

Intravenous amino acids in trimester isolated oligohydramnios

Anagha Jinturkar^{1*}, Priti Bagade²

¹Associate Professor, Department of OBGY, BJ Medical College, Pune, Maharashtra, INDIA.

²Senior Resident, Department of OBGY, Government Medical College, Latur, Maharashtra, INDIA.

Email: dranagha37@gmail.com

Abstract

to determine the efficacy of maternal administration of intravenous amino acid solution in improving amniotic fluid volume in cases of isolated oligohydramnios and to observe its impact on mode of delivery and neonatal outcome. **Study design:** A prospective case-series. Place and duration of study: Government medical collage latur from June 2013 to May, 2014. **Methodology:** forty two women with singleton pregnancy, well established gestational age and clinically and sonographically proven isolated oligophydramnios in the third trimester before 36 weeks were administered amino acid solution intravenously after excluding case of premature rapture of membranes, congenital anomaly of fetus, maternal pulmonary, cardiovascular and hypertensive disorder, and severe placental insufficiency (raised S/D ratio). Pre-infusion and post-infusion amniotic fluid index (AFI) was measured and repeated weekly. Women were followed till delivery. **Result:** according to repeated measurement analysis of variance, mean pre-infusion AFI was 4.7 cm, mean one week ost-infusion AFI was 5.8 cm, mean two week post-infusion AFI was 6.2cm mean three week AFI was 6.3cm (p-value 0.029, significant) cesarean section became a predominant mode of delivery in this group without a firm evidence of associated fetal compromise. **Conclusion:** Amino acid infusion is an effective therapy for raising AFI in isolated oligohydramnios in this case series. Liberal use of cesarean section in this selected group should be carefully re-evaluated.

Keyword: oligohydramnios, amino acid infusion, amniotic fluid index, cesarean section rate.

*Address for Correspondence:

Dr. Anagha Jinturkar, Associate Professor, Department of OBGY, BJ Medical College, Pune, Maharashtra, INDIA.

Email: dranagha37@gmail.com

Received Date: 11/07/2016 Revised Date: 25/08/2016 Accepted Date: 20/09/2016

Access this article online

Quick Response Code:



Website:

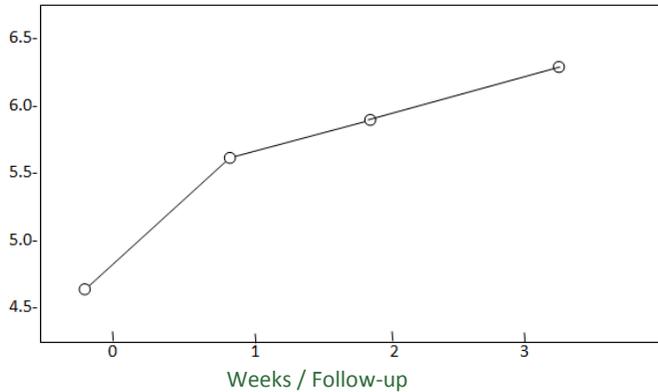
www.statperson.com

DOI: 24 September
2016

INTRODUCTION

Amniotic fluid surrounds fetus and provides the protective low resistance environment suitable for growth and development of fetus in oligohydramnios, volume of amniotic fluid may fall below the normal limits, oligohydramnios encountered in 3-5% of the pregnancies. Most cases are due to premature rupture of membranes, fetal growth restriction, fetal abnormalities, such as urinary tract malformations, chromosomal disorder and drugs e.g. NSAID's. isolated oligohydramnios refers to

absence of significant growth restriction, normal umbilical artery dopler velocimetry (absence of maternal and fetal risk factor) and failure to identify a recognizable underlying etiology objective measurement of amniotic fluid volume is done sonographically and denoted to as Amniotic fluid index (AFI) oligohydramnios of mild entities (AFI5-10 cm) is often associated with preterm birth and fetal growth restriction, Neonatal prognosis is often disastrous in case with severe oligohydramnios (AFI<5 cm) when it may also result in meconium staining fetal heart conduction abnormalities, poor tolerance of labour which often requires caestran section could lead to increase in both maternal and perinatal morbidity and mortality. Amino acids cross the placenta by active transport systems, and their concentration in the fetus are higher than in the mother. A significant reduction in amino acid fetal/maternal gradients and in umbilical veno-arterial difference has been demonstrated in intrauterine growth restricted (IUGR) pregnancies. In growth restriction associated with oligohydramnios, serum amino acids were found lower than those in normally grown fetuses. However no such



Graph 1: P-value = 0.029 (significant)

DISCUSSION

Amino acids form an important nutrient component of amniotic fluid. Maternal caloric consumption may profoundly alter amino acid concentration in amniotic fluid. The rise in mean AFI seen in this series after maternal intravenous infusion of amino acids is indicative of possible intrauterine nutrient deficiency. Prematurity increase the risk of adverse neonatal outcome and oligohydramnios is significantly increased in both spontaneous and indicated preterm deliveries compared to term controls. In the present study all preterm birth were associated with oligohydramnios irrespective of the indication for delivery. There is a continuing search for suitable therapies for pathologies that alter the amniotic fluid. Various studies have tried anten received, probably at the expense of a very high rate of cesarean section. Despite the fact that growth restricted fetuses with normal umbilical artery Doppler velocimetry appear to be at lower risk than those with abnormal velocity waveforms proper monitoring and treatment during pregnancy for all subsets of small for gestational age infants (premature and growth-restricted fetuses) cannot be overemphasized. Pregnancies with oligohydramnios and normal umbilical artery Doppler velocimetry are significantly less likely to experience an abnormal perinatal outcome as compared to those with abnormal Doppler indices. Although in the present series comparison with abnormal Doppler group is lacking but is suggested by the author that keeping a high threshold for surgical intervention in parturients with oligohydramnios and normal umbilical artery Doppler velocimetry may decrease the rate of cesarean section without raising adverse perinatal outcome. Another proposed direction for future research could be to combine intravenous amino acids to raise AFI with another therapeutic intervention like ante/intrapartum amnioinfusion to minimize the risk of fetal rate abnormalities in third trimester isolated oligohydramnios.

CONCLUSION

From the study conducted it can be suggested that intravenous amino acid solution is an effective therapy for raising AFI in isolated oligohydramnios in this case series. This improvement may not have been achieved with diet alone because of non-compliance and socioeconomic status in a developing country like India. However, larger studies with controlled trial are required. Liberal use of cesarean section in this selecting group should be carefully re-evaluated.

ACKNOWLEDGEMENT

I acknowledge contribution of my junior colleagues for data collection. Subject with an AFI of 5.0 cm or less have a higher rate of cesarean for fetal distress. Although in present series ≤ 5 cm AFI is not predictive of adverse perinatal outcome as measured by low Apgars and NICU admissions, which may be reflective of the aggressive antepartum and intrapartum management that these patients

REFERENCES

1. Volante E, Gramellini D, Moretti S, Kaihura C, Bevilacqua G, Alteration of the amniotic fluid and ion in third trimester oligohydramnios : effect on amniotic fluid volume. *J Coll Physician Surg Pak*.2007 Jun; 17 (6): 336-9.
2. Sherer DM. A review of amniotic fluid dynamics and the enigma of isolated oligohydramnios. *Am J Perinatol*. 2002 Jul; 19 (5): 253-66.
3. Gramellini D, Fieni S, Verrotti C, Piantelli G, Cavallotti D, Vadora E. Ultrasound evaluation of amniotic fluid volume : methods and clinical accuracy. *Acta Biomed*. 2004; 75, Supply 1: 40-4.
4. Chhabra S, Dargan R, Bawaskar R. Oligohydramnios: a potential marker for serious obstetric complications. *J Obstet Gynaecol*. 2007 Oct; 27 (7): 680-3.
5. Regnault TR, Feredman JE, Wilkening RB, Anthony RV, Hay WW, Jr. Fetoplacental transport and utilization of amino acids in IUGR - a review. *Placenta*. 2005 Apr; 26 Suppl A: S52 -62.
6. Underwood M, Sherman M. Nutritional characteristic of amniotic fluid. *Neo Review*. 2006; 7 (6): e310.
7. Yuan W, Duffner AM, Chen L, Hunt LP, Seller SM, Bernal AL. Analysis of preterm deliveries below 35 weeks gestation in a tertiary referral hospital in the UK. A case-control survey. *BMC Res Notes*.2010; 3: 119.
8. Suzuki S, Mine K, Sawa R, Yoneyama Y, Araki T. 10% maltose infusion therapy for oligohydramnios . *Australia and New Zealand Journal of obstetrics and Gynecology*.1999; 39 (3): 373-5.
9. Ahmad A. Amino-Acid Infusion in Oligohydramnios. *JK-Practitioner*.2006; 13(3): 140-1
10. Chhabra S, Dargan R, Nasare m. Antepartum transabdominal amnioinfusion. *Int J Gynaecol Obstet*. 2007 May; 97 (2): 95-9.

11. Chu HN, Shen MJ. Treating oligohydramnios with extract of *Salvia miltiorrhiza*: A randomized control trial. *Ther Clin Risk Manag*. 2008 Feb; 4(1):287-90.
12. Malhotra B, Deka D. Duration of the increase in amniotic fluid index (AFI) after acute maternal hydration. *Arch Gynecol Obstet*. 2004 Mar; 269(3):173-5.
13. Hofmeyer GJ, Guimezoglu AM. Maternal hydration for increasing amniotic fluid volume in oligohydramnios and normal amniotic fluid volume. *Cochrane Database Syst Rev*. 2000 (2): CD000134.
14. Umer A, Chohan MA. Intravenous maternal hydration and neonatal outcome. *Acta Biomed*. 2004; 75, Suppl 1:71-5.
15. Tchirikov M, Kharkevich O, Steetskamp J, Beluga M, Strohner M. Treatment of Growth - Restricted Human Fetus with Amino Acids and Glucose Supplementation through a Chronic Fetal Intravascular Perinatal Port System. *Eur Surg Res*. 2010 Aug 20; 45 (1): 45-9.
16. Haws RA, Yakoob MY, Soomro T, Menezes EV, Darmstadt GL, Bhutta ZA. Reducing stillbirths: screening and monitoring during pregnancy and labour. *BMC Pregnancy Childbirth*. 2009; 9 Suppl 1: S5.
17. Voxman EG, Tran S, Wing DA. Low amniotic fluid index as a predictor of adverse perinatal outcome. *J Perinatol*. 2002 Jun; 22 (4): 282-5.
18. Locatelli A, Vergani P, Toso L, Verderio M, Pezzullo JC, Ghidini A. Perinatal outcome associated with oligohydramnios in uncomplicated term pregnancies. *Arch Gynecol Obstet*. 2004 Jan; 269 (2): 130-3.
19. Sheiner E, Hadar A, Shoham-Vardi I, Hallak M, Katz M, Manzor M. The effect of meconium on perinatal outcome: a prospective analysis. *J Matern Fetal Neonatal Med*. 2002 Jan; 11 (1): 54-9.
20. Alchalabi A, Obeidat BR, Jallad MF, Khader YS. Induction of labor and perinatal outcome: the amniotic fluid index. *Eur J Obstet Gynecol Reprod Biol*. 2006 Dec; 129 (2): 75-9.
21. Danon D, Ben-Haroush A, Yogev Y, Bar J, Hod M, Pardo J. Prostaglandin E2 induction of labor for isolated oligohydramnios in women with unfavorable cervix at term. *Fetal Diagn Ther*. 2007; 22 (1): 75-9.
22. Seyam YS, Al-Mahmeid MS, al-Tamimi HK. Umbilical artery Doppler flow velocimetry in intrauterine growth restriction and its relation to perinatal outcome. *Int J Gynecol Obstet*. 2002 May; 77 (2): 131-7.
23. Zhang YL, Liu JT, Gao JS, Yang JQ, Bian XM. Influential and prognostic factors of small for gestational age infants. *Chin Med J (Engl)* 2009 Feb 20; 122 (4): 386-9.
24. Ahmad H, Munim S. Isolated oligohydramnios is not an indicator for adverse perinatal outcome. *J Pak Med Assoc*. 2009 Oct; 59 (10): 691-4.
25. Carroll BC, Burner JP. Umbilical artery Doppler Velocimetry in pregnancies complicated by oligohydramnios. *J Reprod Med*. 2000 Jul; 45 (7): 562-6.

Source of Support: None Declared
Conflict of Interest: None Declared