|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2021: 70.61
Volume 7, Issue 5; May : 2023; Page No. 12-17

Research Article

To Assess the Maternal and Perinatal Outcome with Isolated Oligohydramnios in Third Trimester of Pregnancy

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Received: 24-02-2023 / Revised: 04-03-2023 / Accepted: 15-04-2023
DOI: https://doi.org/10.32553/ijmbs.v7i5.2708
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Conflict of interest: No conflict of interest.

Abstract

Introduction: Oligohydramnios is described as a condition with decreased amniotic fluid volume relative to gestational age. Oligohydramnios is most commonly defined as an amniotic fluid index (AFI) ≤ 5 cm or the largest vertical pocket measuring ≤ 2 cm. Isolated oligohydramnios (IO) refers to the presence of oligohydramnios without fetal structural and chromosomal abnormalities, without fetal growth restriction, without intrauterine infection and in the absence of known maternal disease.

Aim: To study was to analyse the maternal and fetal outcome in isolated oligohydramnios in third trimester of pregnancy.

Method: This is prospective hospital based observational study which was carried out in department of obstetrics and gynaecology, S.P. Medical College, Bikaner for a period from June 2021 to May 2022. This study included 100 pregnant women, who fulfill inclusion and exclusion criteria, out of which 50 pregnant women with 28 completed weeks of gestation who had singleton pregnancy with cephalic presentation and Amniotic Fluid Index (AFI) < 5 cm enrolled as study cases while 50 pregnant women with AFI > 5 cm were in control group.

Results: Majority of the patients were in 21-30 years of age in both groups. Majority of patients in both groups were illiterate, unbooked, belonged to rural area and were from lower middle socioeconomic status; hence both groups were comparable in this regards. In our study in group A out of 50 patients, 33 (66%) had LSCS and 17 (34%) patients delivered by vaginal route and group B out of 50 patients, 43 (86%) patients delivered by vaginal route and only 7 (14%) patients had for LSCS. NICU admission in group A was 14 (28%) and in group B 3(6%) respectively.

Conclusion: C-Section rates were more common in group A compared to group B. NICU admission rate were more in group A (40%) compare to group B (14%). In Isolated oligohydramnios more babies had APGAR<7 at 1& 5min.

Introduction

Amniotic fluid provides a protected environment for the growing foetus. It cushions the foetus against mechanical and biological injury and supplies nutrients for its growth. The normal average volume of amniotic fluid at 16 weeks of gestation is 250 ml; it increases to 800ml at 28 weeks and further to 1000ml at 38 weeks and decreases slightly to 800 ml at 40 weeks [1].

Oligohydramnios is described as a condition with decreased amniotic fluid volume relative to gestational age. Oligohydramnios is most commonly defined as an amniotic fluid index (AFI) ≤ 5 cm or the largest vertical pocket measuring ≤ 2 cm [2,3]. Isolated oligohydramnios (IO) refers to the presence of oligohydramnios without fetal structural and chromosomal abnormalities, without fetal growth restriction, without intrauterine infection and in the absence of known maternal disease.[4-5] Isolated oligohydramnios is a diagnosis of exclusion, after comprehensive assessment of the fetus to exclude malformations, genetic anomalies and FGR. Oligohydramnios is associated with increased maternal morbidity in terms of increase rate of induction of labour and caesarean section. It is also associated with adverse perinatal outcomes such as preterm delivery, low birth weight, fetal distress in labour, meconium passage, low APGAR score, neonatal resuscitation and NICU admission [6].

Aim: Aim of the study was to analyse the maternal in the form of mode of delivery and any maternal complication and fetal outcome in terms of APGAR scores at birth, NICU admission rates, meconium stained liquor and still birth rates in isolated oligohydramnios in third trimester of pregnancy.

Method: This is prospective hospital based observational study which was carried out in department of obstetrics and gynaecology, S.P. Medical College, Bikaner for a period from June 2021 to May 2022.

This study included 100 pregnant women, who fulfill inclusion and exclusion criteria, out of which 50 pregnant women with 28 completed weeks of gestation who had singleton pregnancy with cephalic presentation and Amniotic Fluid Index (AFI) < 5 cm enrolled as study cases while 50 pregnant women with AFI > 5 cm were in control group.

Group A (Cases): 50 pregnant females AFI < 5cm.

Group B (Control): 50 pregnant females with normal AFI.

Inclusion Criteria:

1. All Pregnant women aged≥18 years of age.
2. All pregnant women between 28-40 weeks gestation.
3. Amniotic fluid index less than 5 cm in ultrasonography.
4. Singleton pregnancy.
5. Cephalic presentation.
6. Patient with intact membrane.

Exclusion Criteria:

1. Gestational age < 28 weeks and >40 weeks
2. Patients with AFI >6 cm in ultrasonography
3. Non-cephalic presentation.
4. Patients with multiple gestation.
5. Patients with history of premature rupture of membrane.
6. Fetus having congenital anomalies.
7. High risk pregnancies like placental abnormalities renal diseases, connective tissue disorders.
8. Pregnancy induced hypertension, gestational diabetes mellitus.
9. Patients having major respiratory, heart disease.
10. Previous C section
11. Patients with IUD fetus.
12. Patients with leaking per vagina.

After obtaining an informed written consent, a detailed history including name, age, education, occupation and socioeconomic status, menstrual and obstetric history, any significant personal or past medical / surgical history was taken. A thorough general physical examination and systemic examination followed by obstetric examination was done. Basic investigations: haemogram, blood group, Rh typing, blood sugar (random), urine (routine and microscopy), anti HCV, HBsAg, HIV, VDRL and thyroid profile was performed along with special investigation wherever indicated. A transabdominal ultrasound

obstetric scan was performed. AFI was measured by using Phellan's technique.

1. Antenatal care was given.
2. Decision on mode of delivery by ideal induction or operative intervention was done as per required.
3. Progress of labour was recorded in partograph, Mode of delivery, intrapartum complication and fetal outcome was noted.
4. Neonates who got admitted in NICU were followed up till discharge. All the patients were followed upto delivery:

Plan of activity and time chart was formulated after taking informed written consent from the woman and relatives.

Mode of Delivery: Spontaneous/induced vaginal delivery/caesarean section/ instrumental delivery-forceps or ventouse.

Neonatal Outcomes: Birth weight, sex, Apgar score at 1 and 5 minute, Gestational age, meconium stained liquor, birth asphyxia; any other neonatal complications were studied.

Statistical Analysis: The data was recorded as per proforma. Sample size of 100 pregnant females was considered by using statistical formula. The difference was considered significant at $P<0.05$ and highly significant at $P<0.01$. The data was entered in MS excel sheet windows 10. Student t test and z test of proportion was used for analysis with help of SPSS IBM version 20.

Results: In Group A maximum number of patient 38 (76%) were in age group 21-30 year. and minimum number 1 (2%) in age group 41-50 years. In group B maximum number of patients 34 (68%) were in age group 21-30 years and minimum number 7 (14%) in age group 41-50 years. P value was 0.324 which was not statistically significant.
In group A Total no. of unbook patients were 27 (54%) and booked patients were 23 (46%) and in group B unbooked and booked patients were 28 (56%) and 22 (44%) respectively. Unbooked patients were more in both groups. P Value was 1.000 which was not statistically significant. . In group A maximum number of patients 28 (56%) were from rural area and minimum number of patients 22 (44%) were from urban area. In group B Maximum number of patients 26 (52%) were rural residence and minimum number of patients 24 (48%) urban residence. P value was 0.548 which was not statistically significant. In Group A literate patients were 22 (44%) and Illiterate were 28 (56%). In group B literate patients were 23(46%) and Illiterate were 27 (54%) P value was 1.000which was not statistically significant. Both groups were comparable in demographic data. Which shows in table no. 1?

Table 1: Distribution according to Demographic

Age Group (In Years)	**Group A (Case)**		**Group B (Control)**		**p value**
	No.	%	No.	%	
≤ 20	5	10	9	18	0.324
21-30	38	76	34	68	
31-40	6	12	7	14	
41-50	1	2	0	0	
Mean	25.78		24.88		
	Booking Status				
Booked	23	46	22	44	1.000
Unbooked	27	54	28	56	
	Residence				
Rural	28	56	26	52	0.548
Urban	22	44	24	48	
	Education				

Illiterate	28	56	27	54	1.000
Literate	22	44	23	46	

In group A labour induced patients were 31 (62%) and In spontaneous labour were 19 (38%) and in group B labour induced patients were 16 (32%) and spontaneous were 34 (68%). P value was 0.005 which was statistically significant (Table2).

In group A 33 (66%) had LSCS and 17 (34%) had vaginal delivery. In Group B 43 (86%) had vaginal delivery and 7 (14%) had LSCS delivery. P value was 0.0001 which was statistically significant.

Table 2: Distribution according to Induction of labour and Mode of Delivery

Induction	Group A (Case)		Group B (Control)	
	No.	%	No.	%
Spontaneous	19	38	34	68
Induced	31	62	16	32
p value	0.005			
	Mode of Delivery			
Vaginal	17	34	43	86
LSCS	33	66	7	14
p value	0.0001			

In group A 24 (48%) baby's birth weight was 2.1 to 2.5 kg and in Group B 31 (62%) baby's birth weight was 2.6 to 3 kg. P value was 0.001 which was statistically significant.

In our study NICU Admission in Group A is 14 (28%) and in group B 3(6%) respectively. There was significant different in NICU admission rate in both group. P value was 0.027 which was statistically significant.

APGAR score at 1 minute in group A is < 7 in 14 (28%) patients and 3 (6%) patients in Group B respectively. p value =0.0001 which was statistically significant. APGAR at 5 minute is <7 in 8 (16%) in Group A is 1 (2%) in Group B respectively. P value at 5 minute 0.036 which was statistically significant.

The most common cause of NICU admission in group A was meconium aspiration syndrome i.e. 6(42.86%) followed by perinatal asphyxia 5 (35.71%) than transient tachypnea of new born 3(21.43%). While in group B causes of NICU admission were meconium aspiration syndrome 2 (66.67%) and perinatal asphyxia 1(33.33%) p Value was 0.624 which was not statistically significant (Table 3).

Table 3: Distribution according to Perinatal Outcome in terms of Baby Birth Weight, NICU Admission APGAR Score and causes of NICU Admission.

Birth Weight	**Case Group**		**Control Group**		**P value**
	No. of Cases	**%**	**No. of Cases**	**%**	
1-1.4 Kg.	0	0	0	0	0.0001
1.5-2 Kg.	4	8	0	0	
2.1-2.5 Kg	24	48	9	18	
2.6-3 Kg.	19	38	31	62	
> 3 Kg.	3	6	10	20	
	NICU Admission				
Yes	14	28	3	6	0.027
NO	36	72	47	94	

	APGAR SCORE at 1 min.				
>7	36	72	47	94	0.0001
<7	14	28	3	6	
	APGAR SCORE At 5 Min				
>7	42	84	49	96	0.036
<7	8	16	1	4	
	Cause of NICU Admission				
Perinatal Asphyxia (PA)	5	35.71	1	33.33	0.624
Meconium Aspiration Syndrome(MAS)	6	42.86	2	66.67	
Transient Tachypnea of New Born(TTN)	3	21.43	0	0.00	

Discussion:

In the present study the mean maternal age (21-30 age group) was 25.78 ±4.70 years in group A (cases) and 24.88± 4.43 in group B. In this study mean age was comparable in both groups. Which was similar to studies done by Everett F et al.[6], who found the mean maternal age 23.6±6.5 years and 23.8±5.7 years respectively.

In our study out of 50 cases, 31 (62%) patient were induced in group A and 16 (32%) patient induced in group B. More number of patients was induced in group A as compared to group B. This is comparable to Pratibha singh , et al.[7] (2021) where the rate of induction rates were 40 % in cases and 10 % in controls hence the isolated oligohydramnios patients associated with increased induction rates.

In our study in group A out of 50 patients, 33 (66%) had LSCS and 17 (34%) patients delivered by vaginal route and group B out of 50 patients, 43 (86%) patients delivered by vaginal route and only 7 (14%) patients had for LSCS. Hence LSCS were more in group A as compared to group B. In similar study of Sharma M et al [8]. Who found Labour was induced in 65% cases of oligohydramnios compared to 21% of controls and 44% cases had undergone LSCS compared to 10% of controls. This is also comparable to Pratiba Singh et aln[7]. (2021) and Nithya P et al. [9] (2017).

Most of the patient in groups A, 24 (48%) had birth weight 2.1 to 2.5 kg while in group B, 31 (62%) babies had birth weight 2.6 to 3 kg. Babies with low birth weight were common in group A compare to group B which is comparable to that Pratibha Singh et al. (2021) where low birth weight was found in 54.28% babies of isolated oligohydramnios group.

In our study NICU admission in group A was 14(28%) and in group B 3(6%) respectively. There was significant difference in NICU admissions in both groups. In isolated oligohydramnios group NICU admission were more as compared to group B. This is comparable to Pratiba Singh et al[7], Nithya P et al[9] and Sharma M et al[8].

In our study APGAR score < 7 at 1 min and 5 minute was more common in group A, babies compare to group B. APGAR at 1 min was < 7 in 14(28%) babies in group A, 3(6%) babies in group B respectively.

APGAR at 5 min was < 7 in 8 babies in group A and 1 baby in group B respectively this is comparable to Purvi K Patel et al.[10] (2015). NICU admission in most cases was due to Meconium Aspiration Syndrome (MAS) i.e. 42.86% and in about 33.33% of cases was for Perinatal Asphyxia (PA). Different studies showed poor fetal outcomes in oligohydramnios.

This study demonstrates that an isolated oligohydramnios is associated with maternal

morbidity in terms of increased rate of induction of labour and increased LSCS rate.

Isolated oligohydramnios is associated with increased fetal distress, meconium aspiration, LBW, perinatal Asphyxia and NICU admissions.

Conclusion:

We concluded that Isolated Oligohyramnios in uncomplicated term pregnancies is associated with an increase in operative delivery.

In this study, we found that Isolated Oligohyramnios in term pregnancies is significantly associated with higher rates of induction of labor and Cesarean section.

Neonates born with mothers having isolated severe oligohydramnios have low birth weight, lower APGAR scores and a high rate of NICU admissions.

Isolated Oligohyramnios at term is associated with both high intervention rates and several fetal and neonatal parameters that may indicate compromise.

Caesarean section was mostly performed for fetal heart abnormalities so importance of close watch on fetal heart rate can't be ignored. Babies were more prone for meconium aspiration, birth asphyxia, fetal distress and more number of admissions to NICU in case of isolated oligohydramnios.

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