Section: Miscellaneous

Original Research Article

PREGNANCY OUTCOME OF ISOLATED OLIGOHYDRAMNIOS IN UNCOMPLICATED TERM PREGNANCIES: AN OBSERVATIONAL COMPARATIVE STUDY

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ABSTRACT

Background: Oligohydramnios and its outcome are a relevant issue related to mother and foetus. Purpose of this study is to establish the obstetric and perinatal outcome in pregnancy associated with isolated oligohydramnios as compared to women with normal liquor. **Materials and Methods:** This is an observational comparative study done at Al Azhar Medical College, Thodupuzha, Kerala, India on 50 pregnant women of 37 weeks of gestation or more and diagnosed to have oligohydramnios without any high-risk factors. Age, parity, gestational age matched patients without any high-risk factors and AFI >5 CM attending the opd /ward were taken as controls.in each group there were 25 subjects. After getting informed consent those who fulfilled the inclusion criteria were followed through the delivery and immediate neonatal outcome were assessed. Parameters like age parity, amniotic fluid volume, gestational age at delivery, mode of onset of labour, indication of Induction, methods of induction, need for augmentation of labour, CTG patterns, colour of liquor, mode of delivery, indications of caesarean section, distribution of APGAR SCORE were analysed. **Result:** There was significant difference in maternal outcome in patients with isolated oligohydramnios in the form of increased rates of induction of labour, augmentation of labour, meconium-stained liquor, non-reassuring fatal heart pattern, and caesarean section rates without any significant effects on neonatal outcome. **Conclusion:** Isolated oligohydramnios has increased rate of induction of labor, meconium-stained liquor, CTG abnormalities and caesarean section rates without significant increase in neonatal morbidity and mortality.

INTRODUCTION

Amniotic fluid is very important for growth of fetus in sterile environment, avoidance of external injury and reduction of impact of uterine contractions. Oligohydramnios is a condition where amniotic fluid volume is very low and it has been associated with poor pregnancy outcomes. It can cause increased risk of intrauterine growth restriction, meconium aspiration syndrome, severe birth asphyxia, low Apgar score and maternal morbidity in the form of increased risk of induction of labor, operative interventions etc.[1,2] Thus evaluation of amniotic fluid has become an integral part of antenatal fetal assessment.

According to some studies oligohydramnios has significant impact on maternal and neonatal outcome while some others observed that isolated oligohydramnios had no adverse effect on perinatal outcome5. The incidence of oligohydramnios with general reporting rate is 1 and 3 percent. Oligohydramnios per se does not lead to maternal complications but its underlying cause may. Irrespective of the cause, mother is at risk of caesarean delivery for fetal distress secondary to growth restriction, malformations or umbilical cord compression.[3-5]

Chauhan and associates performed a meta-analysis of 18 studies in which they found that oligohydramnios has increased risk of caesarean section for fetal distress and increased risk of low APGAR score.[6] Baron et al reported that cord compression during labor is very common in oligohydramnios and it can cause variable decelerations and increased rate of caesarean section.[7] Divon et al studied 638 women with post term pregnancy in labor and found that only those

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with AFI< 5 had fetal heart rate decelerations and meconium-stained liquor.[8]

Magnum et al found that those with AFI of less than 5 had similar outcomes to those with normal AFI and concluded that an AFI less than 5 cm is not an indication for delivery.[9] Similarly Rainford et al and Zhang et al reported that isolated oligohydramnios were not associated with adverse pregnancy outcome.[2,10] Thus there is increasing evidence that patients with isolated oligohydramnios with normally growing fetus ,good fetal movement and an unfavorable cervix may be candidates for observations and therapeutic interventions like oral/intravenous administration of water /crystalloids or both to increase the amniotic fluid level can be tried.[11]

The management of isolated oligohydramnios is controversial. Some authors prefer to induce labor as development of oligohydramnios can cause chronic hypoxia. However, some studies show that pregnancy outcome is not affected by induction in otherwise normal pregnancy, because most of the morbidity occurs during intrapartum period. But if severe oligohydramnios is present delivery can be considered.

MATERIALS AND METHODS

It is an observational comparative study carried out at Al Azhar medical college, Thodupuzha, Kerala, India from January 2023 to January 24. Study population comprised of 25 antenatal women with isolated oligohydramnios and 25 antenatal women with normal AFI.

Inclusion Criteria

Singleton pregnancies ≥37 weeks of gestation and intact membranes

Exclusion Criteria

Previous caesarean section, rupture of membranes, medical disorders like preeclampsia, diabetes etc., malpresentation, IUGR, multiple gestation and anomalous fetus.

Sampling procedure was continuous and 25 pregnant women >37 weeks with isolated oligohydramnios and 25 pregnant women >37 weeks normal AFI were recruited for the study. This study was started with human ethical committee approval. During the time period informed consent was obtained from all the antenatal women who fulfilled the inclusion and exclusion criteria. They were divided into two groups.one group with isolated oligohydramnios and other with normal AFI.in both groups 25 pregnant women each and following parameters were assessed.

Parameters to Assess Pregnancy Outcome

Age of the patient, gravidity, amniotic fluid volume, gestational age at delivery, mode of onset of labor, indication of induction of labor, methods of induction of labor, need for augmentation of labor, CTG (reassuring /non reassuring) color liquor, mode of delivery, indications of caesarean section an APGAR score

Data Collection: All data were entered into excel (MS excel 2011). Privacy and confidentiality were maintained. All patient identifiable numbers and information's was stripped and replaced by anonymous numbers.

Statistical analysis: Statistical analysis was performed by using IBM statistical package for social sciences (spss) statistics software (version 24; IBM, New York, USA) the comparisons of counting data were evaluated using chi-square test. A p value of less than 0.05 was considered as significant.

RESULTS

During the study period total number of patients was 50, in those 25 patients with isolated oligohydramnios and 25 patients with normal AFI. In that majority of the patients were around 20-25 years of age. [Table1]. In our observation primigravida were 76%in study group and 80%in control group respectively. Multigravida was only 24%in study group and 20% in control group respectively. So, in our observation majority of patients were primigravida in both groups [Table 1].

Table 1: Age

Age (years)	Study group n (%)	Control group n (%)	P value
20-25	15	13	0.57
26-30	10	12	
Total	25(100)	25(100)	
Gravida			
1	19	20	0.919
2	4	3	
3	2	2	
Total	25(100)	25(100)	

In our study group around 48% patients had AFI 4.1-5 cm ,38% had 3.1-4 cm and 20% had <3 cm whereas in control group 84% had normal AFI and 8% had 5-9 cm [Table 2] 48 % of both groups delivered between 39-39+6 weeks ,28% women delivered between 40-41 weeks, and 24% women delivered between 37-38+6 respectively. this was not statistically significant. [Table 3]

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Table 2: distribution of AFI in study group and control group.

AFI (cm) study group	Number	Percentage
<3	5	20
3.1-4	8	32
4.1-5	12	48
TOTAL	25	100
AFI(cm) control group		
5-7	2	8
7.1-9	2	8
9.1-11	10	40
>11	11	44
Total	25	100

Table 3: gestational age at delivery

Gestational age	Study group n (%)	Control group n (%)	P value
37-38+6	6	6	1
39-39+6	12	12	
40-41	7	7	
TOTAL	25(100)	25(100)	

Table 4: mode of onset of Labor

Labor onset	Study group N (%)	Control group n (%)	P value
Spontaneous	10	22	<0.001
Induced	15	3	
Total	25(100)	25(100)	

In this study, rate of induction was 60% in study group and 12 % in control group. This was statistically significant .88% in control group had spontaneous onset of labour whereas only 40% of study group had spontaneous labour. This shows that rate of induction with isolated oligohydramnios were more compared to control group [Table 4]. In that induced patient 58% had oligohydramnios as the indication of induction. This was statistically significant. [Table 5] out of 15 patients in the study group who had labour induction 11(73.3%) where induced with Foley's alone and only 4 (26.6%) needed multiple inducing agent [Table 5] in case of augmentation of labour more women in the study group required oxytocin augmentation compared to control group. this was statistically significant [Table 5]

Table 5: indication of induction, methods of induction, augmentation of labour

Indication	Study group n (%)	Control group n(%)	P value
Not induced	10	22	0.00061
Oligohydramnios	13	1	
Post dates	2	2	
Total	25(100)	25(100)	
Methods			
Not induced	10	22	0.0036
foleys	11	1	
Foleys +pge1	2	1	
Foleys +2PGE1	2	1	
Total	25(100)	25(100)	
Oxytocin augmentation			
Yes	23	3	<0.001
No	2	22	
Total	25(100)	25(100)	

Table 6: comparison of intrapartum CTG between the groups

	Study group n(%)	Control group n (%)	P value
Non reassuring	17	2	<0.001
Reassuring	8	23	
Total	25(100)	25(100)	

Table 7: colour of liquor

Liquor	Study group n(%)	Control group n(%)	P value
Clear	11	21	<0.001
Thin msl	2	1	
Moderate msl	10	2	
Thick msl	2	1	
Total	25(100)	25(100)	

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In our study out of 25 patients, 68% had non reassuring fatal heart rate in the study group in comparison to 8% in control group. This was statistically significant. this shows that isolated oligohydramnios had more risk of non-reassuring fatal heart rate pattern during intrapartum period which may increase the need of operative intervention and poor neonatal outcome. [Table 6,8] in study group 73% of patients, the indication of caesarean section was NRFHR [Table 9]. But in this study 56% of patients in study group had meconium-stained liquor whereas only 16 % had meconium-stained liquor in control group. This was statistically significant. Out of 56% patients in study group who had meconium staining, 71 .4% had moderate MSL and 14.3 % had thick MSL. But only those who had thick msl (13%) in study group needed caesarean section for MSL [Table 7].

Table 8: mode of delivery

Mode of delivery	Study group n (%)	Control group n (%)	P value
Spontaneous vaginal delivery	10	22	<0.001
Caesarean section	15	3	
Total	25(100)	25(100)	

Table 9: indications of caesarean section

Indication	Study group n (%)	Control group n(%)	P value
Msl in early labour	2	1	0.406
Foetal distress	2	1	
NRFHR	11	1	
Total	15	3	

Table 10: distribution of Apgar score

APGAR score	Study group n (%)	Control group n (%)	P value
<7	2	1	0.55
>7	23	24	
Total	25(100)	25(100)	

In our observation, 92% babies in the study group had an Apgar score of > 7 at 5 min and 96% babies in control group had an Apgar score > 7 which was not significant. The table shows only 3 babies had an Apgar score < 7 in those 2 babies had mild grunting which was self-limiting doesn't needed NICU admission and 1 baby had congenital heart disease (tricuspid atresia) detected after delivery. The difference was not significant. [Table 10]

DISCUSSION

The present study was conducted in the department of obstetrics and gynaecology, al Azhar medical college, Thodupuzha, Idukki, and Kerala. This study was done to evaluate the pregnancy outcome in isolated oligohydramnios in uncomplicated term pregnancy compared with those patients with normal AFI. A detailed history was taken and physical examination was done. They were investigated appropriately and managed according to hospital protocol for the condition

Majority of women recruited in this study belong to age group of 20-25 years. By Kreiser et al mentioned similar results in his study. The younger age group of women in our study was because our hospital population who came for delivery was mostly belonged to younger age group. [12]

Majority of women in both groups were primigravida. other authors also found no significant difference between the groups when parity was compared.[12,13] In the study by Casey et al, 40%in study group and 37 %in control group were primigravida.[13]

In this study majority of patients delivered between 38-39+6 weeks. Similar results were found by Kreiser et al in this study 48% women in each group delivered between 38 – 39+6 weeks, 28% women delivered between 40 and 41 weeks and 24% delivered between 37-37+6 weeks.12 among 25 women in study group 48% had AFI between 4.1 - 5 cm and 44% in control group had AFI >11.

In this study, the rate of induction of labour was significantly more (60%) in the study group compared to control group. similarly, Casey et al and Rainford et al stated that induction of labour was significantly increased with oligohydramnios compared to control group.[13,14] But other studies didn't show any difference in rate of induction of labour between the oligohydramnios and borderline AFI groups.[12]

73% women with isolated oligohydramnios were planned for induction of labour .in that preinduction cervical ripening was done with intracervical Foley's catheter and /or oral pge1. Among these 2 went into labour without further requirement of any augmentation.

In this study there was statically significant difference in the intrapartum foetal heart rate abnormalities between the two groups. 68% women had nonreassuring CTG in the study group in comparison to 8% in control group. Casey et al and Wenstrom et al reported that FHR abnormalities during labour were increased in study group, but their study included high risk patients too. FHR decelerations detected were due to cord compression. [15, 16] Divon et al found that FHR

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abnormalities were significantly higher when the AFI fell below 5 cm 6.

In this study there was statistically significant difference in the intrapartum meconium staining of liquor between 2 groups;56% of patients in study group had MSL whereas only 16 % had MSL in control group. Phelan et al and Divon et al found that MSL was significantly higher when the AFI fell below 5 cm. [6, 17] But Rainford et al found that women with normal AFI had significantly higher rate of MSL than those with low AFI.14Casey et al also reported that MSL was identified less often in pregnancies complicated by oligohydramnios compare to control group. [13]

The present study showed significant difference between the groups when the number of operative deliveries in each group was compared ;60 % had caesarean section in study group in comparison to control group which was only 12 %. The rate of caesarean section is high when compared to our hospital caesarean section rate of 30-40%. Nonreassuring foetal heart rate, foetal distress, MSL in early labour was the most common indications of caesarean deliveries. Similarly ,Chauhan et al showed that relative risk of caesarean delivery for foetal distress associated with antepartum AFI < 5 CM.6 Ahmed et al observed that rate induction of labour and caesarean delivery were significantly more in isolated oligohydramnios group compare to women having normal AFI.[18] But In this study the increase in caesarean delivery rate was not truly due to higher rate of foetal distress but presumably due to higher rate of labour induction, thereby increasing the maternal morbidity. It is well known fact that induced labour compared to spontaneous labour results in caesarean section regardless of parity and condition of cervix. [19]

Increase in incidence of APGAR score <3, admission to ICU, respiratory distress syndrome and meconium aspiration syndrome in pregnancies with AFI <5 cm was recorded by Casey et al but in our study only 2 babies ins study group and 1 baby in control group had APGAR <7 which was self-limiting.2 no babies needed NICU admission.

This study showed significant increase in maternal morbidity in form of labour induction and caesarean deliveries' and nonreassuring foetal heart rate pattern were also increased but without any increase in perinatal mortality.

Limitation

It was hospital-based study; the figures are not strictly representative of the whole population. The amniotic fluid level was measured by different personal. This could have resulted in inter-observer variation.

CONCLUSION

This study may be concluded that in comparison to pregnant women with normal AFI, in those with isolated oligohydramnios -there were significantly increased rates of induction of labour and operative delivery, there were significantly increased rates of meconium-stained liquor and non-reassuring foetal heart rate pattern but there were no significant effects on neonatal outcome in the form of neonatal mortality or major morbidity.

REFERENCES

1. Sultana S, Akbar Khan MN, KhanumAkhtar KA, Aslam M. Low amniotic fluid index in high-risk pregnancy and poor Apgar score at birth. J Coll Physicians Surg Pak 2008; 18(10):630-4.
2. Rainford M, Adair R, Scialli AR, Ghidini A, Spong CY. Amniotic fluid index in the uncomplicated term pregnancy: Prediction of outcome. J Reprod Med 2001; 46(6):589-92.
3. Manning FA, Hill LM, Platt LD. Qualitative amniotic fluid volume determination by ultrasound; antepartum detection of intrauterine growth retardation . Am J Obstet Gynecol 1981; 139(3):254-8.
4. Crowley P, O'Herlihy C, Boylan P. The value of ultrasound measurement of amniotic fluid volume in the management of prolonged pregnancies. Br J Obstet Gynaecol 1984; 91:444.
5. Moberg LJ, Garite TJ, Freeman RK. Fetal heart rate patterns and fetal distress in patients with preterm premature rupture of membranes. Obstet Gynecol 1984;64:60-4.
6. Chauhan SP, Sanderson M, Hendrix NW, Magnan EF, Devoe LD. Perinatal outcome and amniotic fluid index in the antepartum and Intrapartum periods: A meta-analysis. Am J Obstet Gynecol 1999;181:1473.
7. Baron C, Morgan MA, Garite TJ. The impact of amniotic fluid volume assessed intrapartum on perinatal outcome. Am J Obstet Gynecol 1995; 173:167.
8. Divon MY, Marks AD, Henderson CE. Longitudinal measurement of amniotic fluid index in postterm pregnancies and its association with fetal outcome. Am J Obstet Gynecol 1995; 172:142.
9. MagnanEF, Chauhan SP, Barrilleaux PS, Whitworth NS, Martin JN. Amniotic fluid index and single deepest pocket: Weak indicators of abnormal amniotic volumes. Obstet Gynecol 2000; 96:737.
10. Zang J, Troendle J, Meikle S, Klebanoff MA, Rayburn WF. Isolated oligohydramnios is not associated with adverse perinatal outcomes. Br J Obstet Gynecol 2004;111:220.
11. Gilbert WM. Amniotic fluid disorders. In: Gabbe S, Niebyl JR,Simpson JL , editors. Obstetrics, normal and problem pregnancies.5th ed. Philadelphia: Elsevier, 2007; p. 834-45.
12. Kreiser D, EI-Sayed YY, Sorem KA, Chitkara U, Holbrook RH, Druzin ML. Decreased amniotic fluid index in low-risk pregnancy. J Reprod Med 2001; 46:743.
13. Casey BM, MC Intire DD, Bloom SL, Lucas MJ, Santos R, Twickler DM, et al. "Pregnancy outcome after antepartum diagnosis of oligohydramnios at or beyond 34 weeks of gestation". AmJ Obstet Gynecol 2000 ;182: 909.
14. Rainford M, Adair R, Scialli AR, Ghidini A, Spong CY. Amniotic fluid index in the uncomplicated term pregnancy: Prediction of outcome. J Reprod Med 2001; 46(6):589-92.
15. Strong TH, Hetzler G, Sarno AP, Paul RH. Prophylactic Intrapartum amnioinfusion: a randomized clinical trial. Am J Obstet Gynecol.1990; 162:1370-5.
16. Wenstrom KD, Parson MT. The prevention of meconium aspiration in labor using amnioinfusion. Obstet Gynecol 1989;73:647-51.
17. Phelan JP, Smith CV, Small M. "Amniotic fluid volume assessment with four quadrant technique at 36-42 weeks of gestation". J Reprod Med 1987; 32: 540 42.
18. Ahmad H, Munim S. Isolated oligohydramnios is not an indicator for adverse perinatal outcome. JPMA 2009; 56:691.
19. Locatelli A, Zaqarella L, Toso L, Assi F, Ghidini A, Biffi A. Serial assessment of AFI in uncomplicated term pregnancies: Prognostic value of amniotic fluid reduction. J Maternal Fetal Neonatal Med 2004;15:233-6.

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