Original Research Article

Indian Journal of Obstetrics and Gynecology
Volume 8 Number 3, July–September 2020
DOI: http://dx.doi.org/10.21088/ijog.2321.1636.8320.9

Poor Maternal and Perinatal Outcomes Associated with Oligohydramnios in Term Pregnancy

Shivani Goswami

How to cite this article:
Shivani Goswami. Poor Maternal and Perinatal Outcomes Associated with Oligohydramnios in Term Pregnancy. Indian J Obstet Gynecol. 2020;8(3):162-165.

[1]Senior Resident, Department of Obstetrics and Gynecology ESIC Medical College, Faridabad, Haryana 121012, India.

Corresponding Author: Shivani Goswami, Senior Resident, Department of Obstetrics and Gynecology ESIC Medical College, Faridabad, Haryana 121012, India.

E-mail: shivanigoswami7777@gmail.com

Abstract

Introduction: Amniotic fluid provides the fetus with an environment to move and grow. The present study was conducted to assess maternal and fetal outcomes in cases with oligohydramnios.

Methodology: This prospective study was conducted in the Department of Obstetrics and Gynecology of a tertiary care teaching hospital Faridabad, Haryana from February 2019 till January 2020. Oligohydramnios was defined as amniotic fluid index (AFI) of less than 5 cm on ultrasonography. Additionally, we included a control group of pregnant women from the same antenatal clinic who had AFI of more than 5 cm.

Results: During the study period, we included 80 patients with oligohydramnios and another 80 mothers who did not have oligohydramnios. Among those with oligohydramnios, 69% underwent LSCS, while in the other study group, only 38% underwent LSCS. We observed that fetal distress was significantly more common among cases with oligohydramnios as compared to those without oligohydramnios (39% vs 9%, p value < 0.001). Non-reactive NST was observed in 65% in those with oligohydramnios, while it was observed in only 21% in those without oligohydramnios (p value < 0.001). Significantly higher proportion of cases had AGPAR score of less than 7 in the oligohydramnios groups as compared to the non-oligohydramnios group at 1 and 5 minutes (p value < 0.01).

Conclusions: We recommend screening antenatal mothers with AFI to detect possible high risk cases at an early stage, so that the obstetric team can prepare accordingly.

Keywords: Amniotic fluid index; Maternal; Fetal outcome; Oligohydramnios.

Introduction

Amniotic fluid provides the fetus with a protective low resisance environment, which allows the fetus to move and grow, protecting it from external trauma. It also has a role in maintaining the fetal body temperature, and plays a part in the homeostasis of fluid. By permitting extension of the limbs, it prevents joint contractures in the fetus. Any abnormalities of the amniotic fluid volume can directly affect fetal development or indirectly be associated with in an underlying disorder, such as fetal hypoxia, neural tube defect or gastro intestinal obstruction. Traditionally, clinicians relied on clinical examination to detect abnormal fluid volume. However, it was subjective and would lead to miss many cases of oligo- or poly-hydramnios. With the advent of ultrasound imaging, almost accurate assessment of amniotic fluid volume can be made. With normal amount of amniotic fluid index ranging from 5 to 24 cms, amniotic fluid index (AFI) of less than 5 cm is defined oligohydramnios, as originally described by Phelan et. al.[1] When isolated oligohydramnios is diagnosed at term, it is commonly considered a solid indication for labor induction[2], as it is associated with numerous complications, possibly due to umbilical cord

compression or utero-placental insufficiency. However, original reports demonstrating the association between oligohydramnios and adverse perinatal outcome included fetuses with structural anomalies, growth restriction and postmaturity syndrome, as well as mothers with various underlying medical conditions, and, thus, may not apply in cases of isolated oligohydramnios.[3,4] In the present study, we aimed to assess maternal and fetal outcomes in cases with oligohydramnios and excluded cases with associated comorbidity.

Methodology

Study Design and Sampling

This prospective study was conducted in the Department of Obstetrics and Gynecology of a tertiary care teaching hospital Faridabad, Haryana. During the period of February 2019 till January 2020, we included singleton pregnant women with gestational age of 37 to 41 weeks and diagnosed with oligohydramnios, defined as amniotic fluid index (AFI) of less than 5 cm on ultrasonography.[5] Additionally, we included a control group of pregnant women from the same antenatal clinic who had AFI of more than 5 cm. We excluded cases with gestational age less than 37 completed weeks, previous caesarean section, known fetal malformations, ruptured membranes, multifocal pregnancy and intrauterine death of fetus. All cases to be included in the study we explained the purpose of the study and an informed written consent was obtained before being included in the study.

Ultrasonography Protocol

All cases included in the study underwent ultrasnographic examination transabdominally with a 3.5 Mhz transducer in supine position. Using landmark on the maternal abdomen, the uterus was divided into four quadrants right and left halves by the linear nigra, and the upper and lower halves by an imaginary line across the midway between the fundus of the uterus and symphysis pubis. The linear transducer head was placed on the abdomen along the mother's longitudinal axis and held perpendicular to the floor in the sagittal plane. The maximum vertical dimension of the largest fluid pocket in each quadrant was measured in millimeters. The measurements obtained from each quadrant were summed to form the amniotic fluid index (AFI). The identified pocket was considered clear when umbilical cord and other small parts of the fetus are absent.

Data Collection and Data Analysis

Using a pre-designed semi-structured questionnaire, we collected patient related information. We noted information related to demography and pregnancy related information like gestational age, mode of delivery and indications for caesarean section. At the time of delivery, we noted perinatal variables like the pattern of non-stress test (NST) and APGAR score at 1 and 5 minutes. The data were entered in a Microsoft Excel sheet and analysed in SPSS (version 23, IBM). The data were tabulated to present descriptive information and analysis was done using chi-square or Fisher's exact test, considering p value of less than 0.05 as statistically significant.

Results

During the study period, we included 80 patients with oligohydramnios and another 80 mothers who did not have oligohydramnios. Table 1 describes the baseline characteristics of the patients included in the study. The distribution of patients in different age groups was similar (p value = 0.39). The most common age group was 20 to 25 years in both the study groups. Gravid status revealed that patients with oligohydramnios were more commonly in G1 state (61%), while non-oligohydramnios patients were more commonly in G2 state (48%). Completed gestational age at the time of enrolment in the study was 37 weeks in 43% of the patients in oligohydramnios group, while it was 39 weeks in 35% of the patients in the non-oligohydramnios group. Among those with oligohydramnios, 69% underwent LSCS, while in the other study group, only 38% underwent LSCS. We observed that fetal distress was significantly more common among cases with oligohydramnios as compared to those without oligohydramnios (39% vs 9%, p value < 0.001). Perinatal variables have been described in Table 2. Non-reactive NST was observed in 65% in those with oligohydramnios, while it was observed in only 21% in those without oligohydramnios (p value < 0.001). AGPAR score of less than 7 was observed in 48% in the oligohydramnios groups and 24% in the non-oligohydramnios group at 1 minute (p value < 0.01). At 5 minutes, 28% of the cases in the oligohydramnios group had APGAR < 7, while it was 13% in the non-oligohydramnios group (p value < 0.01).

Discussion

The present study was conducted to assess the maternal and perinatal outcomes with

oligohydramnios. We observed that the risk of caesarean section increases with oligohydramnios. Fetal distress was the most common indication of LSCS among cases with oligohydramnios. This may be because of presence of more number of cases with associated risk factors like IUGR and abnormal umbilical artery Doppler velocimetry studies in that group. There is a possibility that awareness of AFI status at the early stages is also likely to influence the caesarean section rate.[6] Similar results were reported by Gaikwad et. al., who shoed 73% LSCS rate among cases with AFI ≤ 5 cm.

We observed that fetal distress was significantly more common among cases with oligohydramnios. Ghike et. al. also found that the rate of cesarean section for fetal distress was 29.73% in oligohydramnios as compared to 9.52% in borderline group and found the difference to be statistically significant.[7] A meta analysis extracted data from 18 studies in which 10551 patients were

Table 1: Baseline information of the antenatal mothers included in the study.

Patient variables	Patient group				p value
	Oligohydramnios (n=80)		No oligohydramnios (n=80)		
Age group (in years)	N	%	N	%	
20 to 25	38	48%	43	54%	
26 to 30	32	40%	24	30%	0.39
> 30	10	13%	13	16%	
Gravid					
G1	49	61%	32	40%	
G2	23	29%	38	48%	< 0.05
G3	8	10%	10	13%	
Gestational age (in weeks)					
37	34	43%	17	21%	
38	22	28%	15	19%	
39	15	19%	28	35%	< 0.01
40	5	6%	16	20%	
41	4	5%	4	5%	
Mode of delivery					
Vaginal	25	31%	50	63%	< 0.001
LSCS	55	69%	30	38%	
Indication for LSCS					
Fetal distress	31	39%	7	9%	< 0.001
Intrauterine growth retardation	9	11%	3	4%	0.07
Non-progression of labor	3	4%	5	6%	0.46
Failed induction	2	3%	4	5%	0.4
Cephalopelvic disproportion	0	0%	5	6%	0.02
Elective LSCS	10	13%	6	8%	0.29

Table 2: Association of perinatal outcomes with oligohydramnios.

Patient variables	Patient group				P value
	Oligohydramnios (n=80)		No oligohydramnios (n=80)		
Non-stress test pattern	N	%	N	%	
Reactive	28	35%	63	79%	< 0.001
Non-reactive	52	65%	17	21%	
APGAR score < 7					
At 1 minute	38	48%	19	24%	< 0.001
At 5 minutes	22	28%	10	13%	< 0.01

analysed and AFI ≤5 was related with a higher risk of cesarean delivery because of fetal distress (pooled relative risk, 2.2; 95% con dence interval, 1.5-3.4) and Apgar scores below <7 at 5 minutes (pooled relative risk, 5.2; 95% confidence interval, 2.4-11.3).[8] In addition, we observed that non-reactive NST pattern was significantly more common in cases with oligohydramnios as compared to those without oligohydramnios. Vasanthamani et. al. compared cases with AFI < 5 cm and those with AFI > 5 cm and reported that cases with oligohydramnios had significantly higher proportion of non-reactive NST (33%) as compared to those without oligohydramnios.[9]

It was observed in the present study that the proportion of cases with APGAR score less than 7 at 1 and 5 minutes was significantly higher among cases with oligohydramnios as compared to those without oligohydramnios. Gaikwad et. al. also reported a higher proportion of cases with oligohydramnios to have APGAR score of <7 (26.5%) as compared to those without oligohydramnios (11.7%), though the difference was statistically not significant. Yenigul and Asicioglu compared the effects of oligohydramnios with those cases who had AFI of more than 5 and found that the number of patients with 5-min Apgar score <7 was similar between two groups.[10] Though, there was a statistically significant difference between the 1st and 5th minute Apgar scores of the two groups ($p<0.001$). Mushtaq et. al. compared cases with AFI < 5 cm and > 5 cm and reported no statistically significant difference between the two groups with respect to APGAR at 1 minute and 5 minutes.[11] So it appears from the literature that there is a discrepancy in whether APGAR score is affected by oligohydramnios, and thus warrants additional investigations.

Conclusion

Results of the present study show that oligohydramnios is associated with poor maternal and perinatal outcomes. Fetal distress, non-reactive NST pattern, risk of LSCS and low APGAR scores were associated with oligohydramnios in our study population. Though idiopathic oligohydramnios cannot be prevented, screening antenatal mothers with AFI could help in detecting possible high risk cases at an early stage and the obstetric team can prepare accordingly.

References

(Endnotes)

1. Phelan JP, Smith CV, Broussard P, Small M. Amniotic fluid volume assessment with the four-quadrant technique at 36-42 weeks' gestation. J Reprod Med. 1987;32:540-2.
2. Scwartz N, Sweeting R, Young BK: Practice patterns in the management of isolated oligohydramnios: a survey of perinatologists. J Matern Fetal Neonatal Med 2009;22:357-336.
3. Manning FA, Hill LM, Platt LD: Qualative amniotic fluid volume determination by ultrasound: antepartum detection of intrauterine growth retardation. Am J Obstet Gynecol 1981;139:254-258
4. Sherer DM: A review of amniotic fluid dynamics and the enigma of isolated oligohydramnios. Am J Perinatol 2002;19:253-266.
5. Youssef AA, Abdulla SA, Sayed EH, Salem HT, Abdelalim AM, Devoe LD. Superiority of amniotic fluid index over amniotic fluid pocket measurement for predicting bad fetal outcome. South Med J. 1993;86(4):426-9.
6. Chauhan SP, Washburne JF, Magann EF, Perry KG Jr, Martin JN, Morrison JC. A randomized study to assess the efficacy of the amniotic fluid index as a fetal admission test. Obstet Gynecol. 1995;86:9-13.
7. Ghike Sunita, Reddy G, Ghike NW. Increasing Severity of Oligohydramnios: A risk factor for outcome. J South Asian Feder Obst Gynae. 2013;5(1):8-10.
8. Chauhan SP, Sanderson M, Hendrix NW, Magann EF, Devoe LD. Perinatal outcome and amniotic uid index in the antepar- tum and intrapartum periods: A meta-analysis. Am J Obstet Gynecol 1999;181:1473–8.
9. Vasanthamani P, Ishwarya S, Meena TS, Padmanaban S. A study on perinatal outcome in term oligohydramnios. International Journal of Clinical Obstetrics and Gynecology 2019; 3(2): 214-216
10. Yenigul NN, Asicioglu O. The Effects of Isolated Oligohydramnios in Term Pregnancies on Labor, Delivery Mode, and Neonatal Outcomes. EJMI 2019;3(1):59–64
11. Mushtaq E, Parveen S, Shaheen F, Jan S, Abdullah A, Lone YA. Perinatal Outcome in Patients with Isolated Oligohydramnios at Term: A Prospective Study. J Preg Child Health 2017;4: 332.