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Original Research Article

OLIGOHYDRAMINOS BEYOND 34 WEEKS OF GESTATION AND ITS PERINATAL OUTCOME

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Abstract

Background: Amniotic fluid around the foetus during pregnancy, poses several risks such as intrauterine growth restriction (IUGR), meconium aspiration syndrome (MAS), birth asphyxia, low Apgar scores, and abnormal Doppler studies. Effectively managing oligohydramnios can significantly lower perinatal morbidity and mortality rates. **Objective:** (1) To study effect of oligohydramnios on foetal outcome in the form of (a) Foetal distress (b) Growth restriction (c) NICU admission. (2) To study maternal morbidity in the form of a) operative deliveries b)induced labour and early delivery. **Materials and Methods:** It is an observational study conducted over a period of one year. Total 266 pregnant mothers beyond 34 weeks of gestation selected according to inclusion and exclusion criteria. Patients were divided into two groups that is, AFI < 5 and AFI > 5. A detailed history, examination and all required investigation done. Perinatal outcome than studied in patients. **Result:** Oligohydramnios was seen in 64.7% multigravida. NST was non-reactive in 27.1% patients with oligohydramnios with p value<0.001. 17.3% patients with AFI<5cm had abnormal doppler study with p value significant. The rate of caesarean section was significantly higher in oligohydramnios group. The main indication of caesarean section were foetal distress. Foetal growth restriction was significantly more common in oligohydramnios group compared to control group with p value<0.03. **Conclusion:** Early detection of oligohydramnios, associated antenatal risk factors and timely management can improve maternal and fetal outcome.

INTRODUCTION

Amniotic fluid protects the fetus from trauma, guards against umbilical cord compression, provides a physical space for fetal movement, which aids in neuromusculoskeletal maturation. It also protects fetus from infection as it has bacteriostatic properties.[1] Amniotic fluid levels are maintained through a dynamic process of fluid inflow and outflow within the amniotic cavity. In the initial phases of pregnancy, the amniotic fluid is mainly produced by the movement of water from the amnion into the amniotic space, facilitated by active solute transport. In the first half of second trimester, source of amniotic fluid is transudate across fetal skin. Later in pregnancy, it is produced from fetal urine and secretion from the respiratory tract.[2,3] Abnormal amniotic fluid volume (AFV) is a sign of foetal or placental pathology, which implies a problem with fluid production or circulation. Abnormal AFV values may be linked to a higher risk of unfavorable pregnancy outcomes.[4]

AFI less than 5 cm is referred to as oligohydramnios, while AFI between 5 and 8 cm is referred to as borderline AFI, using the working definition of liquor assessment.[5]

MATERIALS AND METHODS

It is a hospital based prospective observational study carried out at a tertiary care center, north India over a period of one year from July 2022 to August 2023 after approval from the ethical committee.

The study population comprised of 266 Pregnant women with gestational age >34weeks attending the antenatal clinic as well as emergency department and getting admission to the labor room. The patients than divided equally into two groups. Oligohydramnios group(AFI</=5cm) contains 133 patients and control group (AFI>5cm) also contains 133 patients.

Inclusion Criteria

Gestational age >34weeks, Sonographically proven cases of oligohydramnios, Intact membranes, Singleton pregnancies.

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Exclusion Criteria

Ruptured membranes, Multiple gestation, Polyhydramnios, twins, Uterine anomalies.

Oligohydramnios is first confirmed by measuring AFI. A detailed history and examination were done. All required investigations were performed. Routine management involved hydration, rest, left lateral position, and controlling any underlying factors if present. Fetal surveillance included Doppler studies, modified biophysical profiles, and ultrasound scans. Maternal and perinatal outcomes were then studied in the patients.

As required, decisions concerning delivery were made, including options for induction, elective cesarean section, or emergency cesarean section (LSCS). While some patients were already in labor, others were allowed to proceed into spontaneous labor.

After delivery, thorough examination of the newborn was done by the duty pediatrician. Parameters such as APGAR score, birth weight, and need for NICU admission were noted.

Statistical analysis: Statistical differences between proportions were tested using either the chi-square test or Fisher's exact test. Qualitative data were expressed as percentages, with a 'p' value less than 0.05 considered statistically significant.

RESULTS

[Table 1], shows no significant (P = 0.95) difference between the mean age of participants in cases (26.51±3.94 years) and that of the control group (26.54±3.64 years). Mean gestational age at presentation of oligohydramnios group was 38.62±0.82 weeks while mean gestational age of control group was 38.57±1.02 weeks with no significant difference between both groups (p value-0.72). Oligohydramnios is seen more among multigravida 86(64.7%) with p value <0.01.

[Table 2] NST was done for all patients and recurrent late decelerations, or variable deceleration patterns, was observed in 36(27.1%) patients with oligohydramnios and 14(10.5%) patients in control group. The reason for non-reactive NST pattern was fetal distress, meconium-stained liquor or poor placental function (p value 0.001).

Participants with abnormal doppler study were significantly higher in oligohydramnios group 23(17.3%) compared to control group 12 (9%) (p value = 0.04).

Fetal growth retardation was seen in 30 (22.6%) patients in oligohydramnios group while in control group, fetal growth retardation was seen in 10 (11.5%) patients, indicating oligohydramnios had an association with fetal growth restriction (p value 0.03).

[Table 3] The rate of the caesarean section among the Oligohydramnios was 72(54.1%) which is significantly higher (P <0.001) than the rate among the control group 46(34.6%). The main indication for caesareans were fetal distress, meconium-stained liquor and associated antepartum complication like previous caesarean section, Hypertensive disease of pregnancy, IUGR, Breech.

[Table 4] Comparison of fetal outcomes between both groups showed one stillbirth case in the oligohydramnios group, whereas none were reported in the control group.

There was no significant disparity in the mean birth weight between the two groups. Low birth weight was significantly more in oligohydramnios group as compared to control group with p value <0.01. Similarly, number of NICU admission, perinatal death and birth asphyxia (APGAR<7) were more in oligohydramnios group with p value significant.

Table 1: Demographic representation of the participants.

Demographic characteristics	Oligohydramnios Group (n=133)	Control Group (n=133)	p value
Mean age in years	26.51±3.94	26.54±3.64	0.95
Mean Gestational age	38.62±0.82	38.57±1.02	0.72
Primigravida	47 (35.3%)	71 (53.3%)	<0.01
Multigravida	86 (64.7%)	62 (46.7%)	

Table 2: Association of Non-reactive NST, Abnormal Doppler and FGR

	Oligohydramnios Group (n=133)	Control Group (n=133)	P value
Non-reactive NST/CTG	36(27.1%)	14(10.5%)	0.001
Abnormal doppler	23(17.3%)	12(9%)	0.04
FGR	30(22.6)	13(9.8%)	<0.01

Table 3: Comparison of mode of delivery between both groups

Mode of delivery	Oligohydramnios Group (n=133)	Control Group (n=133)	p value
LSCS	72 (54.1%)	46 (34.6%)	<0.01
NVD	57 (42.9%)	87 (65.4%)	
Forceps	4 (3%)	0	

Table 4: Comparison of Fetal outcome between both groups

Fetal outcome	Oligohydramnios Group (n=133)	Control Group (n=133)	p value
Still birth	1 (1.1%)	0	1.0
Mean birth weight (kgs)	2.71±0.50	2.78±0.36	0.30
Low birth weight (<2.5 kgs)	42 (31.6%)	21 (15.8%)	<0.01
APGAR 1 min <7	22 (16.5%)	9 (6.7%)	0.01

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APGAR 5 min <7	22 (16.5%)	9 (6.7%)	0.01
Early Neonatal death	8 (6%)	0	<0.01
NICU admission	28 (21.1%)	15(11.3%)	0.03

DISCUSSION

The mean age of participants in cases is 26.51±3.94 years and that of the control group 26.54±3.64 years, reflecting the childbearing age of most of the patients. There was no significant difference between the mean gestational age at presentation in both groups. Oligohydramnios was seen more among multigravida with p value of 0.01. Ghimire S et al,[6] in 2016 reported different association, with majority of study participants who were nullipara were found to be at risk of having AFI less than 5.

Participants with abnormal doppler study were significantly higher in oligohydramnios group 17.3% compared to control group 9% (p value = 0.04). All patients with abnormal doppler study underwent caesarean section. In our study, 36 (27.1%) patients had non-reactive NST in oligohydramnios group which is significantly higher than control group 14(10.5%). Casey BM et al,[7] Sriya R et al,[8] and Ghinke S et al,[9] also reported the similar findings. The impaired placental functions linked to oligohydramnios can account for the FHR pattern changes and decelerations. This leads to inadequate foetal oxygenation and foetal hypoxia, causing aberrant alterations in the foetal heart rate. Additionally, variable deceleration was observed to be substantially more frequently in conjunction with oligohydramnios, according to Sarma N et al.[10] In present study, FGR were significantly more common in oligohydramnios group (22.6%) compared to control group 9.8% (p value<0.01). Similar to our study, Ahmer R et al,[11] reported IUGR in 16.7% babies of oligohydramnios patients while Casey BM et al,[7] reported IUGR in 24% babies of oligohydramnios mother.

The rate of caesarean section was significantly higher (P < 0.001) among oligohydramnios group (54.1%) compared to the control group (34.6%), with foetal distress being the primary indication for caesarean delivery. This study has resemblance to that conducted by Prajapat A et al,[12] wherein the oligohydramnios group had a greater rate of caesarean sections (47.67%). The results were similarly consistent with those of Hanafy M et al,[13] who found that the rate of C.S. was much higher in the oligohydramnios group (40.0% vs. 20.0%, respectively) than in the control group.

In our research, 42 (31.6%) of the 133 infants in the oligohydramnios group and 21 (15.8%) of the 133 infants in the control group were born weighing less than 2.5 kg with p value of less than 0.01. According to a study by Prajapat A et al,[12] the study group's mean birth weight was 2.68 kg, whereas the control groups was 2.85 kg. The Sarma N et al,[10] investigation found that the oligohydramnios group had a five-fold higher incidence of low birth weight neonates. In our study it was observed that oligohydramnios had a poor Apgar score and a markedly increased rate of foetal distress. The results were in line with those of Chate P et al,[14] who observed that the Apgar score of the study group was less than 7 in 30% at 1st minute, and 16% at 5th minute.

Out of 133 babies in oligohydramnios group early neonatal death was seen in 6% cases while in controls no early neonatal death was seen. Similar to our study, the perinatal death was significantly higher in the oligohydramnios group in the Sarma N et al,[10] Jandial C et al and Casey BM et al study.[2,5,7]

In our study, NICU admission was required for 28(21.1%) in study group and 15(11.3%) in control group. Prajapat et al reported a NICU admission rate of 19% among neonates in the oligohydramnios group, compared to 7% in the control group. Jagatia K et al also reported the similar findings.

CONCLUSION

Oligohydramnios is a common condition that required appropriate antepartum and intrapartum treatment as well as rigorous foetal monitoring. oligohydramnios is associated with a high rate of pregnancy complications and increased perinatal morbidity and mortality. Therefore, early detection of oligohydramnios plays a crucial role in prenatal care by facilitating timely interventions, monitoring foetal well-being, and optimizing delivery planning, ultimately leading to improved outcomes for both the mother and the baby. Regular ultrasound examinations are essential to evaluate amniotic fluid levels, foetal growth, and development. Doppler studies can assess foetal blood flow and oxygenation, providing insights into foetal cardiovascular health. Additionally, non-stress tests or biophysical profiles can evaluate foetal activity and foetal well-being. Antepartum or intrapartum AFI assessment identifies women who needs increased surveillance for pregnancy complications. As a result, these women should be cared for in units capable of effectively managing such complications.

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