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Maternal and Perinatal Outcomes of Oligohydramnios in Pregnancies at A Tertiary Care Hospital in Bangladesh

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Key words:
Maternal and perinatal outcomes, oligohydramnios, term pregnancies

Abstract:

Background: *Oligohydramnios is one of the important complications seen in pregnancy. It increases the chance of miscarriage, premature birth, meconium aspiration syndrome, RDS, still birth, low birth weight baby & operative intervention for oligohydramnios on pregnancy out come.* ***Methods****: This cross sectional study was conducted in department of Obstetrics &Gynaecology, Sir Salimullah Medical College Mitford Hospital, Dhaka during the period of January 2022 to June 2022 among 50 patients to assess the effect of oligohydramnios on pregnancy outcome and to formulate the plan of management in order to reduce the related complications. Clinically suspected oligohydramnios was confirmed by USG. Age, parity, gestational age, mode of delivery, colour of liquor, Apgar score, birth weight, neonatal complications were recorded at time of delivery.* ***Results:*** *The socio demographic data revealed that 58% respondents were primigravida, mean age was 23.96±5.01 SD (Range 18-40), gestational age was e"37 weeks in 90% cases. 64% respondents were diagnosed as severe oligohydramnios. Meconium stained liquor and the rate of caesarean section was higher in severe oligohydramnios was associated with low Apgar score (<7) than border line oligohydramnios. Neonatal complication was seen 22% babies and among than only 7 babies needed NICU admission.* ***Conclusion:*** *Neonatal complications are common in pregnancy associated with oligohydramnios. From this study it was concluded that meconium stained liquor, rate of caesarean section forfoetal distress was higher in severe oligohydranios groups than border line group. Severe oligohydramnios was also associated with low Apger score (<7) than borderline one.*

Introduction:

Obstetricians providing health care often face a situation in which pregnant woman is noted to have oligohydramnios both clinically and sonographically. Clinically in oligohydramnios uterine size is much smaller than the period of amenorrhoea and the uterus in full of foetus.[1]An accurate and reproducible method of determining abnormality in amniotic fluid volume is sonographic assessment of amniotic fluid index (AFI). After taking a detailed history and complete examination, AFI is obtained sonographically. The largest pocket free of fetal parts and loops of cord in each quadrant is measured and added to give AFI. An AFI 8-25cm is considered

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normal. The patients with AFI between 5.1- 8cm have borderline oligohydramnios and the patients having AFI less than or equal to 5cm have severe oligohydramnios.[3]

The mechanism of amniotic fluid production and turnover are complex. Several factors including foetal swallowing, micturition, respiratory tract secretion and transudation from maternal serum across the foetal membranes or from maternal circulation in the placenta, work in combination to produce a normal amniotic fluid[4].

In the majority of cases the cause of oligohydramnios is unknown. Some causes of low amniotic fluid are premature rupture of membranes, problems with placenta, intrauterine growth restriction, birth defects (particularly kidney or urinary tract defect), certain maternal medical conditions (Diabetes, Pre- eclampsia, Lupus, GHTN, Chronic HTN, twin to twin transfusion syndrome), and drugs e.g. NSAIDS[5].

Oligohydramnios identified either in the antepartum or intrapartum period of pregnancy has been associated with increased risk of meconium stained amniotic fluid, abnormal fetal heart rate tracing and intervention for fetal distress in labour[6,14].

Approximately 60% of foetus with intra uterine growth retardation (IUGR)have decreased amniotic fluid volume discernable on sonographic examination. This feature is very useful in differentiating the pathologically growth restricted foetus from the one that is merely constitutionally small.

Generally oligohydramnios in IUGR foetus is serious sign of fetal jeopardy because it indicates that the foetus has already start centralizing the blood flow to protect the brain and other vital organs[7,15]

In most cases of low amniotic fluid, pregnancy ends with a health baby although there are threats to life of foetus. However, oligohydramnios is more serious when it occurs in the first half of pregnancy. Low levels of amniotic fluid increase the chance of miscarriage, premature births and stillbirth. In addition when oligohydramnios develops in early pregnancy carries a greater risk of lung and limb defects. Insufficient amniotic fluid can compress fetal lungs and causes kidney and urinary tract problems.[8]

The majority of congenital anomalies associated with oligohydramnios involve the urinary tract. Bilateral renal agenesis, multicystic dysplastic kidneys and posterior urethral valves result in oligohydramnios. The reduction in amniotic fluid volume makes assessment of fetal anatomy more difficult. Early symmetric intrauterine growth restriction and oligohydramnios should suggest a possible karyotypic abnormality. Patients with second trimester oligohydramnios have a higher prevalence of congenital anomalies (50.7% vs 22.1%) and lower survival rate (10.2% vs 85.3%) then those women with oligohydramnios in the third trimester." So this study was undertaken to find outcome of pregnancy with oligohydramnios.

Methods:

This cross sectional study was conducted in department of Obstetrics &Gynaecology, Sir Salimullah Medical College Mitford Hospital, Dhaka during the period of January 2022 to June 2022. Fifty pregnant patient with oligohydramnios at 32 weeks to 40 weeks of gestation admitted in department of obs and gynae, Sir Salimullah Medical College Mitford Hospital, Dhaka. Clinically suspected and sonographically confirmed singleton pregnancy with oligohydramnios from 32 to 40 weeks of gestation Oligohydramnios: It is defined as AFI less than 5 cm at term[3]. Borderline oligohydramnios: It is considered when AFI 5.1-8cm[3]. Severe Oligohydramnios: It is considered when AFId" 5cm[3].Fetal distress: Fetal heart rate which is <100 or 160 beats/min and irregular on intermittent auscultation is considered as fetal distress in this study. Apgar score: It is the scoring system of newborn babies at Imin and 5min of birth. Apgar score <7 at 5 minutes of birth is considered as birth asphyxia in this study. In this study when oligohydramnios was suspected clinically it was confirmed sonographically by measuring AFI. After selection informed written consent was taken from each of study population. On admission foetal surveillance was done by intermittent foetal heart rate monitoring. Colour and amount of liquorat the time of rupture of membranes was recorded. Gestational age at the timeof delivery either term or preterm was recorded.

Mode of delivery and indication indication of caesarean section was also recorded. Apgar score of the baby was recorded at one minute & five minutesafter vaginal delivery or after caesarean section.

Neonatal birth weight was measured. Less than 2.5 kg was considered as low birth weight. Neonatal

complication such as respiratory distress syndrome, meconium aspiration syndrome, suspected sepsis and admission to neonatal ward and neonatal deaths were recorded.

All the information's were recorded in a predesigned date collection sheet (Appendix-II). The data was processed and edited by computer. The statistical package SPSS version-16 was used for the data analysis. All statistical analysis of different variables were analyzed by z test and chi-square test. For all analytical test pd"0.05 was considered as significant.

Results:

Table I shows mean age of the patients was 23.96 ±5.01SD, Range (18-40). Fifty eight percent of respondents were primigravida. Gestational age was ≥37weeks in ninety percent cases.

Table I: Patients Profile (n=50)

Profile	Group	Frequency	Percent
Age (in year)	≤20	15	30
	20-25	22	44
	25-30	10	20
	>30	3	6
Gravidity	1st	29	58
	2-3	15	30
	4-5	5	10
	>5	1	2
Gestational age	>37	5	10
	≥37	45	90

Table II: Colour of liquor in relation to AFI

AFI	Colour of Liquor (N=50)		P-value
Borderline Oligohydramnios	Clear	Stained	x^2=3.92
(AFI- 5.1-8cm)	16	2	P=0.046
Severe Oligohydramnios	12	20	
(AFI- <5cm)			

In severe oligohydramnios meconium stained liquor was more common than borderlineoligohydramnios. It was statistically significant (P<0.005)

Table III: Distribution of the respondents by mode of delivery (n=50)

Mode of Delivery	Borderline Oligohydramnios (n=18)	Severe Oligohydramnios (n=32)	P-value
Normal vaginal	06	02	x^2=2.9
delivery	12	30	P=0.088

Caesarean section

Rate of caesarean section was higher in severe oligohydramnios group but it was not statistically significant (P>0.005).

Table IV: Condition of newborn during delivery (n=50)

Condition	Range	Severe oligohydramnios		Borderline oligohydramnios		P-value
		1min	5min	1min	5min	$\chi^2$2.36
Apger	<7	19	12	3	3	P=0.124
score	≥7	13	20	15	15	
Birth Wt.	>5.5Kg	Frequency		Percent		
	≥2.5Kg	9		18		
		41		82		

Apgar score less than 7 in five minutes was higher severe oligohydramnios group than borderline oligohydramniosgroupe But it was not statistically significant (P>0.05). Eighty two percent of babies birth weight was ≥2.5kg.

Discussion:

The aim of this study was to assess the effect of antenatal oligohydramnios on pregnancy outcome. It would help in identifying patients at risk taking appropriate measures about the mode, data and time of delivery and about neonatal care.

In this the study mean age of the patient was 23.96 ± 5.01 SD. 58% percent of respondents were primigravida. Other author found that there was no significant relation of age and parity with oligohydramnios'. In this study higher number of oligohydramnios among primigravida due to small sample size.

In this study 28% percent patients had meconium stained liqour. which has similarity with a study among 147 oligohydramnios patients where meconium stained liqour was found in 6% cases 1. And number of meconium stained liqour was significantly higher in severe oligohydramnios group than borderline one. Which is contrary to the study by other author where there is no significant difference of meconium stained liqour in between borderline and severe oligohydramnios group1. In this study severe oligohydramnios was associated with increase staining of liqour.

The rate of caesarean section was higher (84%) in oligohydramnios and indication of caesarean section was foetal distress in 54.76%. It is similar with other study where AFI <5cm was associated with increase rate of caesarean section delivery for foetal distress1. Another study found 15.2% caesarean section delivery among 341 oligohydramnios patients1. Higher rate of caesarean section in this study was due to lack of facilities for antepartum and intrapartumfoetal monitoring. So for the avoidance of adverse perinatal outcome in most cases caesarean section was done. In another Study caesarean section rate was higher in severe oligohydramnios group than borderline oligohydramnios group (9.7% vs 5%, P < 0.06)[18] which is similar to our study.

Foetal outcome is very important in pregnancy. Birth weight is one of the important indicators of foetalwell being. It was found that only 18 percent babies were below 2.5kg while 82 percent babies were 2.5kg or more. It suggests that the probability of delivering low birth weight babies are not common among mother who are oligohydramnios. Similar study found among that 79 oligohydramnios patients, low birth weight was 10 %. Another study found that among 147 oligohydramnios patients, 41 (35%) had low birth weight baby[19]. So Oligohydramnios is not always a reflection of poor intrauterine nutrition to the fetus.

In this study Apgar score less than 7 at five minute was higher (37.7%) in severe oligohydramnios group than borderline Oligohydramnios. But is was not significant (x^2=2.34, P> 0.05). In a review study the association of severe oligohydramnios with apgar score less than 7 (132/4325 patients, here (x^2=10.85, P< 0.05)[20].

In this study neonatal complications occurred in 11 babies. From the study it was observed that 12% of neonates developed respiratory distress syndrome, 4% neonates developed meconium aspiration syndrome. There was only one early neonatal death. There is strong relationship between adverse neonatal outcome and oligohydramnios. In another study respiratory distress syndrome was 10% and meconium aspiration syndrome was 1.4% which is almost similar to this study[1].

In this study that there was only one early neonatal death. The baby was born asphyxiated, birth weight 2.5kg, severely pale and gestational age at the time of delivery was 37 weeks. In this study admission in NICU was 14% which was almost similar to other two studies 10% and 7% respectively[18].

Conclusion:

Pregnancy outcome in oligohydramnios is not so gloomy as it is thought to be. But obstetricians should be vigilant in dealing with such cases. When oligohydramnios is diagnosed congenital anomaly and IUGR should be excluded first. Good foetal surveillance and timely intervention is need for better feotal outcome. Neonatal complications are common in pregnancy with oligohydramnios. From this study it was concluded that meconium stained liquor, rate of caesarean section for foetal distress was higher in severe oligohydramnios groups than border line group. Severe oligohydramnios was also

associated with low Apgar score (<7) than borderline oligohydramnios.

Limitations:
Single-center and the relatively short study duration might limit validity. Future multi-center studies with longer follow-up periods will provide more comprehensive insights.

Data Availability:
The datasets analysed during the current study are not publicly available due to the continuation of analyses but are available from the corresponding author on reasonable request.

Conflict of Interest:
The authors stated that there was no conflict of interest in this study.

Funding:
This research received no external funding.

Ethical consideration:
The study was approved by the Ethical Review Committee of Sir Salimullah Medical College Mitford Hospital (SSMCMH) Dhaka, Bangladesh. Informed consent was obtained from each participant or caregivers of the patients.

Author Contributions:
All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; had agreed on the journal to which the article had been submitted; and agreed to be account able for all aspects of the work.

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