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Outcome of Pregnancies with Severe Oligohydramnios in the 3rd Trimesters

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Abstract

Background: Amniotic fluid volume (AFV) of less than 200 ml is considered as insufficient, and is referred as significant oligohydramnios. Approximately 8% of pregnant women may experience low amniotic fluid levels (less than normal / AFI < 8 cm) But among them about 4% of pregnant women are diagnosed with severe or significant oligohydramnios. A range of unfavorable perinatal outcomes, including fatal growth restriction meconium aspiration of fetus, fetal distress and surgical intervention for foetal distress in labour and even perinatal death, are linked to oligohydramnios which are found during the antepartum period of pregnancy. The purpose of the study was to determine the outcome of pregnancies with severe oligohydramnios in the 3rd trimester. **Material & Methods:** This prospective observational study was carried out on the admitted patients in the Department of Gynecology & Obstetrics at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from February to July 2013 (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:** 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. Normal CTG tracing was found in eighteen patients (18, 36.0%) and abnormal CTG was found in thirty-two patients (32, 64%). Based on fetal outcome (N=50), 23 babies (23, 46.0%) were admitted to the NICU, of whom 7 (7, 14.0%) had birth asphyxia, 8 (8, 16.0%) had neonatal sepsis, 4 (4, 8.0%) had neonatal jaundice, 2 (2, 4.0%) had meconium aspiration syndrome, 4 had stillbirths, and 5 had died as neonates. **Conclusion:** Nowadays, routine obstetric USG is more routinely used to detect oligohydramnios. In the third trimester of pregnancy, PIH and postdated pregnancies are the most common causes of decreasing amniotic fluid. Unfavourable perinatal outcomes can be avoided with careful fetal heart rate monitoring during antenatal period and at labour. Every case of oligohydramnios necessitates a comprehensive prenatal assessment, parental counselling, and a personalized delivery time and technique. This study found no connection between meconium-stained liquor and oligohydramnios and found that caesarean section deliveries were considerably more common in these women.

Keywords:- Outcome of Pregnancies, Oligohydramnios, Amniotic fluid volume.

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INTRODUCTION

Severe oligohydramnios refers to amniotic fluid volume (AFV) that is less than 200 ml insufficient except for gestational age.[1] About 4% of pregnant women are diagnosed with severe oligohydramnios, and about 8% of them may have low fluid levels. There are several various ways to assess amniotic fluid, but deep pocket measures or amniotic fluid index (AFI) evaluations are the most popular method.[2,3] A diagnosis of oligohydramnios would be suspected if an AFI at 32–36 weeks of gestation revealed a fluid level of lower than 5 centimetres (or less than the 5th percentile), the absence of a fluid pocket 2-3 cm in depth, or a fluid volume of less than 500 ml.[4] Oligohydramnios is diagnosed by ultrasound examination, preferably based on an amniotic fluid index (AFI) ≤5 cm or single deepest pocket (SDP)<2 cm, but a subjective assessment of reduced AFV is also acceptable.[5] In general, it is riskier to have little amniotic fluid throughout the first six months of pregnancy. These issues could consist of: fetal deformities caused by being compressed inside the uterus, preterm birth, miscarriage, stillbirth etc.[6] A range of unfavourable perinatal outcomes, including perinatal death, meconium-stained amniotic fluid, irregular foetal heart rate monitoring, and surgical intervention for foetal distress in labour, are linked to oligohydramnios found during the antepartum period of pregnancy.[7] Oligohydramnios is caused by premature membrane rupture, placental insufficiency, twin-twin transfusion syndrome, post maturity, and specific maternal health conditions like high blood pressure and the use of certain medications, as well as congenital abnormalities of the fetus' urinary tract, such as renal agenesis, urethral obstruction, and fetal polycystic kidney.[8] When oligohydramnios occurs later in pregnancy as a result of an early membranous rupture, there is a risk of umbilical cord compression. If the cord is compressed during labour, there could be variable deceleration in fatal heart rate.[9] Amniotic fluid generation and turnover have complicated mechanisms. About 12 days after conception, just after the amniotic sac forms, amniotic fluid also starts to generate.[10] A healthy amniotic fluid is produced by several processes, including fetal swallowing, micturition, respiratory tract secretion, transudation from maternal serum across the foetal membranes, and transudation from maternal circulation in the placenta.[11] This fluid is essential for the fetus' proper growth and development. It protects the fetus from physical harm, promotes the development of the fetal lungs, and acts as an infection barrier.[12] There are numerous difficulties related to pregnancy in our nation. One of these complications is oligo hydra hydramnios, which is quite prevalent. The perinatal outcome in patients with oligohydramnios, however, is not well studied. In light of the backdrop, we conducted this study to evaluate the perinatal outcome in women who were in their third trimester of pregnancy and had oligohydramnios. The purpose of the study was to determine the outcome of pregnancies with severe oligohydramnios in the 3rd trimester.

Objectives

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

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- To see the time and mode of termination of pregnancy as well as fetal outcome.

MATERIAL AND METHODS

This prospective and 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 2013 (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 upto 42 weeks of pregnancy had been included. Clinically suspected and then sonographically confirmed Oligohydramnios cases were enrolled in 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 were 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 segment caesarean section (LSCS). Mode of delivery, either normal vaginal delivery or assisted vaginal delivery or caesarean section was recorded. Indication for LSCS 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 was 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 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.

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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 [Table 1]. 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 [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]. Based on borderline oligohydramnios (n=18), seven (7, 38.9%) patients underwent caesarean delivery, & eleven patients (11, 61.1%) underwent vaginal delivery. Based on severe oligohydramnios (n=32), all of them underwent caesarean delivery [Table 4]. Based on the fetal outcome (N=50), twenty-three babies (23, 46.0%), were admitted into the ICU, seven (7, 14.0%) had birth asphyxia, eight (8, 16.0%) had neonatal sepsis, four babies (4, 8.0%) had neonatal jaundice, two babies (2, 4.0%) had meconium aspiration syndrome, four experienced stillbirths, and five neonates had died [Table 5].

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%

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Table 2: Distribution of the study population based on Possible causes of oligohydramnios (N=50).

Pregnancy complications	**(N,%)**
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%

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 borderline and severe oligohydramnios (N=50).

Oligohydramnios	**(N,%)**
Borderline oligohydramnios (n=18)	
Caesarean section	7,38.9%
Normal vaginal delivery	11,61.1%
Severe oligohydramnios (n=32)	
Caesarean section	32,100.0%
Normal vaginal delivery	0,0.0%

Table 5: Distribution of the study population based on Foetal outcome (N=50).

Foetal outcome	**(N,%)**
Number of babies admitted	23,46.0%
No morbidity	20,40.0%
Birth asphyxia	7,14.0%
Neonatal sepsis	8,16.0%
Neonatal jaundice	4,8.0%
Meconium aspiration syndrome	2,4.0%

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Early neonatal death	5,10.0%
Still birth	4,8.0%
APGAR score at 5 minute	
>7	26,52.0%
≤7	24,48.0%

DISCUSSION

A useful method for identifying those who may experience a possible negative outcome for the fetus is the measurement of amniotic fluid volume during the prenatal period. Our study's goal was to evaluate how neonatal oligohydramnios affected the perinatal outcome. It would help identify patients who are at risk and in determining the best delivery method, timing, and neonatal care options. As a tertiary hospital, it mostly handles cases that have been referred. For these kinds of high-risk pregnancies, this department includes a specialized Obstetrics unit called the Fetomaternal Medicine unit. In our study, the majority of the patients came from this specialist centre as referred cases from various parts of our country to receive the best pregnancy treatment and foetal monitoring and management practices. In our study, among the pregnant mother (N=50), the mean age of the mothers was 25.8 years and two-fifths of the mothers belonged to 21-25 years old. A similar analysis carried out in Bangladesh found that most of the patients belonged to 21-25 years old.[2] A study carried out in Maharashtra found that around 65% of patients belonged to 20-25 years old.[13] A contradictory study found that the majority of the mothers (51.3%) with oligohydramnios belonged to 25-34 years old.[14] Another analysis showed that the mean age of the study participants was 26.4 years.[15] 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.[16] 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.[17] 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.[18] 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.[2] 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

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aspiration, umbilical cord compression, and nonreactive fetal tracings.[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. A similar study depicted that a total of 61% of patients had CTG reactive at the time of admission and 39% of patients had abnormal CTG. The rate of abnormal CTG was statistically significant.[20] In this present content, meconium-stained liquor was found in only fourteen patients (14, 28.0%) which was not statistically significant. Another related content showed that meconium-stained liquor (MSL) was present in 27.1% of the total cases.[21] A related article found that meconium-stained liquor was found in 31.6% of patients.[22] 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).[21] 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] A related article showed that preterm delivery, or the delivery of a patient before 37 full weeks, occurred in about 68% of cases.[2] Current analysis depicted that, based on fetal outcome (N=50), twenty-three babies (23, 46.0%), were admitted into the ICU, seven (7, 14.0%) had birth asphyxia, eight (8, 16.0%) had neonatal sepsis, four babies (4, 8.0%) had neonatal jaundice, two babies (2, 4.0%) had meconium aspiration syndrome, four experienced stillbirths, and five neonates had died. Another related article showed that pregnancies with normal amniotic fluid do not raise the risk of poor Apgar score, low umbilical artery pH, NICU admission, or mortality rates in the presence of fetal distress brought on by oligohydramnios.[24] Oligohydramnios, often known as low amniotic fluid, is a dangerous disorder. It occurs when there is less amniotic fluid than would be expected given the gestational age of the baby. There is no cure for this illness, not even medical intervention. However, in our study out of 50 patients, 5 neonates died.

CONCLUSIONS

At present, oligohydramnios is discovered more frequently thanks to routine obstetric USG. The most frequent causes of decreased amniotic fluid in the third trimester of pregnancy are PIH and postdated pregnancies. Careful intrapartum fetal heart rate monitoring can help to prevent unfavorable perinatal outcomes. Every case of oligohydramnios requires a thorough antenatal evaluation, parental counselling, and a customized choice of delivery time and method. In these findings, there was no significant relation between meconium-stained liquor with oligohydramnios and caesarian section deliveries were significantly higher in women with oligohydramnios.

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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