

Case Report

Isolated Oligohydramnios Managed Successfully with Maternal Oral Hydration: A Case Report

*Aliyu RM¹, Adesiyun AG¹, Aliyu I², Randawa AJ¹.

Departments of Obstetrics and Gynaecology¹ and Radiology², Ahmadu Bello University Teaching Hospital, Shika-Zaria, Kaduna state.

Abstract

Antenatal management of oligohydramnios can be challenging to the Obstetrician and a source of anxiety to the patient especially when prematurity is of great concern. A multipara who was found to have a fundal height of 20 weeks at 28 weeks' gestation with no complaint of liquor drainage. Ultrasound scan revealed a singleton viable fetus, single pocket of liquor of 1.24cm and no fetal anomaly. She had acute oral hydration with two liters of water. Amniotic fluid index (AFI) was 5cm and 10.4cm by 24 hours and one-week post hydration respectively. AFI remained normal till at 35 and 37 weeks when it decreased and had similar courses of oral hydration repeated with normalization of AFI. She had an uneventful delivery at term to a normal baby of average weight. Maternal oral hydration should be considered as a modality of increasing amniotic fluid volume especially in resource constrained settings.

Keyword: Oligohydramnios, Maternal oral hydration, Amniotic Fluid.

*Corresponding author:

Aliyu Rabi'at Muhammad,
Department of Obstetrics and Gynaecology,
Ahmadu Bello University Teaching Hospital,
Shika-Zaria. +2348037016884. rabaahmb@ymail.com

Introduction

The amniotic fluid (AF) provides an ideal environment for normal fetal growth and development. Oligohydramnios is commonly defined as amniotic fluid index (AFI) of less than 5 cm or single deepest pocket of less than 2cm.^{1,2} Oligohydramnios affects about 3-5% of pregnancies. It is considered a risk factor for adverse perinatal outcome due to increased incidence of cord compression resulting in fetal hypoxia.³⁻⁵ Maternal morbidity is also increased because of increased incidence of labour induction and caesarean section largely due to fetal distress in pregnancies complicated by oligohydramnios.⁶⁻⁸ Oligohydramnios is an obstetric complication associated with an

intrauterine growth restriction, impaired fetal pulmonary development, pressure induced deformities, congenital malformations, increased risk of fetal distress, increased caesarean section rates and meconium aspiration.^{1, 9} Isolated oligohydramnios (IO) occurs when oligohydramnios exists in the absence of fetal structural or chromosomal abnormalities, fetal growth restriction, intrauterine infection and known maternal disease and accounts for less than half of cases of oligohydramnios.¹⁰ Due to the potential adverse fetal outcome it poses, oligohydramnios has been utilized as an indication for delivery and has been found to a leading cause of labour induction in some centers.^{11, 12}

Antenatal management of oligohydramnios can be challenging to the obstetrician and a source of

anxiety to the patient especially when prematurity is of great concern. Maternal hydration status is related to amniotic fluid volume.¹³ There is some evidence that maternal hydration causes increase in amniotic fluid volume in women with reduced amniotic fluid with the oral route of hydration being superior to the intravenous route in increasing amniotic fluid volume.¹⁰⁻¹⁶ However, evidence to support this intervention in routine clinical practice is lacking.¹⁰ We present a case of IO managed successfully with maternal oral hydration in our poor-resourced setting.

Case Report

Mrs. A.B was a 35-year-old G₆P₄⁺¹ (3 alive) who presented for routine antenatal visit at 28 weeks' gestation (from an early scan done at 11 weeks) and was found to have a fundal height of 20 weeks at examination. The index pregnancy was booked in our hospital at 15 weeks' gestation and the fundal height had been appropriate with gestational age up till her follow up at 24 weeks' gestation.

She was well and had no history of liquor drainage, known co-morbidity or history ingestion of traditional medications. She had however received Artemisinin-based combination therapy for acute malaria at 20 weeks and was also taking iron and folic acid supplements. General and systemic examination findings were normal except for a small -for-date uterine size of 20 weeks which was not compatible with her gestational age of 28 weeks. Pelvic examination was also normal and liquor drainage was not demonstrable. Obstetric and anomaly scan revealed a viable singleton fetus in longitudinal lie and cephalic presentation at 28 weeks + 2days; a single pocket of amniotic fluid that measured 1.24cm and no fetal anomaly detected. Serum electrolytes, full blood count and blood glucose were normal. Tests for HIV, syphilis and hepatitis were all negative. A diagnosis of Isolated Oligohydramnios was made.

She was counseled on the diagnosis and management. She was admitted and commenced on a single course of daily oral hydration where she was given two liters of water over two hours in addition to her routine water intake. Repeat AFI measurements at 24 hours and then on alternate days were ≥ 5 cm. By the 7th day of admission, AFI was 10.4cm and there was normal fetal anatomy and biometry. Fetal surveillance was done by twice daily fetal auscultation and maternal perception of fetal kicks were reported to be normal.

She was allowed home on her routine fluid intake after counselling on the need for weekly follow up. The weekly AFI had remained normal up till 35 and 37weeks' gestation when it became 4.8cm and 5cm respectively and similar courses of oral hydration (two liters of water drunk over two hours) were given at both instances with restoration of AFI to normal

levels by 24 hours post hydration. Weekly biophysical profile was commenced at 32 weeks' gestation and it also remained normal. At 38 weeks' gestation, the AFI was 6.9cm. In view of a normal AFI and normal biophysical profile at term, she was allowed to have spontaneous onset of labour and counseled on the need to continue fetal surveillance. She however defaulted from subsequent antenatal visits for social reasons.

She had spontaneous but precipitate labour at 41 weeks' gestation and delivered a live female baby at home who cried immediately after birth. She was seen with the baby at the third day of life when she presented for immunization. The baby weighed 2.8kg and had no gross anomaly. The puerperal and neonatal period were uneventful.

Discussion

Maternal oral hydration was found to increase amniotic fluid volume in a woman with IO in this case report. This restoration of AF to normal has enabled prolongation of pregnancy and aversion of adverse perinatal outcomes like indicated preterm delivery with associated prematurity and its complications. The popular modality of managing oligohydramnios has been amnioinfusion which leads to a transient increase in AFV and is not without complications. Additionally, amnioinfusion requires expertise which is not available in our setting.

Management of oligohydramnios is challenging especially in low resource settings. Chromosomal analysis is an additional investigative tool employed in determining the etiology of oligohydramnios because it can be associated with chromosomal abnormalities. Chromosomal study was not done for the patient because even in high resource settings, it is usually indicated when fetal anomalies are detected on ultrasound.¹⁷ There was no fetal anomaly detected during ultrasound scan in our patient coupled with the fact that the expertise is not readily available in our setting. Being a high-risk pregnancy, additional fetal surveillance is warranted. Fetal surveillance for pregnancies complicated by oligohydramnios includes fetal heart rate auscultation, serial liquor volume measurement, non-stress test and doppler velocimetry of umbilical and fetal vessels.¹⁸ However, doppler velocimetry is usually indicated when placental insufficiency is suspected. This patient had no identified risk of placental insufficiency and fetal biometry was normal. Hence fetal monitoring in this case was limited to fetal heart auscultation, weekly liquor volume assessment and biophysical profile.

Maternal hydration status has been closely linked to amniotic fluid volume and maternal hydration has been proposed as a possible effective treatment in conservative management of IO. However, more evidence is needed to support this intervention in

clinical practice.^{10, 14} Some studies have suggested evidence of maternal hydration increasing amniotic fluid volume in pregnancies complicated by oligohydramnios though the exact mechanism by which it does so remains unclear.¹⁰ However, increased uteroplacental perfusion and decreased maternal plasma osmolality have been postulated.^{19, 20} Evidence suggests oral hydration is superior to intravenous hydration in increasing the amniotic fluid volume and the duration of hydration is likely to be more important than dose of fluid for hydration.^[10] Tito *et al* found maternal hydration can prolong gestation by up to eight weeks by ensuring daily intake of 1500-2500mls per day.⁹

Pregnancy was prolonged by 13 weeks in our patient with only three courses of acute oral hydration (two liters of water over two hours). This is similar to report in 2014 by Oloyede *et al* who employed maternal hydration as a key intervention in a woman with severe oligohydramnios at 23 weeks' gestation with resultant normalization of amniotic fluid volume.²¹ Though Malhotra and Deka suggested duration of increase to last less than 24 hours,²² normalization of AFI for seven weeks was observed in our patient before a repeat diagnosis of oligohydramnios was made. Maternal hydration has been found to be safe as no adverse effect was reported in a Cochrane review.¹⁰

Conclusion

This case report highlights use of a simple, cheap, readily available and safe modality in conservative management of oligohydramnios especially in resource-constrained setting. Maternal oral hydration may be an effective intervention that can be employed to increase AFV especially in settings where amnioinfusion is not readily available. Use of maternal oral hydration in IO may 'demedicalize' management of affected pregnancies and may improve perinatal outcome by preventing preterm delivery.

References

- Shrem G, et al. Isolated oligohydramnios at term as an indication for labor induction: A systematic review and meta-analysis. *Fetal Diagn Ther*. 2016; 40(3):161-173.
- Magann E, et al. Amniotic fluid index and single deepest pocket: weak indicators of abnormal amniotic volumes. *Obstet Gynecol*. 2000; 96(5):737-40.
- Rezaie Kakhkhaie K, et al Perinatal outcome after diagnosis of oligohydramnios at term. *Iran Red Crescent Med J*. 2014;16(5):e11772.
- Hsieh TT, et al. Perinatal outcome of oligohydramnios without associated premature rupture of membranes and fetal anomalies. *Gynecol Obstet Invest*. 1998;45(4):232-6.
- Madhavi K RP. Clinical Study of Oligohydramnios, Mode of Delivery and Perinatal Outcome. *IOSR Journal of Dental and Medical sciences*. 2015: 6-11.
- Alchalabi HA, et al. Induction of labor and perinatal outcome: the impact of the amniotic fluid index. *Eur J Obstet Gynecol Reprod Biol*. 2006 ;129(2):124-7.
- Jagatia K, Singh S PC. Maternal and Fetal Outcome in Oligohydramnios. *Int J Med Sci Public Health*. 2015: 724-7.
- Tasneem SA, Kolar A, Ali MK QF. A Study of Amniotic Fluid Index in Term Pregnancy. *Int J Curr Res and Acad Rev*. 2014: 147-52.
- Patrelli TS, et al. Maternal hydration therapy improves the quantity of amniotic fluid and the pregnancy outcome in third-trimester isolated oligohydramnios: a controlled randomized institutional trial. *J Ultrasound Med*. 2012;31(2):239-44.
- Gizzo S, et al. An Update on Maternal Hydration Strategies for Amniotic Fluid Improvement in Isolated Oligohydramnios and Normohydramnios: Evidence from a Systematic Review of Literature and Meta-Analysis. *PLoS One*. 2015;10(12):e0144334.
- Sherer DM, Langer O. Oligohydramnios: use and misuse in clinical management. *Ultrasound Obstet Gynecol*. 2001;18(5):411-9.
- Leeman L, Almond D. Isolated oligohydramnios at term: is induction indicated? *J of Fam Pract*. 2005: 25-32.
- Magann EF, Sandlin AT, Ounpraseuth ST. Amniotic Fluid and the Clinical Relevance of the Sonographically Estimated Amniotic Fluid Volume: Oligohydramnios. *J Ultrasound Med*. 2011;30(11):1573-85
- Hofmeyr GJ, Gülmezoglu AM. Maternal hydration for increasing amniotic fluid volume in oligohydramnios and normal amniotic fluid volume. *Cochrane database Syst Rev*. 2002(1):CD000134. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10796151>
- Kilpatrick, S J, et al. Maternal Hydration Increases Amniotic Fluid Index. *Obstet Gynecol*. 1991; 78:1098-102.
- Ghafarnejad M, Tehrani MB, Anaraki FB, et al. Oral hydration therapy in oligohydramnios. *J Obstet Gynaecol Res*. 2009:895-900.
- Singer A, et al. microarray findings in pregnancies with oligohydramnios- a retrospective cohort study and literature review. *J Perinat Med*. 2019; 48(1):53-58.
- Bhattacharya R, Akshaya S. Antenatal and intrapartum surveillance in patients with oligohydramnios in a tertiary hospital. *Int J Reprod Contracep Obstet Gynaecol*. 2017; 5(8):2511-2514.
- Doi S, et al. Effect of maternal hydration on oligohydramnios: a comparison of three volume expansion methods. *Obstet Gynecol*. 1998;92(4 Pt 1):525-9.
- Umer A, Chohan MA. Intravenous maternal hydration in third trimester oligohydramnios: effect on amniotic fluid volume. *J Coll Physicians Surg Pak*. 2007;17(6):336-9.
- Oloyede OA, et al. Severe Oligohydramnios at Mid trimester: Maternal hydration- A case report. *Nig Med Pract*. 2014; 65(1-2). Available at <https://www.ajol.info/index.php/nmp/cart/view/103906/94022>.
- Malhotra B, Deka D. Duration of the increase in amniotic fluid index (AFI) after acute maternal hydration. *Arch Obstet Gynecol*. 2004; 269(3):173-5