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Original Research Article

A Study to Determine the Feto-Maternal Outcome in Oligohydramnios: A Prospective Study

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Abstract

Aim: The aim of the present study was to determine the feto-maternal outcome in oligohydramnios.

Methods: A prospective study was conducted of all ANC'S admitted in labor room in Obstetrics and Gynaecology. All the admitted term patients underwent ultrasound examination to assess the liquor. Amount of liquor was calculated using four quadrant method where deepest pockets in each quadrant was measured and their sum gives the AFI. Out of 3680 patients 100 antenatal women at term had AFI of less than 8 cms and were included in the study.

Results: In our study, 58% of women were 20-29 years old, 30% were >30, and 12% were under 20. Primigravidas were 54% and multigravidas 46%. Most cases (82%), were between 37 and 40 weeks, while 18% were between 40 and 42 weeks. In 100 pregnant women, 36% experienced non-reassuring NST, 45% had protracted labour, 10% had intrauterine growth restriction, 4% had malpresentations, 2% had foetal malformations, and 3% had postpartum haemorrhage. 64% had borderline AFI and 36% severe oligohydramnios. Clear liquor was seen in 72%, thin liquor in 16%, and thick liquor in 6%. We found 15% foetal discomfort, 5% CPD, 4% malpresentations, 3% failed induction, and 1% deep transverse arrest.

Conclusion: Oligohydramnios increases pregnancy difficulties and perinatal death. An intrapartum AFI assessment would identify women who need more antepartum surveillance for pregnancy problems. The babies of women with oligohydramnios are usually smaller, but with foetal surveillance and appropriate intervention, they can survive.

Keywords: Oligohydramnios; Maternal Outcome; Fetal Outcome

Introduction

Quantitative estimation of amniotic fluid volume is a part of routine obstetric scan. Semi quantitatively the amount of amniotic fluid is described using the amniotic fluid index. Oligohydramnios occurs in about 1% to 5% of pregnancies at term. Amniotic fluid surrounds the developing fetus. Its existence plays an essential role in fetal development. [1] At first, amniotic fluid is mainly water with electrolytes, but by about the 12- 14th week the liquid also contains proteins, carbohydrates, lipids and phospholipids and urea, all of which aid in the growth of the fetus. [2] The amniotic fluid volume varies with the gestational age from 200ml at 16weeks, 1000ml at 28 weeks, 900ml at 36 weeks and 800ml at 40 weeks of gestation. A good clinical examination can pick up most subjects of abnormal liquor volume and can be confirmed ultrasonographically. [3] As per definition of liquor assessment an AFI less than 5cm is known as oligohydramnios, AFI from 5 to 8 cm has been termed borderline AFI. [4] Oligohydramnios is associated with increased fetal malformations and in the absence of malformations, to be complicated by fetal growth restriction, maternal morbidity and adverse perinatal outcome. [5] Hence every case of oligohydramnios needs careful antenatal evaluation, parental counseling, individualized decision regarding timing and mode of delivery, continuous intrapartum fetal monitoring and good neonatal care for optimum perinatal outcome. [6]

During antenatal fetal surveillance, amniotic fluid assessment is a crucial barometer to know the fetal status. [7] Primal sonographic sign of an obstetrical issue is abnormal amniotic fluid volume. [8] Normally during third trimester, around 3% to 8% of pregnant women are anguishing from low

amniotic fluid at any point of pregnancy. It is normally anticipated as a sign of placental insufficiency. [9] Most severe and frequent complication of pregnancy is Oligohydramnios and the incidence of this is observed to be about 1-5% of total pregnancies. [10] Compression of uterine wall and adherent fetal parts and prolonged external compression and abnormal fetal development due to prolonged Oligohydramnios boost the risk of pulmonary hypoplasia includes fetal skeletal and facial deformities. Oligohydramnios also increase the caesarian section rate for fetal distress up to 41%. [11]

The aim of the present study was to determine the feto-maternal outcome in oligohydramnios.

Materials and Methods

A prospective study was conducted of all ANC'S admitted in labor room in Obstetrics and Gynaecology AIIMS, Patna, Bihar, India for two year s. All the admitted term patients underwent ultrasound examination to assess the liquor. Amount of liquor was calculated using four quadrant method where deepest pockets in each quadrant was measured and their sum gives the AFI. Out of 3680 patients 100 antenatal women at term had AFI of less than 8 cms and were included in the study. Maternal & neonatal outcome was observed in terms of AFI, obstetric complications, mode of delivery, Apgar score at delivery, birth weight, NICU admission and perinatal morbidity and mortality.

Inclusion Criteria

Gestational age 37-42 weeks of gestation Amniotic fluid Index: <8 cm Fetus with no obvious congenital anomaly Intact membranes at the time of admission.

Exclusion Criteria

- Women with Premature Rupture of Membranes before admission
- Multiple pregnancies Gestational age < 37 weeks
- Antepartum hemorrhage
- Fetal anomalies Maternal risk factors

Study was conducted to observe outcome of labour in form of perinatal morbidity and maternal outcome in form of induction and deliveries: (1) To study affects Oligohydramnios on fetal outcome in form of – (a) Fetal distress, (b) Growth retardation, (c) NICU admission; (2) To study APGAR scores of newborn babies in relation to Oligohydramnios; (3) To study incidence of congenital malformation; (4) To study early neonatal morbidity and mortality; (5) To study maternal morbidity in form of operative delivery and induced labour. A detailed history and examination were done. All required investigation done. Oligohydramnios confirmed by measuring AFI. Routine management in form of rest, left lateral position, oral and intravenous hydration and control of etiological factor was done if present. Fetal surveillance was done by USG, modified Biophysical profile and Doppler. Decision of delivery by either induction or elective or emergency LSCS was done as per required. Some patients were already in labour and other allows going in spontaneous labour. Cases were than studied for maternal and perinatal outcome.

Results

Table 1: Demographic details

		No of patients with AFI <8 cm	Percentage
Maternal age	<20 years	12	12
	20 to 29 years	58	58
	>30 years	30	30
Parity	Primigravida	54	54
	Multigravida	46	46
Gestational age	37 to 40 weeks	82	82
	40 to 42 weeks	18	18

In our study 58% of women were aged between 20-29 years, 30% were >30 years and only 12% were less than 20 years. Number of Primigravidas and multigravidas were almost equal each being 54% and 46% respectively. Majority of the cases were between 37 to 40 weeks of gestation constituting 82% and 18% were between 40 to 42 weeks.

Table 2: Obstetric complications and Amniotic fluid characteristics

Complications	No of patients with AFI < 8 cm	Percentage
Malpresentation	4	4
IUGR	10	10
NST-non reassuring	36	36
Prolonged labor	45	45
Fetal anomalies	2	2

PPH	3	3
Amniotic fluid		
AFI 5-8 cm	64	64
AFI <8 cm	36	36
Clear	72	72
Thin meconium	16	16
Thick meconium	6	6

Out of 100 antenatal women, Non-reassuring NST was seen in 36% of cases, 45% had prolonged labour, intrauterine growth restriction was found in 10%, malpresentations were seen in 4%, fetal anomalies in 2% and 3% had postpartum hemorrhage. Borderline AFI was seen in 64% and 36% had severe oligohydramnios. Clear liquor was demonstrated in 72% of cases, thin meconium stained liquor was seen in 16% and 6% had thick meconium stained liquor.

Table 3: Indications for cesarean section

Indications for cesarean	No of patients with AFI< 8 cm	Percent (%)
Fetal distress	15	15
CPD	5	5
Mal-presentation	4	4
Deep transverse arrest	1	1
Failed induction	6	6

Fetal distress was seen in 15%, CPD in 5%, 4% of malpresentations, 3% had failed induction and deep transverse arrest occurred in 1%.

Table 4: Perinatal and Neonatal outcomes

Outcomes	Number	Percentage (%)
Birth weight		
1 – 2 kg	20	20
2 - 3 kg	50	50
>3 kg	30	30
Apgar scores < 7	20	20
Nicu Admissions	30	30
Observation for 48 hrs	17	17
RDS	24	24
Mechanical ventilation	4	4
Sepsis	10	10
Jaundice	3	3
Anomalies	2	2
Death	2	2

Out of 100 babies delivered birth weight was >3kg in 60 neonates (30%), 100 (50%) were between 2 to 3 kgs and 40 (20%) between 1 – 2 kg. low agar scores i.e. <7 was seen in 50 newborns (25%) and 60 (30%) babies required NICU admission.

Discussion

Quantitative estimation of amniotic fluid volume is a part of routine obstetric scan. Semi quantitatively the amount of amniotic fluid is described using the amniotic fluid index. Oligohydramnios occurs in about 1% to 5% of pregnancies at term. Amniotic fluid surrounds the developing fetus. Its existence plays an essential role in fetal development. [1] At first, amniotic fluid is mainly water with electrolytes, but by about the 12- 14th week the liquid also contains proteins, carbohydrates, lipids and phospholipids and urea, all of which aid in the growth of the fetus. [2]

In our study 58% of women were aged between 20-29 years, 30% were >30 years and only 12% were less than 20 years. Number of Primigravidas and multigravidas were almost equal each being 54% and 46% respectively. Majority of the cases were between 37 to 40 weeks of gestation constituting 82% and 18% were between 40 to 42 weeks. Majority of the cases were between 37 to 40 weeks of gestation constituting 80% and 20% were between 40 to 42 weeks. These findings are comparable with the study done by Biradar KD et al, Patel PK et al but contrast result was found in study done by Vidyasagar et al (80.49%). [12-14] Almost 35.5% participants were Primigravida. In similar study done by Biradar et al, Vidyasagar et

al and Patel RK et al, where Primigravida participants were 33.0%, 46.3% and 35.8% respectively. [12-14]

Out of 100 antenatal women, Non-reassuring NST was seen in 36% of cases, 45% had prolonged labour, intrauterine growth restriction was found in 10%, malpresentations were seen in 4%, fetal anomalies in 2% and 3% had postpartum hemorrhage. Borderline AFI was seen in 64% and 36% had severe oligohydramnios. Clear liquor was demonstrated in 72% of cases, thin meconium stained liquor was seen in 16% and 6% had thick meconium stained liquor. The incidence of oligohydramnios was 4.70% among the 4254 number of deliveries in our hospital in contrast to 3.8% observed by Rhoades JS et al. [15] Out of 100 babies delivered birth weight was >3kg in 60 neonates (30%), 100 (50%) were between 2 to 3 kgs and 40 (20%) between 1 – 2 kg. low agar scores i.e. <7 was seen in 50 newborns (25%) and 60 (30%) babies required NICU admission. Casy et al reported 6.4% perinatal death. In our study perinatal mortality was 2%. [16] Better identification of fetus at high risk is done. Increased induction of labour and elective caesarean deliveries are currently practiced for better perinatal outcome. Early detection of oligohydramnios and its management may help in reduction of maternal & fetal morbidity and mortality. The measurement and its comparison to the index are important in helping to determine fetal and maternal health.

The finding of oligohydramnios can be associated with fetal anomalies, pre mature rupture of membranes, uteroplacental insufficiency (e.g. growth retardation, postdatism, abnormal placentation, maternal systemic illness etc.), and multiplepregnancies or can be idiopathic. Ultrasound detection of this complication should prompt the clinician to thoroughly evaluate the mother for hypertension, diabetes or other medical comorbidities. In addition, a thorough fetal anatomic survey focusing on the genitourinary tract and an attempt at visualizing free amniotic bands should be performed with ultrasound. Oligohydramnios and perinatal morbidity and mortality has been well established by Manning et al. [17]

Conclusion

Oligohydramnios is associated with high rate of pregnancy complications and increased perinatal morbidity and mortality. AFI assessed ante partum, and intrapartum would help to identify women who need increased ante partum surveillance for pregnancy complications. Women with oligohydramnios usually have lower birth weight babies but can expect a safe and good outcome with proper fetal surveillance and timely intervention. Due to intrapartum complication and high rate of perinatal morbidity and mortality, rates of caesarean section are rising, but decision between vaginal delivery and caesarean section should be well balanced so that unnecessary maternal morbidity prevented and other side timely intervention can reduce perinatal morbidity and mortality.

References

1. Asnafi N, Bouzari Z, Mohammadnetadj M. Oligohydramnios and pregnancy outcome: ten-years review. International Biological and Biomedical Journal. 2015 Feb 10;1(1):23-8.
2. Fedakâr A, Semiz S, Peker N. Clinical features of babies born to mothers with oligohydramnios: a two years' experience. Journal of Pregnancy and Child Health. 2016;3(2).
3. Ray P, Bulusu R, Konar C. A prospective study on the feto-maternal outcome in cases of borderline amniotic fluid index at term in a rural hospital. Indian Journal of Obstetrics and Gynecology Research. 2017 Mar 15;4(1):89-91.
4. Patel PK, Pitre DS, Gupta H. Pregnancy outcome in isolated oligohydramnios at term. National Journal of Community Medicine. 2015 Jun 30;6(02):217-21.
5. Preshit Chate. et al. Pregnancy outcome after diagnosis of oligohydramnios at term. Int J Reprod Contracept Obstet Gynecol. 2013; 2 (1) :23-26.
6. Kahkhaie KR, Keikha F, Keikhaie KR, Abdollahimohammad A, Salehin S. Perinatal outcome after diagnosis of oligohydramnious at term. Iranian Red Crescent Medical Journal. 2014 May;16(5).
7. Bansal D, Deodhar P. A clinical study of maternal and perinatal outcome in oligohydramnios. J Res Med Den Sci. 2015;3(4):312-6.
8. Williams Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hauth JC, Wenstrom KD: 21st Edition USA; McGraw Hill. Fetal Growth and Development. Chapter 7:142-3.
9. Gaikwad PR, Oswal MS, Gandhewar MR, Bhatiyani BR. Perinatal outcome in oligohydramnios and borderline amniotic fluid index: a comparative study. Int J Reprod Contracept Obstet Gynecol. 2016; 5:1964-8.
10. Moore TR. Clinical assessment of amniotic fluid. Clin Obstet Gynaecol. 1997;40(2):303-13.
11. Casey BM, McIntire DD, Bloom SL, Lucas MJ, Santos R, Twickler DM, et al. Pregnancy outcomes after antepartum diagnosis of oligohydramnios at or beyond 34 weeks of gestation. Am J Obstet Gynecol. 2000;182(4):909-12.

12. Biradar KD, Shamanewadi AN. Maternal and perinatal outcome in oligohydramnios: study from a tertiary care hospital, Bangalore, Karnataka, India. Int J Reprod Contracept Obstet Gynecol. 2016; 5:2291-4.
13. Vidyasagar V, Chutani N. Fetomaternal outcome in cases of oligohydramnios after 28 weeks of pregnancy. Int J Reprod Contracept Obstet Gynecol. 2015; 4:152-6.
14. Patel PK, Pitre DS, Gupta H. Pregnancy outcome in isolated oligohydramnios at term. Ntl J Commun Med. 2015;6(2):84-8.
15. Rhoades JS, Stout MJ, Macones GA, Cahill AG. Effect of Oligohydramnios on Fetal Heart Rate Patterns during Term Labor Induction. American journal of perinatology. 2019 Jun; 36(07):715-22.
16. Casey BM, McIntire DD, Bloom SL, Lucas MJ, Santos R, Twickler DM, Ramus RM, Leveno KJ. Pregnancy outcomes after antepartum diagnosis of oligohydramnios at or beyond 34 weeks' gestation. American journal of obstetrics and gynecology. 2000 Apr 1;182(4): 909-12.
17. Manning FA, Platt LD, Sipos L. Antepartum fetal evaluation: Development of a fetal biophysical profile. Am J Obstet Gynecol. 1980; 1 36(6):787-95.