound, a careful search should be made to detect any identifiable congenital anomalies.

Keywords: Oligohydramnios, Polyhydramnios, Fetomaternal

Introduction

Introduction Just as our ancestors crawled out of ocean to life on land, we too, until birth, float in amniotic fluid. It provides temperature stability, cushioning and a necessary presence in collapsed airways to help stimulate lung development. The importance of amniotic fluid volume as an indicator of fetal wellbeing has made its assessment an important part of antenatal fetal surveillance. Abnormalities such as meconium staining, congenital anomalies, growth retardation, dysmaturity and fetal asphyxia have been associated with reduced amniotic fluid volume.¹ Polyhydramnios is sometimes

associated with major fetal anomalies, ²aneuploidy, macrosomia and stillbirth.³ It has been proposed that amniotic fluid possesses certain bacteriostatic properties that protect against potential infectious processes and that a decrease in amniotic fluid volume may impair the gravid womans' ability to combat such infections.⁴

We report a clinical study of fetomaternal outcome in pregnancies with abnormal liquor volume managed at a tertiary care hospital.

Material and Method

Study Design

This study was conducted in the Department of Obstetrics and Gynaecology, S.P Medical College, Bikaner.

Study type

Prospective study

Study duration

12 months from December 2020 to November 2021.

Study place

This study was conducted in Obstetrics and Gynaecology in S.P Medical College, Bikaner.

Study population

The study population consisted of 300 patients.

Methodology

After applying inclusion and exclusion criteria, all pregnant women admitted in labor room having singleton pregnancy at 28-40 weeks of gestation with intact membrane with abnormal AFI were selected. Informed and written consent was taken. Detailed history, physical examination and necessary investigations were undertaken. AFI to be measured using Phelan's four quadrant ultrasound technique. The uterus is arbitrarily divided into four quadrants by the umbilicus transversely and the linea-nigra vertically. The largest vertical pocket free of fetal parts and umbilical cord loop in each quadrant is measured and sum of these measurements were giving AFI in cm. An AFI 5-24cm is normal. AFI

<5cm is considered oligohydramnios and > 24 cm is considered as polyhydramnios. Women with AFI <5cm and >24cm were included and inferred. Assessment of maternal outcome in terms of mode of delivery and foetal outcome in terms of birth weight, Apgar score at one and five-minute, respiratory distress, meconium aspiration, seizures in first 24 hours of life, congenital malformations, neonatal intensive care unit admission and death of baby.

Inclusion criteria

- Singleton pregnancy
- Pregnant females with 28-40 weeks of gestation with intact membranes with abnormal liquor volume will be included.

Exclusion criteria

- Females with leaking per vaginum.
- Intrauterine death.
- Post-term pregnancy.
- Multiple gestation.
- Patient who did not give consent.

Statistical analysis

Data analysis were performed using the Statistical Package for Social Sciences for Windows, version 17.0 (SPSS Inc., Chicago, IL, USA). A p value <0.05 was considered as significance. Continuous data were expressed as Mean and SD, while categorical data were presented as number of patients.

Results

Table 1: Socio-demographic profile

Variable	AFI \leq 5	AFI >24	p-value
Age in yrs	24.79 \pm 79	26.76 \pm 4.24	>0.05
Booked : Unbooked	75:175	16:34	>0.05
Obstetric score	2.06 \pm 1.31	2.48 \pm 1.33	0.04

Mean age in oligohydramnios group was 24.79 \pm 79 years and in polyhydramnios group it was 26.76 \pm 4.24 years, which was higher in

polyhydramnios group and the difference was statistically found insignificant (p>0.05). Only 30.3% females were booked and 69.7% females

were unbooked. In, in oligohydramnios group only 30% females were booked and polyhydramnios group 32% females were booked. Mean **obstetric score** in oligohydramnios group was 2.06 ± 1.31 while in

polyhydramnios group, was 2.48 ± 1.33 and this difference was found statistically significant where polyhydramnios group had a higher mean value.

Table 2: Distribution of cases according to mode of delivery in abnormal AFI

Mode of Delivery	AFI ≤ 5		AFI > 24		Total		
	No.	%	No.	%	No.	%	
SPVD	151	60.4	33	66.0	184	61.3	
Instrumental	1	0.4	0	-	1	0.3	
Caesarean	98	39.2	17	34.0	115	38.4	
Total	250		50		300		
p	0.702						

Table 2 shows distribution of cases according to mode of delivery in abnormal AFI. In oligohydramnios group, 39.2% were underwent caesarean section compared 34% in polyhydramnios group. In polyhydramnios group 66% delivered vaginally compared to 60.4% in oligohydramnios group in our study.

Table 3: Distribution of cases according to neonatal outcome in abnormal AFI

Neonatal Outcome	AFI ≤ 5		AFI > 24		Total		
	No.	%	No.	%	No.	%	
Healthy	227	90.8	38	76.0	265	88.3	
Death in NICU	21	8.4	2	4.0	23	7.7	
Still Birth	2	0.8	10	20.0	12	4.0	
Total	250		50		300		
p	<0.001						

According to neonatal outcome, most of the babies were healthy (n=265; 88.3%) while 12(4%) females had still birth and 23(7.7%) babies were died.

In oligohydramnios group 90.8% babies were healthy while 8.4% were died in NICU and 0.8% were still birth while in polyhydramnios group 76% babies were healthy while 4% were died in NICU and 20% babies were still birth. Still birth rate in very high in polyhydramnios group. This difference was found statistically highly significant ($p < 0.001$).

Discussion

This study was undertaken to assess the value of a thorough obstetric examination in detecting abnormalities of liquor volume. The variation in clinically suspected and USG confirmed oligoamnios (7%) and polyhydramnios (10%) is fairly acceptable and compares with those reported in the literature (5–6%).⁵ The error decreased from 45 to 50% when the examination was performed by a house surgeon to 10% when examined by the senior resident, thereby emphasising the need of good clinical teaching in under and post graduate curricula. When

oligohydramnios is detected in the second or early third trimester, a level 3 USG to detect fetal congenital anomalies is necessary as its incidence may vary from 8.5% (present study) to 9.37–26% in other studies.⁶ When no anomaly is detected, the clinician must be alerted to PROM⁷ as it requires treatment with appropriate antimicrobials after vaginal swab culture and sensitivity. In the absence of any evidence of infection, associated complications and a reassuring biophysical profile (24% of our subjects had an adequate amniotic fluid pocket of 2.92 cm as required in biophysical profile), none of our patients were induced. 36% delivered within 2 weeks while the rest continued with their pregnancies under proper supervision. When oligohydramnios was associated with an additional risk factor, the incidence of induction was high (56.5%). The incidence of CS in our study (42.8%) is high as compared to others. Fetal distress (48/60) was the commonest indication of CS. Fetal monitoring in labour is by FHR auscultation, intermittent cardiotocography and observation of the colour of liquor and not continuous fetal monitoring and fetal pH as in the west. Also the labour rooms are mostly manned by postgraduate trainees whose decision making is skewed towards CS for fear of adverse neonatal outcome.

Conclusion

Development of abnormal liquor volume during pregnancy signals danger to the foetus. It is associated with an increased incidence of caesarean section, labour complications and adverse perinatal outcome. But isolated oligo and polyhydramnios in term gestation has better perinatal outcome compared to early onset and with associated conditions like hypertensive diseases of pregnancy, GDM, IUGR. Ultrasound is the ideal method to detect any abnormality in liquor volume. If any abnormality is detected during the ultrasound, a careful search should be

made to detect any identifiable congenital anomalies.

A detailed history, clinical examination and relevant investigations should be done to identify the various etiological factors in all cases of abnormal liquor volume, to get better foetal outcome as well as to avoid the maternal complications

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