Oligohydramnios with Liquor <5 cms and Its Maternal and Foetal Outcome

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ABSTRACT

BACKGROUND

Oligohydramnios is defined as the amniotic fluid index < 5 cms measured through ultrasound techniques. It is becoming a major health care issue in the antenatal period. We wanted to identify and quantify the maternal and foetal outcome in patients with decreased liquor using amniotic fluid index.

METHODS

This study is a retrospective study done in the labour room of Sri Ramachandra Medical College, Porur, Chennai between January 2017 to March 2019. A total of 9600 deliveries were conducted during the study period of which clinically suspected cases in the second and third trimester were 106 in number. Various parameters like antenatal history, ultrasound parameters like gestational age, placental localisation, amniotic fluid volume, congenital anomalies of the foetus, APGAR score at 1 min and 5 mins and perinatal mortality were noted.

RESULTS

In the total of 9600 deliveries, 106 (1.1%) were having oligohydramnios. All women between 21-25 years (57.89%) of age had decreased amniotic fluid index. Anaemia and PIH were the most common factors associated with oligohydramnios. Caesarean section was 50% and vaginal delivery was 36.8% in women with low amniotic fluid index. Variable heart rate deceleration (10.52%) was seen in babies born to women with decreased amniotic fluid index. Higher incidence of low Apgar score <7 at 1 min and 5 min and meconium stained liquor was observed among cases with very low AFI [6 (15.2%) and 5 (13.15%) respectively] and low AFI (22.2%) respectively. Higher incidence of IUGR was observed in very low AFI [16 (42.10%)]. Decreased amniotic fluid index is associated with increased perinatal morbidity and mortality and still births.

CONCLUSIONS

Foetal distress, meconium passage and low APGAR score at 1 min and 5 mins were associated with low amniotic fluid index and these patients required careful monitoring and follow up during antenatal and intranatal period.

KEY WORDS

APGAR Score, Intrauterine Growth Retardation, Meconium Stained Liquor, Pregnancy Induced Hypertension

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BACKGROUND

Phelan defined oligohydramnios as amniotic fluid index (AFI) ≤ 5 cm and borderline oligohydramnios as AFI between 5 and 8 cm between 36–42 weeks of gestation.^[1] It is becoming a major health issue in the antenatal period. The incidence of oligohydramnios at term is 1-5% at >41 weeks is 12%, These women are more likely to develop perinatal morbidity, mortality, stillbirths and land up in assisted instrumental delivery or caesarean section. To avoid these antenatally amniotic fluid index should be checked and those women with decreased amniotic fluid index should be followed up during the second and third trimesters and in the postnatal period. The perinatal morbidity and mortality associated with oligohydramnios can be brought down if the high risks are identified in the antenatal period and careful decisions are made about the timing and mode of delivery and vigilant monitoring of the labour This study was conducted in this institute to find out the amniotic fluid index and its association with maternal and foetal outcome.

We wanted to identify and quantify the maternal and foetal outcome in patients with decreased liquor using amniotic fluid index.

METHODS

This study is a retrospective study done in the labour room of Sri Ramachandra Medical College, Porur, Chennai between January 2017 TO March 2019. Total of 9600 deliveries were conducted during the study period of which clinically suspected cases in the second and third trimester were 106 in number. Various parameters like antenatal history, ultrasound parameters like gestational age, placental localisation, amniotic fluid volume, congenital anomalies of the foetus, APGAR score at 1 min and 5 mins, perinatal mortality were noted. The safest mode of delivery either by instrumental delivery or by caesarean section is done in women with foetal heart rate abnormalities. The patients with decreased amniotic fluid index were given a trial of labour and if unsuccessful or with foetal distress then they were taken for caesarean section. The neonates with decreased birth weight, NICU admissions, low APGAR score were monitored.

Inclusion and Exclusion Criteria

All women with decreased amniotic fluid index <5 cms either singleton pregnancy or multiple pregnancy during the second and third trimester are included in this study between 2-year period from January 2017- March 2019. All those women with increased amniotic fluid index >5 cms in the second and third trimesters are excluded in this study.

Statistical Analysis

In this study the percentage of all the values and Chi-square test is done and p value significance for maternal and foetal outcome is done.

RESULTS

In this study, shows 3 patients less than 20 years (2.8%), 35 patients between the age of 21-25 years (33%), 46 patients between 26-30 years (43.4%), 22 patients between >30 years (20.8%). In this study, 52 patients are Primigravida (49.1%) and 54 patients are Multigravida (50.9%); 53 preterm patients <37 weeks (50%) and 53 term patients ≥ 37 weeks (50%); 12 patients with Doppler changes (11.3%) and 94 patients with (88.7%); 28 patients were induced (26.4%) and 78 patients were not induced (73.6%); 3 patients with Meconium stained liquor (2.8%) and 103 patients with clear liquor (97.2%); 29 patients with ≤ 3 AFI (27.4%) and 77 patients with >3 AFI (72.6%); 70 patients with normal CTG (66%), 28 patients with Suspicious CTG (26.5%) and 8 patients with abnormal CTG (7.5%). In this study, 90 patients had Emergency LSCS (84.9%) and 16 patients had vaginal delivery (15.1%).

Risk Factors	Count	%
GDM	14	13.2%
IUGR	31	29.2%
PIH	12	11.3%
Previous LSCS	25	23.6%
Low Risk	25	23.6%
Anaemia	5	4.7%
PPROM	6	5.7%
Non-Reassuring CTG	4	3.8%
Doppler Changes	8	7.5%
Breech	4	3.8%

Table 1. Risk Factors and Their Percentages in Patients with Oligohydramnios

In this study, Table 1 shows 14 patients with GDM (13.2%), 31 patients with IUGR (29.2%), 12 patients with PIH (11.3%), 25 patients previous LSCS (23.6%), 5 patients with anaemia (4.7%), 6 patients with PPROM (5.7%), 4 patients with non-reassuring CTG (3.8%), 8 patients with Doppler changes (7.5%), 4 patients Breech presentation (3.8%)

		Count	%
APGAR_1 Min	≤ 7	23	21.7%
	> 7	83	78.3%
APGAR_5 min	≤ 7	4	3.8%
	> 7	102	96.2%
NICU_Admission	Yes	51	48.1%
	No	55	51.9%
Birth Weight	Low Birth Weight <2.5 Kg	54	50.9%
	Normal >2.5 Kg	52	49.1%

Table 2. Percentage of Birth Weight, Apgar Score, NICU Admission and their Foetal Outcome in Patients with Oligohydramnios

In this study, Table 2 shows 23 babies with Apgar score in 1 min ≤ 7 (21.7%) and 83 babies with Apgar >7 (78.3%), 4 patients with Apgar score in 5 mins ≤ 7 (3.8%) and 102 patients with Apgar >7 (96.2%), 51 babies needed NICU admission (48.1%) and 55 babies did not need NICU admission (51.9%), 54 babies were Low birth weight <2.5 Kg (50.9%) and 52 babies were normal weight above 2.5 Kg (49.1%). In this study Table 3 shows 1 patient with GDM and AFI ≤ 3 (7.1%) and 13 patients with GDM and AFI >3 (92.9%). 9 patients with IUGR and AFI ≤ 3 (29%) and 22 patients with IUGR and AFI >3 (71%). 2 patients with PIH and AFI ≤ 3 (16.7%) and 10 patients with PIH and AFI >3 (83.3%). 5 patients with previous LSCS and AFI ≤ 3 (20%) and 20 patients with previous LSCS and AFI >3 (80%). 2 patients with anaemia and AFI ≤ 3 (40%) and 3 patients

with anaemia and AFI >3 (60%). 4 patients with PPRM and AFI <= 3 (66.7%) and 2 patients with PPRM and AFI >3 (33.3%). 1 patient with Non reassuring CTG and AFI <=3 (25%), 3 patients with Non reassuring CTG and AFI >3(75%). 4 patients with Doppler changes and AFI <=3 (50%), 4 patients with Doppler changes and AFI>3 (50%). 2 patients were breech and AFI <=3 (50%), 2 patients were breech and AFI >3 (50%). The p value was not significant for all the risk factors.

Risk Factors	AFI				p
	<= 3		> 3		
	Count	%	Count	%	
GDM	1	7.1%	13	92.9%	0.049
IUGR	9	29.0%	22	71.0%	0.804
PIH	2	16.7%	10	83.3%	0.202
Previous LSCS	5	20.0%	20	80.0%	0.345
Anaemia	2	40.0%	3	60.0%	0.293
PPROM	4	66.7%	2	33.3%	0.041
Non-Reassuring CTG	1	25.0%	3	75.0%	0.427
Doppler Changes	4	50.0%	4	50.0%	0.107
Breech	2	50.0%	2	50.0%	0.239
Table 3. Percentage of AFI and Their Risk Factors in Patients with Oligohydramnios					

		AFI				p
		<= 3		> 3		
		Count	Column N %	Count	Column N %	
Doppler	Abnormal	4	33.33%	8	66.67%	0.227
	Normal	25	26.60%	69	73.40%	
Induced	Yes	6	21.43%	22	78.57%	0.412
	No	23	29.49%	55	70.51%	
Liquor	Meconium Stained	0	0.00%	3	100.00%	0.379
	Clear	29	28.16%	74	71.84%	
Mode of Delivery	Emergency LSCS	29	32.22%	61	67.78%	0.004
	Vaginal	0	0.00%	16	100.00%	
	NO	9	16.36%	46	83.64%	
CTG	Non-Reactive	4	50.00%	4	50.00%	0.107
	Reactive	25	25.51%	73	74.49%	

Table 4. Maternal Outcome with Doppler, Induction, Liquor Colour, Mode of Delivery, NST Changes According to AFI

In this, Table 4 shows 4 patients with Abnormal Doppler changes and AFI <=3 (33.33%) and 8 patients with Abnormal Doppler changes and AFI>3 (66.67%). 25 patients with normal Doppler changes and AFI <=3 (26.6%) and 69 patients with normal Doppler changes and AFI >3 (73.4%) with p value not significant. 6 patients were induced with AFI <=3 (21.43%) and 22 patients were induced with AFI>3 (78.57%). 23 patients were not induced with AFI <=3 (29.49%) and 55 patients were not induced with AFI>3 (70.51%) with p value not significant. 3 patients had meconium stained liquor with AFI>3 (100%), 29 patients had clear liquor with AFI <=3 (28.16%) and 74 patients had clear liquor with AFI>3 (71.84%) with p value not significant.

		AFI				p
		</= 3		> 3		
		Count	%	Count	%	
Apgar_1 Min	</= 7	13	56.52%	10	43.48%	< 0.001
	> 7	16	19.28%	67	80.72%	
Apgar_5 Min	</= 7	2	50.00%	2	50.00%	0.239
	> 7	27	26.47%	75	73.53%	
NICU Admission	Yes	20	39.22%	31	60.78%	0.008
	No	9	16.36%	46	83.64%	
Birth Weight	Low Birth Weight <2.5 Kg	20	37.04%	34	62.96%	0.023
	Normal >2.5 Kg	9	17.31%	43	82.69%	

Table 5. Foetal Outcome with APGAR in 1 Min, Apgar in 5 Min, NICU Admission and Birth Weieht According to the AFI

29 patients had Emergency LSCS with AFI <=3 (32.22%) and 61 patients had Emergency LSCS with AFI>3 (67.78%) and 16 patients had vaginal delivery with AFI>3 (100%) with p value not significant. 4 patients had non-reactive CTG with AFI <=3 (50%) and 4 patients had non-reactive CTG with AFI>3 (50%). 25 patients had normal CTG with AFI <=3 (25.51%) and 73 patients had normal CTG with AFI>3 (74.49%) with p value not significant.

In this study, Table 5 shows foetal outcome 13 babies with Apgar in 1 min <=7 and AFI <=3 (56.52%) and 10 babies with Apgar in 1 min <=7 and AFI>3 (43.48%), 16 babies with Apgar in 1 min >7 and AFI <=3 (19.28%) and 67 babies with Apgar in 1 min >7 and AFI>3 (80.72%) with p value significant. 2 babies with Apgar in 5 mins <=7 and AFI <=3 (50%) and 2 babies with Apgar in 5 mins <=7 and AFI>3 (50%). 27 babies with Apgar in 5 mins >7 and AFI <=3 (26.47%) and 75 babies with Apgar in 5 mins >7 and AFI >3 (73.53%) with p value not significant.

20 babies had NICU admission with AFI <=3 (39.22%) and 31 babies had NICU admission with AFI>3 (60.78%). 9 babies did not require NICU admission with AFI <=3 (16.36%) and 46 babies did not require NICU admission with AFI>3 (83.64%) with p value not significant. 20 babies were low birth weight <2.5 Kg and AFI <=3 (37.04%) and 34 babies were low birth weight <2.5 Kg with AFI >3 (62.96%). 9 babies were normal birth weight >2.5 Kg with AFI <=3 (17.31%) and 43 babies were normal birth weight >2.5 Kg with AFI>3 (82.69%) with p value not significant.

DISCUSSION

In this study those patients out of 9600 who have decreased AFI are 106(1.1%). 3 (2.8%) women were <=20 yrs., 35(33%) women were between 21-25 yrs., 46 women (43.4%) were between 26-30 yrs. and 22(20.8%) women >30 yrs. as compared to Yashodhara et al^[2] 2 (28.57%) were <=20 yrs., 22 women (57.89%) between 21-25 yrs., 12 women (31.57%) were between 26-30 yrs. and 2 (5.26%) >30 yrs. Primi's in our study who had <5 AFI were 52(49.1%) and Multi's 54(50.9%) similar to Yashodhara et al^[2] study Primi's were 24(63.15%) and Multi's were 14(36.85%).

In our study the various risk factors are 14 patients with GDM (13.2%), 31 women with IUGR (29.2%), 12 women with PIH (11.3%), 25 women previous LSCS (23.6%), 5 women with anaemia (4.7%), 6 women with PPRM (5.7%), 4 patients with non-reassuring CTG (3.8%), 8 women with Doppler changes (7.5%), 4 women Breech presentation (3.8%), similar to Yashodhara et al^[2] study 18 women with PIH (22.6%), 1 woman with chronic abruption (1.35%), 3 women with Foetal anomaly (4.05%), 6 women with PROM (8.1%), 10 women with Anaemia (13.51%) and unknown causes 10 women (13.51%)

Here 90 patients had Emergency LSCS (84.9%) and 16 patients had vaginal delivery (15.1%) similar to Yashodhara et al^[2] 89.5% had LSCS and 10.5% had vaginal delivery. In Jandial et al^[3] 66% had LSCS and 33% had vaginal birth. In Alchalabi HA et al^[4] reported decreased AFI associated with increased LSCS rates. Oligohydramnios is independent of induction in most institutes as compared with Jandial et al^[3] and Alchalabi et al^[4] 3 (2.8%) patients had MSL associated

with reduced AFI. Martinez Medel J et al^[5] shows no significant difference between MSL and low AFI.

70 (66%) women had normal CTG and 36 women (34%) had abnormal CTG similar to Yashodhara et al study^[2] 78.9% had abnormal CTG and 21.1% had abnormal CTG. In Kumar et al^[6] 40% had abnormal CTG, in Chandra et al^[7] 69.23% had abnormal CTG, in Sriya et al^[8] 41.55% had abnormal CTG. 23 babies with Apgar score in 1 min ≤ 7 (21.7%) and 83 babies with Apgar > 7 (78.3%), 4 patients with Apgar score in 5 mins ≤ 7 (3.8%) and 102 patients with Apgar > 7 (96.2%), 51 babies needed NICU admission (48.1%) and 55 babies did not need NICU admission (51.9%), 54 babies were Low birth weight < 2.5 Kg (50.9%) and 52 babies were normal weight above 2.5 Kg (49.1%) similar to Yashodhara et al^[2] APGAR in 1 min & in 5 mins ≤ 7 is 28.35%. In Syria et al^[8] APGAR score in 1 min and 5 mins ≤ 7 is 38.8%. In Jandial et al^[3] APGAR score in 1 min & 5 mins is 25%. In Rainford et al^[9] and Conway et al^[10] p value is not significant. 48.1% needed NICU admissions which corresponds with Rainford et al,^[9] Gumus et al,^[11] Jandial et al.^[3]

CONCLUSIONS

Foetal distress, meconium passage and low APGAR score at 1 min and 5 mins were associated with low amniotic fluid index and these patients required careful monitoring and follow up during antenatal and intranatal period.

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