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Various Mode of Presentation of Oligohydramnios in Patients Admitted in BSMMU: A Hospital Based Study

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Abstract

Introduction: Oligohydramnios is a pregnancy disorder characterized by a shortage of amniotic fluid volume. It is a rather common obstetric complication that has severe effects on the health of both the mother and the fetus. Early identification is essential for prompt diagnosis and therapy because the clinical appearance of oligohydramnios can vary greatly. This study aimed to investigate the various modes of presentation of oligohydramnios in patients admitted to Bangabandhu Sheikh Mujib Medical University (BSMMU), a tertiary care hospital in Bangladesh. ***Methods:*** This prospective observational study was carried out on the admitted patients at the Department of Gynaecology and Obstetrics in Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from February to July 2008 (6 months). A total of fifty women (N=50) having Oligohydramnios in pregnancy were included in the study. Completed data forms were reviewed, edited, and processed for computer data entry. The data analysis was performed using Statistical Package for Social Sciences (SPSS) Version 25.0.The ethical clearance of this study was obtained from the Institutional Review Board (IRB) of BSMMU, Dhaka, Bangladesh. ***Results:*** The mean age of the mothers was 25.8 years and two-fifths of the mothers (20, 40.0%) belonged to 21-25 years old. Twenty-three mothers (23, 46.0%) were nulliparous. Of fifty mothers (N=50), eighteen (18, 36.0%) had borderline oligohydramnios and thirty-two (32, 64.0%) had severe oligohydramnios. Normal CTG tracing was found in eighteen patients (18, 36.0%) and abnormal CTG was found in thirty-two patients (32, 64%) ($p < 0.01$) which was statistically significant. Among the alive babies after initial resuscitation, twenty-three babies (23, 50.0%) were required to get admitted. Twelve admitted babies (12,52.2%) stayed in the neonatal ward for <7 days and among them one baby (1,8.3%) died, nine babies (9,39.1%) were treated for 7—21 days, among them two babies (2,22.2%) could not survive and two babies were treated for more than 21 days but could not survive. ***Conclusion:*** According to the findings, severe oligohydramnios was linked to a higher risk of cesarean delivery, higher APGAR ratings, and probable issues that would necessitate neonatal admission and care.

Keywords: Oligohydramnios, Amniotic fluid volume, Caesarian section.

INTRODUCTION

Oligohydramnios is a condition characterized by a deficiency of amniotic fluid volume during pregnancy. It is a relatively common obstetric complication with significant implications for maternal and fetal health [1]. The condition has been associated with various adverse pregnancy outcomes, such as preterm birth, intrauterine growth restriction, fetal malformations, and fetal distress. The clinical presentation of oligohydramnios can vary widely, and early recognition is crucial for timely intervention and management [2]. Oligohydramnios can be classified into two main categories: mild and severe. Mild oligohydramnios is characterized by a reduced amniotic

fluid index (AFI) between 5 and 8 cm, whereas severe oligohydramnios is defined by an AFI less than 5 cm. The severity of oligohydramnios is directly related to the risks it poses to both the mother and the fetus [3, 4]. Previous studies have identified various modes of presentation of oligohydramnios, including maternal complaints, abnormal fetal monitoring, and ultrasound findings [5, 6]. Maternal complaints may include reduced fetal movements, uterine contractions, abdominal discomfort, or even vaginal leakage. These subjective symptoms, although non-specific, can provide important clues for the diagnosis of oligohydramnios [7]. Abnormal fetal monitoring is another common presentation of oligohydramnios. Fetal heart rate abnormalities, such as persistent bradycardia or decelerations, can indicate fetal distress due to reduced amniotic fluid [8]. Monitoring techniques like non-stress tests (NSTs) and biophysical profiles (BPPs) are essential tools in assessing fetal well-being in cases of oligohydramnios [9]. Ultrasound evaluation plays a vital role in the diagnosis and management of oligohydramnios. It allows for accurate measurement of the AFI, visualization of fetal anatomy, and assessment of placental function. In severe cases, ultrasound may reveal additional findings such as fetal growth restriction, umbilical cord abnormalities, or fetal malformations [10]. This research is of great significance as it provides valuable insights into the clinical presentation of oligohydramnios, ultimately aiding in the timely identification and management of this condition. This study aimed to investigate the various modes of presentation of oligohydramnios in patients admitted to Bangabandhu Sheikh Mujib Medical University (BSMMU), a tertiary care hospital in Bangladesh. By examining the diverse manifestations of this condition, we seek to enhance our understanding of oligohydramnios and improve the clinical management of affected pregnancies.

OBJECTIVES

- To see various mode of presentation of Oligohydramnios in patients admitted in BSMMU.
- To find out the possible etiology.

METHODS

This prospective observational study was carried out on the admitted patients in the Department of Gynaecology & Obstetric at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from February to July 2008 (6 months). A total of fifty women (N=50) having Oligohydramnios in pregnancy were included in the study. For the purpose of this study Oligohydramnios was defined as when clinically an amniotic fluid was suspected to be reduced and sonographically AFI was less than 8 cm. Collen Baraob *et al.*, considered AFI 8.1- 20cm as normal amniotic fluid volume. AFI 5.1-8cm as moderate oligohydramnios (borderline oligohydramnios) and AFI < or equal to 5cm as severe oligohydramnios. Women having Oligohydramnios at 28 weeks and beyond 40 up to 42 weeks of pregnancy had been included. Clinically suspected and then sonographically confirmed Oligohydramnios cases were entered into the study. After selection, a declaration form had been shown to each patient and then an informed written consent had been taken from each of them. By transabdominal ultrasonography AFI index was measured by four-quadrant technique by dividing the uterus into four quadrants. The transducer was placed on the maternal abdomen along the longitudinal axis. The vertical diameter of the largest amniotic fluid pocket in each quadrant was measured with the transducer head held perpendicular to the floor. These measurements were summed in centimeter and the result was recorded as the amniotic fluid index (AFI). On admission, fetal surveillance was done by BPP which included foetal cardio tocography (CTG) ultrasonography. Fetal heart rate was monitored by CTG. It was done for 20 minutes. Baseline FHR, beat to beat variability acceleration and deceleratins were observed. Variable deceleration or late deceleration or prolonged bradycardia was the indicator of foetal distress and these had influenced the pattern of management towards caesarean section. Gestational age at the time of delivery was recorded. Liquor was assessed (volume, colour etc) at the time of rupture of the fetal membranes, during labour and at the time of lower uterine caesarean section (LUCS). Mode of delivery, either normal vaginal delivery or assisted vaginal delivery or caesarean section was recorded. Indication for LUCS was kept in the records. APGAR score was recorded at 1 & 5 minutes. Neonatal complications, such as respiratory distress syndrome, suspected sepsis, need for admission in neonatal ward and total duration of stay in neonatal ward was recorded. All the cases of stillbirth and early neonatal death were recorded. The study coordinators performed random checks to verify data collection processes. Completed data forms were reviewed, edited, and processed for computer data entry. Frequencies and percentages were used for descriptive analysis. The data analysis was performed using Statistical Package for Social Sciences (SPSS) Version 25.0. Chi-square tests were performed to observe the statistical relationship between the study variables where $p<0.05$ considered, the level of significance with 95%CI.The ethical clearance of this study was obtained from the Institutional Review Board(IRB) of BSMMU, Dhaka, Bangladesh.

Inclusion Criteria:

- Any pregnant patient of third trimester, with or without history of IUGR, Pregnancy-induced hypertension, p-PROM and post-dated pregnancy.
- No age bar will be made.

Exclusion Criteria:

- Pregnancy with IUD.

- Pregnancy with other medical conditions like- DM etc.
- Multiple pregnancy
- Pregnancy with polyhydramnios.
- Oligohydramnios in other than 3rd trimester of pregnancy**.**

RESULTS

Among the pregnant mother (N=50), the mean age of the mothers was 25.8 years and two-fifths of the mothers (20, 40.0%) belonged to 21-25 years old. Twenty-three mothers (23, 46.0%) were nulliparous. Of fifty mothers (N=50), eighteen (18, 36.0%) had borderline oligohydramnios & thirty-two (32, 64.0%) had severe oligohydramnios. Thirteen mothers (39, 78.0%) underwent caesarean section [**Table 1**]. Based on the indication of caesarian section (n=39), twenty-five patients (25, 64.1%), had foetal distress, eleven (11, 28.2%) had previous history of caesarian section and three (3, 7.7%) had malpresentation [**Table 2**]. Among fifty patients (N=50), normal CTG tracing was found in eighteen patients (18, 36.0%) and abnormal CTG was found in thirty-two patients (32, 64%) and the p-value is <0.01 which was statistically significant. Meconium-stained liquor was found in only fourteen patients (14, 28.0%) which was not statistically significant. Around one-third of the patients (15, 30.0%) had a gestational age of 28—31 completed weeks, & four (4, 8.0%) had a gestational age of more than 40 completed weeks [**Table 3**]. All of the severe oligohydramnios mothers (32,100.0%) underwent cesarean section, and eleven borderline oligohydramnios mothers (11, 61.1%) underwent normal vaginal delivery [**Table 4**]. APGAR score was done after primary resuscitation at the end of 5 minutes including twenty-six (n=26) babies having >7 APGAR score and APGAR score was found significantly higher in the severe oligohydramnios group than borderline oligohydramnios [**Table 5**]. This study did not include the stillborn babies as among these babies some were macerated which could not reflect the actual attained birth weight of the foetus. The study showed three alive babies (3, 6.5%) had birth weights>2500 gm whereas twenty (20, 43.5%) and eighteen (18, 39.1%) alive babies had birth weights between 1501—2500gm and 1000—1500gm respectively [**Table 6**]. Among the alive babies after initial resuscitation, twenty-three babies (23, 50.0%) were required to get admitted [**Table 7**]. Twelve admitted babies (12,52.2%) stayed in the neonatal ward for <7 days and among them one baby (1,8.3%) died, nine babies (9,39.1%) were treated for 7—21 days, among them two babies (2,22.2%) could not survive and two babies were treated for more than 21 days but could not survive [**Table 8**].

Table 1: Distribution of the study population based on baseline characteristics (N=50)

Characteristics	**(N,%)**
Age: Mean±SD : 25.8±5.5	
18—20	6,12.0%
21—25	20,40.0%
26—30	16,32.0%
>30	8,16.0%
Parity	
Nulliparous	23,46.0%
Multiparous	27,54.0%
Amiotic fluid index	
5.1—8 cm (Borderline oligohydramnios)	18,36.0%
≤5 cm (Severe oligohydramnios)	32,64.0%
Mode of delivery	
Normal vaginal delivery (NVD)	11,22.0%
Caesarean section	39,78.0%
Possible causes	
PROM	10,20.0%
Congenital anomalies of foetus	6,12.0%
Post-dated pregnancy	4,8.0%
Placental insufficiency	10,20.0%
IUGR	7,14.0%
Without any apparent complications	13,26.0%

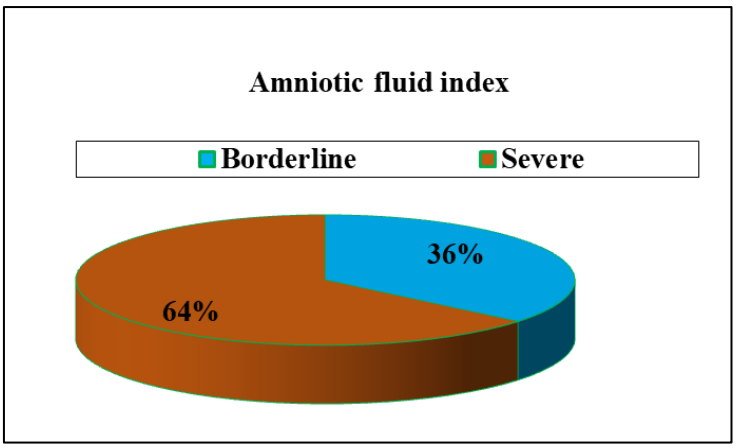

Fig. 1: Shows the amniotic fluid index of the study patients

Table 2: Distribution of the study population based on indication of caeserian section (N=39)

Indications	**(n,%)**	***p-value***
Foetal distress	25,64.1%	
H/O previous C/S	11,28.2%	<0.01
Malpresentation	3,7.7%	

Table 3: Distribution of the study population based on Foetal heart rate, Color of the liquor and Gestational age at the time of delivery (N=50)

CTG Tracing	**(N,%)**
Normal CTG	18,32.0%
Abnormal CTG	32,64.0%
Color of the liquor	
Normal color liquor	36,72.0%
Meconium stained liquor	14,28.0%
Gestational age	
28—31 completed weeks	15,30.0%
32—35 completed weeks	15,30.0%
36—39 completed weeks	16,32.0%
>40weeks	4,8.0%

Table 4: Distribution of the study population based on Comparison of caeserian section between borderline and severe oligohydramnios (n=50)

Oligohydramnios	**C/S**	**NVD**	***p-value***
Borderline oligohydramnios (n=18)	7,38.9%	11,61.1%	
Severe oligohydramnios (N=32)	32,100.0%	0,0.0%	<0.01

Table 5: Comparison of APGAR score <7 in borderline and severe oligohydramnios group (N=50)

APGAR score	**Borderline oligohydramnios (n=18)**	**Severe oligohydramnios(N=32)**	**p-value**
≥7 (n=26)	4,15.4%	20,77.0%	
<7 (n=24)	14,58.3%	12,50.0%	<0.05

Table 6: Distribution of the study population based on birth weight of baby excluding 4 still born babies (n=46)

Weight (in gm)	**(n,%)**
<1000	5,10.9%
1000—1500	18,39.1%
1501—2500	20,43.5%
>2500	3,6.5%

Table 7: Distribution of the study population based on Admission in neonatal ward (n=46)

Number of alive babies	**Number of babies admitted (n,%)**
46	23,50.0%

Table 8: Distribution of the study population based on Length of stay of admitted babies in neonatal ward (n=23)

Days	(n,%)	Number of death
<7days	12,52.2%	1,8.3%
7—21 days	9,39.1%	2,22.2%
>21 days	2,8.7%	2,100.0%

DISCUSSION

Oligohydramnios refers to a condition in which there is an abnormally low volume of amniotic fluid surrounding the fetus during pregnancy. The mode of presentation of oligohydramnios can vary depending on the severity. As a tertiary hospital, it mostly handles referral cases. This department has a specialized Obstetrics unit called the Fetomaternal Medicine unit for these high-risk pregnancies. In our study, the majority of patients were sent cases from different regions of our country to this specialized Centre to receive the best pregnancy care and foetal monitoring and management techniques. In our study, the mean age of the moms was 25.8 years, and two-fifths of the mothers were between the ages of 21 and 25. In Bangladesh, a comparable analysis revealed that the majority of patients were between the ages of 21 and 25 [11]. A contradictory study found that the majority of the mothers (51.3%) with oligohydramnios belonged to 25-34 years old [12]. The majority of the pregnant women were between the ages of 20 and 25 and the average age was 26.6 years depicted in another study [13]. In our study, twenty-three mothers (23, 46.0%) were nulliparous. A related finding carried out in Yangzhou City, Jiangsu Province found that 75.7% of pregnant women were nulliparous [14]. Current findings depicted that of fifty mothers (N=50), eighteen (18, 36.0%) had borderline oligohydramnios & thirty-two (32, 64.0%) had severe oligohydramnios. A retrospective observational analysis found that 49% had severe oligohydramnios, and 51% had borderline oligohydramnios [15].A study conducted in Nepal showed that 65% of the patients had mild oligohydramnios and another 35% had severe oligohydramnios [16]. Another related article conducted in Bangladesh found that borderline oligohydramnios affected 74% of the 78 pregnant women, while severe oligohydramnios affected 25% of them [11].Based on pregnancy complications, ten (10,20.0%) had premature rupture of membranes (PROM), six (6,12.0%) had congenital anomalies of the fetus, four (4,8.0%) had post-dated pregnancy, ten (10,20.0%) had placental insufficiency, seven (7,14.0%) had Intrauterine growth restriction (IUGR) babies, and thirteen (13,26.0%) had without any apparent complications showed in this current study. Another related finding found that during labour in a pregnancy complicated by oligohydramnios, there are several additional issues to be aware of. These include a higher risk of fetal heart rate decelerations, cesarean birth, meconium aspiration, umbilical cord compression, and nonreactive fetal tracings [17].

In our study, the caesarian section rate was significantly higher at 78% and among the indications of caesarian section foetal distress was significantly higher and it was 64%. AFI≤5cm was associated with an increased incidence of foetal distress found in another analysis [18]. An increase rate of caesarean section (14.7%) for foetal distress among oligohydramnios patients was shown in another article [19]. In this present analysis, normal CTG tracing was found in eighteen patients (18,36.0%) and abnormal CTG was found in thirty-two patients (32, 64%) and the p-value is <0.01 which was statistically significant. According to a similar study, 39% of patients had aberrant CTG and 61% of patients had reactive CTG at the time of admission. Statistics showed that the frequency of aberrant CTG was high [20]. In this present content, meconium-stained liquor was found in only fourteen patients (14, 28.0%) which was not statistically significant. Another related finding revealed that meconium-stained liquor (MSL) was detected in 27.1% of all instances [21]. In our analysis, around one-third of the patients (15,30.0%) had a gestational age of 28—31 completed weeks, & four (4,8.0%) had a gestational age of more than 40 completed weeks. A similar analysis found that the gestational age ranged from 35.3 weeks to 42.5 weeks, with 38.8 (1.6) weeks serving as the mean (SD) [22]. Another study demonstrated at Kathmandu found that 80 (74.1%) of the women had gestational ages between 37 and 40 weeks, 13 (24.1%) between 40 and 42 weeks, and one (0.9%) had gestational ages more than 42 weeks [23]. In our study, there were 20 severe oligohydramnios cases where the APGAR score was less than 7 at 5 minutes, compared to just 4 cases in the borderline oligohydramnios group. The correlation between severe oligohydramnios and lower APGAR scores was highly significant. In a review, study found that there were the association of severe oligohydramnios with APGAR score <7 [24].In our study neonatal admission was 23 among 46 live births which indicates that 50% of these pregnancy outcomes needed neonatal specialized management.

CONCLUSION

A condition known as oligohydramnios, which occurs when there is inadequate amniotic fluid surrounding the fetus in the uterus, is one that occurs during pregnancy. The vital fluid known as amniotic fluid surrounds and shields the growing fetus, acting as a cushion, regulating temperature, and aiding in the development of the lungs and musculoskeletal system. In our findings, the majority of cases (64.0%) had severe oligohydramnios, and among the mothers who

underwent caesarean section, the most common indication was fetal distress (64.1%). Approximately half of the alive babies (50.0%) required admission after initial resuscitation. Among the admitted babies, most (52.2%) stayed in the neonatal ward for less than 7 days, but there was a notable mortality rate (8.3%) within this group.

RECOMMENDATIONS

A study with a larger number of patients should be undertaken. Outcome measures should be compared between women with normal amniotic fluid volume with those of oligohydramnios. Labor room facilities for ultrasonography (along with CTG) for admitted patients should be introduced.

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Conflict of Interest: None declared.
Ethical Approval: The study was approved by the Institutional Review Board (IRB).

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