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RESEARCH ARTICLE

PREGNANCY OUTCOME IN PATIENTS WITH OLIGOHYDRAMNIOS AT OR BEYOND 34 WEEKS OF GESTATION

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ABSTRACT

Objectives: To study the effects of decreased Amniotic fluid Index (AFI≤5cm) on pregnancy outcome at or beyond 34 weeks of gestation.
Methods: Prospective comparative study conducted in Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur from Feb. 2013 to Oct. 2014. An analytic study comparing maternal and fetal outcomes in women with AFI ≤ 5 vs women with AFI > 5 in primigravida was designed.
Results: AFI ≤ 5 was associated with higher number of labour induction (44.29% vs 22.86%) and LSCS (45.71% vs 35.71%) in mothers, increased incidence of low APGAR score (18.57% vs 2.86%), low birth weight (35.72% vs 8.57%), NICU admissions (17.14% vs 5.71%) and deaths (5.71% vs 1.43%) in neonates as compared to AFI > 5.
Conclusion: Thus we conclude that oligohydramnios is associated with increased maternal morbidity and fetal morbidity and mortality. Early diagnosis and prompt management is essential. Antenatal and intrapartum monitoring will improve the perinatal outcome.

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INTRODUCTION

Just as our ancestors crawled out of ocean to life on land, we too, until birth, float in amniotic fluid. It provides temperature stability, cushioning and a necessary presence in collapsed airways to help stimulate lung development. The importance of amniotic fluid volume as an indicator of fetal wellbeing has made its assessment an important part of antenatal fetal surveillance (Guin Gita *et al.,* 2011). The volume of amniotic fluid is positively correlated with the growth of foetus. From the 10th to the 20th week it increases from 25ml to 400ml approximately. From the 8th week, when the fetal kidneys begin to function, fetal urine is also present in the amniotic fluid. It reaches the plateau of 800ml at the 28 week gestational age. The amount of fluid declines to roughly 400 ml at 42 weeks gestational age. The assessment of amniotic fluid volume has therefore become an important part of obstetric ultrasonographic examinations. The widespread use of real-time ultrasonography makes available to clinicians the technology with which to evaluate AFI (Amniotic Fluid Index). In this recent ultrasonographic era, a non-invasive; semi quantitative assessment of amniotic fluid volume is possible.

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The amount of amniotic fluid in singleton pregnancies has been assessed with ultrasonography both subjective and semi-quantitatively. A four-quadrant sonographic technique, the amniotic fluid index (AFI) was described by Phelan *et al.* in 1987. In the four-quadrant technique a vertical pocket of amniotic fluid, free of umbilical cord, in all four quadrants of the uterus was summated. This is currently the gold standard since it has been shown to be reproducible (Morris *et al.,* 2003). Oligohydramnios has variously been defined according to the method adopted for measuring amniotic fluid volume. Amniotic fluid index of <5cm or single deepest pocket of less than 3cm constitutes oligohydramnios (Rukhsana Karim *et al.,* 2010). Oligohydramnios or decreased amniotic fluid, has been correlated with increased risk of intrauterine growth restriction, congenital abnormalities, postdates pregnancy, meconium passage, abnormal fetal heart rate patterns, and lower APGAR scores in multiple studies (Elizabeth *et al.,* 2002). Oligohydramnios has been associated with increased rate of induction of labour and Caesarean section in various studies.[6]

METHODS

The study was a hospital based comparative study and conducted in the department of Obstetrics and Gynaecology, SMS Medical College, Jaipur from February 2013 to October 2014. . This study was reviewed and approved by the institutional ethical committee.

Table 1. Intergroup comparision of demographic parameters

Demographic Parameters		Cases	Controls	p value*	Statistical Significance
Mean Age (Mean ± SD) (years)		24.44±3.36	24.57±3.45	0.824	Non Significant
Residence	Rural	30 (42.86%)	33 (47.14%)	0.734	Non Significant
	Urban	40 (57.14%)	37 (52.86%)		
Religion	Hindu	52 (74.28%)	48 (68.57%)	0.998	Non Significant
	Muslim	15 (21.43%)	19 (27.14%)		
	Others	03 (4.29%)	03 (4.29%)		
Literacy Status	Literate	38 (54.29%)	36 (51.43%)	0.866	Non Significant
	Illiterate	32 (45.71%)	34 (48.57%)		
Socio-economic Status	Upper (I)	0	0	1.000	Non Significant
	Upper Middle (II)	14 (20%)	12 (17.14%)		
	Middle/ Lower Middle (III)	33 (47.14%)	30 (42.86%)		
	Upper Lower (IV)	5 (7.14%)	6 (8.57%)		
	Lower (V)	18 (25.72%)	22 (31.43%)		

Table 2. Intergroup Comparision of pregnancy outcome results

S. No.	Pregnancy Outcome	Amount of Liquor (AFI)				Total		P value	Comment
		AFI ≤ 5 (Group A)		AFI > 5 (Group B)					
		No.	% (of 70)	No.	% (of 70)	No.	% (of 140)		
1.	Induction of labour	31	44.29	16	22.86	47	33.57	0.012	S
2.	LSCS	32	45.71	25	35.71	57	40.71	0.302	NS
3.	APGAR at one min. (≤5)	13	18.57	2	2.86	15	10.71	0.006	S
4.	APGAR at five min. (≤7)	6	8.57	1	1.43	7	5	0.121	NS
5.	Low birth weight (≤ 2.5 kg.)	25	35.72	6	8.57	31	22.14	0.000	S
6.	Respiratory distress	9	12.86	3	4.29	12	8.57	0.131	NS
7.	Meconium aspiration	5	7.15	1	1.43	6	4.29	0.211	NS
8.	Seizures	4	5.71	2	2.86	6	4.29	0.211	NS
9.	Malformations	5	7.14	2	2.86	7	5	0.438	NS
10.	NICU admission	12	17.14	4	5.71	16	11.43	0.063	NS
11.	Neonatal death	4	5.71	1	1.43	5	3.57	0.362	NS

S: significant; NS: non-significant

The study population of 140 women were divided into two groups: Group A (Cases) comprised of 70 women with AFI ≤ 5. Group B (Controls) comprised of 70 women with AFI > 5 in USG by four quadrant technique. Well dated singleton primigravida pregnant women with live foetus presented at or beyond 34 weeks of gestation were included in the study. Cases with PROM, IUFD, polyhydramnios, placenta previa, multiple gestations, diabetes mellitus and grossly congenital malformed foetuses were excluded from the study. Women attending antenatal clinic at or beyond 34 weeks of gestation were selected randomly for the study, after considering inclusion and exclusion criteria and informed consent. They were subjected to detailed history taking, complete general physical examination, systemic examination and obstetric examination. Routine antenatal investigation were done for all the selected patients. Special emphasis was given over USG, in which Amniotic fluid index (AFI) was calculated using Four Quadrant technique, Biophysical profile (BPP) and colour Doppler were also noted. Both the groups were monitored during antenatal period. During antenatal period both the groups were followed till term for spontaneous onset of labour or need for induction of labour. They were also closely monitored in the intrapartum period, till the delivery of the patients. Both the groups were compared to look for maternal and neonatal outcome. Maternal outcome was noted by the mode of onset of labour - whether spontaneous or induction of labour required, mode of delivery - whether vaginal or LSCS. Neonatal outcome was seen in terms of birth weight, APGAR score at one minute and five minutes, presence of respiratory distress, meconium aspiration, occurrence of seizures, presence of malformations, NICU admissions and neonatal deaths. All the data was entered in Excel Sheet and the data was analysed statistically using SPSS software. Quantitative data was summarized in mean and standard deviation.

The difference in mean value was analysed using independent sample‘t’-test. Qualitative data was summarized in proportion and analysed using Chi-square and ‘Z’ test. A p value of <0.05 was considered statistically significant. All the statistical analysis was done keeping power of study at 80% and 95% confidence level.

RESULTS

In the present study, a sincere effort has been made to study the effect of oligohydramnios on pregnancy outcomes. The pregnancy outcomes in oligohydramnios were also compared with pregnancy with normal AFI. The two study groups were comparable in all demographic factors (Table 1). The induction of labour done in Group A and Group B was 44.29% and 22.86% respectively. The difference was statistically significant reflecting greater number of labour induction in oligohydramnios cases. (P value = 0.012). The mode of delivery by caesarean section in Group A was 45.71% and in Group B was 35.71% which shows that patients with oligohydramnios have more chances of LSCS. (P value = 0.302). The incidence of low birth weight (≤ 2.5 kg.) in Group A was 35.72% and in Group B was 8.57% which appears to be significant and shows greater number of low birth weight in oligohydramnios (P value < 0.001). The low APGAR score at one min. (≤ 5) in Group A and Group B was in 18.57% and 2.86% respectively (P value = 0.006, S). APGAR score at five min. (≤ 7) in Group A was 8.57% and in Group B 1.43% (P value = 0.121, NS). This shows significant relation between oligohydramnios and low APGAR at one min. (P value = 0.006). The incidence of respiratory distress in Group A and Group B was 12.86% and 4.29% respectively showing more chances of fetal distress in oligohydramnios. (P value = 0.131)

The incidence of meconium aspiration in Group A was 7.14% and in Group B was 1.43% which shows that oligohydramnios is related to more chances of meconium aspiration. (P value = 0.211). The occurrence of seizures in first 24 hrs. of life seen in 5.71% neonates in Group A while 2.86% in Group B and it was associated with respiratory distress. (P value = 0.211). The occurrence of malformations in the group A and Group B was 7.14% and 2.86% respectively showing increased incidence of malformations in oligohydramnios. The severe malformations in group A were renal agenesis and Fallot's teratology, while minor malformations included presence of club foot and amniotic band. (P value = 0.438). The incidence of NICU admissions due to various causes of fetal distress in Group A was 17.14% and in Group B was 5.71% shows increased perinatal morbidity in oligohydramnios. The incidence was more because of increased chances of respiratory distress and meconium aspiration (P value = 0.063). Neonatal deaths in Group A and Group B was 5.71% and 1.43% respectively. This shows that oligohydramnios is also associated with increased perinatal mortality. The causes of death in group A were septicaemia in two neonates, bilirubin encephalopathy and congenital cyanotic heart disease in the other two neonates (P value = 0.362).

DISCUSSION

Our study showed that oligohydramnios is associated with increased maternal morbidity and fetal morbidity and mortality. Maternal morbidity is increased due to more chances of labour induction and higher number of LSCS. Many previous studies also had same results (Bhagat, 2014; Alchalabi *et al.,* 2006; Brian *et al.,* 2000). The perinatal morbidity is increased due to increased incidence of low birth weight, low APGAR score, higher chances of respiratory distress, meconium aspiration, malformations, seizures and all these leading to higher no. of NICU admissions and neonatal deaths. Our results were in accordance with many other previous studies (Bhagat, 2014; Alchalabi *et al.,* 2006; Brian *et al.,* 2000; Morris *et al.,* 2014; Bachhav *et al.,* 2014; Hashimoto *et al.,* 2013; Souza *et al.,* 2013; Locatelli *et al.,* 2004; Voxman *et al.,* 2002).

Conclusion

So we conclude that antenatal diagnosis of oligohydramnios should be done as early as possible. It should be taken as an alarming sign and pregnancy should be monitored with regular antenatal check-ups, weekly or biweekly USG for BPP and AFI, colour Doppler and daily NST. Proper counselling of the patient and attendants should be done related to all the consequences of oligohydramnios.

Regarding the termination of pregnancy one should wait till fetal lung maturity. During induction of labour the progress should be monitored by continue fetal heart rate tracing, uterine activity, maintaining partograph and all the measures should be ready for emergency caesarean section in case of fetal distress or for any maternal indication. Prompt neonatal resuscitation should be ready at the time of delivery and done by trained neonatologist for better perinatal outcomes.

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