

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20180185>

Original Research Article

Isolated oligohydramnios: effects on obstetric and perinatal outcome

Ashwini Vishalakshi L.*, Reddi Rani P.

Department of Obstetrics and Gynecology, Mahatma Gandhi Medical College and Research Institute, Pilliyarkuppam, Pondicherry, India

Received: 06 December 2017

Accepted: 30 December 2017

***Correspondence:**

Dr. Ashwini Vishalakshi L.,

E-mail: akshivishal@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Outcome of oligohydramnios has been studied at a large. Varying results have been projected in each study. This study has been done to establish the obstetric and perinatal outcome in pregnancy associated with oligohydramnios as compared to women with normal liquor.

Methods: This was a prospective case controlled study done which included 100 women with oligohydramnios who were compared with 100 women with normal liquor. Maternal and perinatal outcome was compared between the two groups.

Results: There was a significant difference in the obstetric and perinatal outcomes among the study and control groups. Significant variation was seen in the obstetric outcome with regards to the incidence of induction of labor and mode of delivery (by caesarean section). Both were increased among the study group as compared to the control group. CTG changes, meconium stained liquor, neonatal admissions and observations were more among the study group as compared to control group.

Conclusions: Although there is an increased rate of caesarean section, NICU admission and observation, thick meconium stained liquor and NST changes there is no significant increase in the perinatal morbidity and mortality.

Keywords: Meconium stained liquor, Oligohydramnios, Perinatal outcome

INTRODUCTION

During every antenatal visit liquor is measured either subjectively by the obstetrician or objectively by measuring amniotic fluid index or single deep pocket of liquor by ultrasonogram. Abnormally high or low liquor was associated with a significant increase in the risk of fetal death even after a normal nonstress test.^{1,2}

Rutherford et al based on clinical observation noted an increased risk of suboptimal perinatal outcome in term infants when the amniotic fluid volume (AFV) was less than 5 cm or more than 25 cm.³ AFV estimation has been described as the most sensitive measure within the biophysical profile for predicting fetal death in addition to NST (non-stress test).⁴ Haws et al showed that low

AFV was frequently associated with poor pregnancy outcome and in these cases a reassuring NST loses its usual predictive value.⁵ There is a gradual decline in amniotic fluid beyond 32 weeks till 40 weeks thereafter the rate of decline is higher and by 42 weeks mean AFV is 400 ml.⁶

The changes in AFV seen during pregnancy increases proportionately with the fetal growth till 32 weeks. Thereafter it decreases till term.⁷ Therefore as the amniotic fluid decreases, fetal growth rate is also reduced. Delivery is required when the AFI reduces to less than 5 as the incidence of complications increases with no benefit of continuation of pregnancy. But in contradiction to these, a few studies question the entity isolated oligohydramnios at term as a predictor for

adverse perinatal outcome.⁸⁻¹⁰ Hence this study is done to correlate isolated oligohydramnios with adverse perinatal and obstetric outcomes.

METHODS

This study was conducted in the Department of Obstetrics and Gynecology at Mahatma Gandhi Medical College and Research Institute, Pondicherry, India during the period January to June 2017. The study group included antenatal women diagnosed with oligohydramnios (AFI<5) by ultrasound after 37 weeks of gestation. Women having normal liquor (AFI 6 to AFI 20) were included in the control group. Consent of all patients was taken.

Liquor volume was estimated by measuring the AFI by the four-quadrant technique of Phelan. Induction and labor management was done as per the department protocols. Fetal wellbeing was monitored by cardiotocogram in all women.

Inclusion criteria

- Women with singleton pregnancy more than 37 weeks with the foetus in cephalic presentation,
- AFI ≤5 and intact membranes.

Exclusion criteria

- Women with <37 weeks gestation,
- Ruptured membranes,
- Malpresentations,
- Associated medical complications.

Outcomes studied were induction of labor, NST/CTG changes, incidence of meconium stained amniotic fluid, mode of delivery, APGAR score, NICU admissions.

Statistical tests applied for analysis of data were Chi square test. A P value of <0.05 was taken as significant.

RESULTS

A total of 200 women were included for the study. Study group included 100 cases and control group included 100 cases. Both groups had comparable antepartum variables like age, parity and gestational age. The mean maternal age in the study group was 25.2 years and that in the control group was 24.03 years. The age distribution between the two groups was not statistically significant (P=0.95).

Number of primigravidas in the study group was 71 (71%) and multipara were 29 (29%). This was comparable to the control group which included 81 (81%) primigravidas and 19 (19%) multipara. The average gestational age in the study group was 38.55 and control

group was 38.56 which was similar in both groups (Table 1).

Table 1: Maternal characteristics.

Parameters	Study group (n=100)	Control group (n=100)	P value
Age (years) (mean±SD)	25.2±3.61	24.03±3.07	0.014 [#]
Gestational age (weeks) (mean±SD)	38.55±1.10	38.56±0.99	0.95 [#]
Parity	Primi 71%	Primi 81%	0.098*
	Multi 29%	Multi 19%	
Induced	63%	47%	0.023*
AFI (cm) (mean±SD)	4.13±1.16	10.48±2.22	<0.0001 [#]

*chi-square test, # student's t test

There was a significant difference in the mean AFI among study group (mean=4.13) and control group (mean=10.48) with a p value of <0.0001. Among the cases 63 (63%) were induced and 47 (47%) were induced in the control group. Induction of labor was significantly more in the study group as compared to the control group (p=0.023). Non-reassuring NST was noted in 21% of the study group and 4% of the control group. There was a significantly higher rate of non-reassuring NST in the study group as compared to the control group (p=0.000).

Meconium stained amniotic fluid was seen in 27% of the study group and 9% of the control group. The difference in the occurrence of meconium staining was statistically significant (p=0.0085). Thick meconium staining was seen in 14% among the cases and 3% among controls which was statistically more, the p value being 0.005.

Table 2: Obstetric and perinatal outcome.

Parameters	Study group (n=100)	Control group (n=100)	P value
Non-reactive NST	21%	4%	0.000*
Meconium stained liquor	27%	9%	0.0085*
Caesarean	61%	25%	<0.0001*
NICU observation	39%	8%	<0.0001*
NICU admission	14%	3%	0.0053*
APGAR 1 minute (mean±SD)	7.75±0.93	7.82±0.76	0.56 [#]
APGAR 2 minute (mean±SD)	8.91±0.51	8.92±0.42	0.88 [#]
Birth weight (kg) (mean±SD)	2.92±0.35	3.01±0.34	0.78 [#]

*chi-square test, # student's t test

There was a higher rate of caesarean section among study group (61%) as compared with controls (25%) ($p=0.0001$). Among cases caesarean section was done for meconium stained liquor in 22%, failed induction in 2%, cephalopelvic disproportion in 9%, fetal distress in 18%, maternal request in 2%, arrest of dilatation in 8%. Among controls caesarean section was done for meconium stained liquor in 6%, failed induction in 2%, cephalopelvic disproportion in 7%, fetal distress in 3%, maternal request in 2%, arrest of dilatation in 5%. The mean Apgar at 1 minute was 8.91 and 8.92 respectively in cases and controls. The difference was not statistically significant ($p=0.88$). Average Apgar score at 5 minutes was 7.75 in the study group and 7.82 in the controls ($p=0.56$). The mean birthweight in the study group was 2.92 kg and control group was 3.01 kg. The mean birth weight did not differ significantly ($p=0.78$) (Table 2).

Among the study group 39 neonates were kept in NICU for observation out of which 14 were admitted, [TTN (Transient Tachypnoea of new-born): 4; RDS (Respiratory Distress Syndrome): 4; MSL: 2; Perinatal depression: 2; Birth asphyxia: 1, Late onset neonatal sepsis: 1]. Among the controls 8 neonates were observed in the NICU of which 3 were admitted for TTN. The difference in admission rates between the cases and controls was statistically significant ($p=0.0053$). There were no perinatal deaths in both the groups.

DISCUSSION

Assessment of liquor after 37 weeks helps in risk determination during delivery. The increased risk is determined by the higher incidence of NICU admissions and observations. Various other parameters are APGAR score, meconium stained liquor, fetal heart rate decelerations on CTG etc. In the present study the mean APGAR score at 1 minute was 7.75 in study group and 7.82 in control group was not statistically different. However, a study by Pradhan et al showed 1 min APGAR score <7 in 36% in study group and 10.9% in control group which was statistically significant ($p = 0.001$).¹¹ The five min APGAR score in our study was 8.91 and control group was 8.92 which was similar to the results by Pradhan et al where it was 4 versus 3.4 which was almost equal.¹¹

Voxman et al showed a significant inverse relationship between AFI and NICU admission.¹² In the present study more number of neonates from the study group (39%) were observed in NICU as compared to the control group (8%). This difference was statistically significant. A study by Zhang et al and Enas et al have given similar results.^{13,14} This study shows increased evidence of NICU admission among study group (14%) as compared to control group (3%) ($p=0.001$). Although there is a statistical significance in the NICU observation rates it was not associated with increased perinatal morbidity or mortality. Similar results were obtained by Kavitha et al in their study where the NICU admission rate was 18%

and 4% among study and control group respectively which was statistically significant.¹⁵ But a study by Mushtaq et al and Sangeetha et al showed no difference in NICU admissions.^{14,16}

In our study there were no neonatal deaths or stillborn in both the groups. Similar results were found in other related studies by Kavitha et al and Sowmya et al.^{15,18}

CONCLUSION

Our present study shows that even though there is an increased rate of caesarean section, NICU admission and observation, thick meconium stained liquor and NST changes there is no significant increase in the perinatal morbidity and mortality. But the long-term outcomes have not been studied. Hence it is a drawback of our study. Hence further studies may be required to establish the long-term consequences of oligohydramnios.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Chamberlain PF, Manning FA, Morrison I, Harman CR, Lange IR. Ultrasound evaluation of amniotic fluid volume: II. The relationship of increased amniotic fluid volume to perinatal outcome. *Am J Obstet Gynecol.* 1984;150:250-4.
2. Chamberlain PF, Manning FA, Morrison I, Harman CR, Lange IR. Ultrasound evaluation of amniotic fluid volume. II. The relationship of increased amniotic fluid volume to perinatal outcome. *Am J Obstet Gynecol.* 1984;150:245-9.
3. Rutherford SE, Phelan JP, Smith CV, Jacobs N. The four-quadrant assessment of amniotic fluid volume: an adjunct to fetal heart rate testing. *Obstet Gynecol.* 1987;70:353-6.
4. Manning FA. Antepartum fetal testing: a critical appraisal. *Curr Opin Obstet Gynecol.* 2009;21(4):348-52.
5. Haws RA, Yakoob MY, Soomro T. Reducing still births: screening and monitoring during pregnancy and labor. *BMC Pregnancy Childbirth.* 2009;9(1):S5S.
6. Brace RA, Wolf EJ. Normal amniotic fluid changes throughout pregnancy. *Am J Obstet Gynecol.* 1989;161:382.
7. Williams RL, Creasy RK, Cunningham GC. Fetal growth and perinatal viability in California. *Obstet Gynecol.* 1982;59(5):624-32.
8. Schucker JL, Mercer BM, Audibert F. Serial amniotic fluid index in severe preeclampsia: a poor predictor of adverse outcome. *Am J Obstet Gynecol.* 1996;175:1018-23.

9. Conway DL, Adkins WB, Schroeder B, Langer O. Isolated oligohydramnios in term pregnancy: is it a clinical entity? *J Matern Fetal Med.* 1998;7:197-200.
10. Magann EF, Chauhan SP, Kinsella MJ. Antenatal testing among 1001 patients at high risk. The role of ultrasonographic estimate of amniotic fluid volume. *Am J Obstet Gynecol.* 1999;180:1330-6.
11. Pradhan S, Adhikari A, Pradhan P. Relationship between amniotic fluid index and perinatal outcome.
12. Voxman EG, Tran S, Wing DA. Low amniotic fluid index as a predictor of adverse perinatal outcome. *J Perinatol.* 2002;22(4):282-5.
13. Zhang J, Troendle J, Meikle S. Isolated oligohydramnios is not associated with adverse perinatal outcomes. *BJOG.* 2004;111:220-5.
14. Mushtaq E, Parveen S, Shaeen F. Perinatal outcome in patients with isolated oligohydramnios at term: a prospective study. *J Preg Child Health.* 2017;4:332.
15. Kavitha G. Pregnancy outcome in isolated oligohydramnios at or beyond 34 weeks of gestation. *Int J Cur Res Rev.* 2015;7(13):62-8.
16. Sangeetha K, Rao J, Ashwini AP. Pregnancy outcome in amniotic fluid index less than 5 in term low-risk pregnancy. *International J Scientific Study.* 2015;3(3):69-73.
17. Sowmya K, Vargheese B, Borkar UY. Effect of isolated oligohydramnios in otherwise normal term pregnancy. *Int J Biomed Res.* 2014;5(2):98-101.

Cite this article as: Vishalakshi AL, Rani RP. Isolated oligohydramnios: effects on obstetric and perinatal outcome. *Int J Reprod Contracept Obstet Gynecol* 2018;7:635-8.