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Original Research Article

A study on maternal and perinatal outcome in pregnancy with oligohydramnios: study from a tertiary care hospital, Karnataka, India

Shilpa Nabapure*, Rashmi P. S., Prema Prabhudeva

Department of Obstetrics and Gynecology, S. S. Institute of Medical Sciences and Research Centre, Davanagere, Karnataka, India

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*Correspondence:

Dr. Shilpa Nabapure,

E-mail: shilpanabapure@gmail.com

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ABSTRACT

Background: Oligohydramnios is described as a condition with decreased amniotic fluid volume relative to gestational age. It is a severe and common complication of pregnancy which is associated with increased maternal morbidity and adverse perinatal outcomes. This study was conducted to find out the significance of oligohydramnios in determining the maternal and perinatal outcome in pregnant women with oligohydramnios.

Methods: The present study is a hospital-based study conducted in the department of obstetrics and gynecology, of SSIMS and RC Davanagere, during the period between August 2018 to April 2019. Detailed clinical history was taken, AFI was measured using Phelan's four quadrant ultrasound technique. All the information was entered in the proforma and analyzed.

Results: The mean age group of the study participants was 26.36 ± 4.46 years. Majority (51.9%) of them were primigravida. Gestational age, birth weight and abnormal Doppler study were found to have an association with the perinatal outcome. Perinatal mortality in the present study was 4%.

Conclusions: Oligohydramnios is a frequent occurrence in obstetrics and this condition requires intensive surveillance and proper antenatal care.

Keywords: Oligohydramnios, Maternal, Perinatal outcome

INTRODUCTION

Amniotic fluid is a clear, slightly yellowish liquid that surrounds the fetus during pregnancy. It is contained in the amniotic sac. Amniotic fluid volume is related to gestational age. It measures about 50 ml at 12 weeks, 400 ml at 20 weeks, 800 ml at 28 weeks and reaches peak of 1 litre at 36-38 weeks. Thereafter the amount diminishes till at term it measures about 600-800 ml.¹

Amniotic fluid provides a protected environment for the growing fetus. During pregnancy, it acts as a shock absorber, maintains even temperature, allows for growth and free movement of the fetus and prevents adhesion

between fetal parts and amniotic sac. During labour, the amnion and chorion are combined to form a hydrostatic wedge which helps in dilatation of cervix, it guards against umbilical cord compression.¹

Oligohydramnios is described as a condition with decreased amniotic fluid volume relative to gestational age.² It is a severe and common complication of pregnancy and the incidence of this is reported to be around 1 to 5% of total pregnancies.³ It is a condition where the liquor amnii is deficient in amount to the extent of less than 200 ml at term. Sonographically, it is defined when the maximum vertical pocket of liquor is less than 2 cm or when amniotic fluid index (AFI) is less than 5 cm.¹

Pre-eclampsia, intrauterine growth restriction (IUGR) and post-dated pregnancies are the commonest causes of reduced amniotic fluid during third trimester of pregnancy due to chronic placental insufficiency and reduced renal circulation.² The common clinical features are smaller symphysiofundal height, fetal malpresentation, and undue prominence of fetal parts and reduced amount of amniotic fluid.¹

Oligohydramnios is associated with increased maternal morbidity in terms of increase rate of induction of labour, prolonged labour and caesarean section due to malpresentation. It is also associated with adverse perinatal outcomes such as preterm delivery, low birth weight, fetal distress in labour, meconium passage, low Apgar score, neonatal resuscitation and NICU admission.^{1,2} The sequelae from long standing oligohydramnios includes pulmonary hypoplasia, potter's syndrome, club foot, club hand and dislocation of hip.³

Thus, it appears prudent to evaluate amniotic fluid volume (AFV) during any assessment of fetal status whether as a part of antenatal testing protocol or in the labour suite.

Thus, this study was conducted to find out the significance of oligohydramnios in determining the maternal and perinatal outcome in pregnant women with oligohydramnios during third trimester of pregnancy in a tertiary care hospital of Karnataka, India.

METHODS

The present study is a prospective hospital-based study conducted in the department of obstetrics and gynecology, of SSIMS and RC Davanagere, from August 2018 to April 2019. The study population consisted of 50 patients attending the OPD for regular antenatal checkup and who were diagnosed to have oligohydramnios on ultrasonography. The study population was followed till the end of pregnancy to look for maternal and perinatal outcome. An informed written consent was taken from all the study participants.

Inclusion criteria

- Singleton pregnancy
- Gestational period > 28 weeks
- Intact membranes
- Sonographically proven cases of oligohydramnios with AFI < 8 cm.

Exclusion criteria

- Women with premature rupture of membranes
- Multiple pregnancy
- AFI > 8 cm.

After preliminary history taking and thorough general and obstetric examination, patients were analysed for

amount of liquor (AFI) by Phelans four quadrant techniques on USG.

For the present study, AFI <8 cm was considered oligohydramnios and were advised admission. The data was entered in the proforma.

The maternal outcome in terms of mode of delivery and perinatal outcome in terms of birth weight, Apgar score at birth and NICU admission was studied and analysed.

Amniotic fluid index (AFI)

This was first described by Phelan and Coworkers (1987) more than 25 years ago. The uterus is divided into four equal quadrants by using the umbilicus as a reference point to divide the uterus into upper and lower halves, and by using the lineanigra to divide the uterus into left and right halves. The maximum vertical dimensions of the largest fluid pocket in each quadrant are measured by ultrasonography in millimetres. The measurement obtained from each quadrant was summed to form the AFI. The identified pocket is considered clear when the umbilical cord and other small parts of the fetus are absent.²

Statistical analysis

Data was entered in Microsoft excel 2010 version and analysis was done using SPSS version 13. Data was presented in percentages and proportions. Chi square test was applied to find out the association between oligohydramnios and the pregnancy outcome. p value < 0.05 was considered significant.

RESULTS

The study was done on 50 antenatal patients with oligohydramnios. The mean age group of the study participants was 26.36±4.46 years. Majority (51.9%) of them were primigravida and most of them (44%) belonged to the age group of 26 to 30 years. 41(82%) patients required an emergency LSCS and 19 (38%) of the new-born required an extra care and were admitted in NICU.

The relationship of maternal and fetal outcomes with certain selected parameters was studied as seen in Table 1. Gestational age, birth weight and abnormal doppler study were found to have an association with the perinatal outcome. The present study revealed that children with increased birth weight and gestational age had a favourable perinatal outcome. Those with an abnormal doppler study had an unfavourable perinatal outcome. Other factors like age of the mother, parity, mode of delivery and AFI did not have any association with perinatal outcome. Perinatal mortality in the present study was 4%.

Table 2 shows the relationship between diagnosis in the patient and the perinatal outcome. It was seen that the neonates born to mothers with severe preeclampsia landed more often in NICU than those born to normal

mothers. Other factors did not have any association with perinatal outcome. It can also be seen that neonates born to mothers without any complication had more chance of

getting discharged without any issues rather than those born to mothers with complications during antenatal period who most often land up in NICU.

Table 1: Relationship of certain selected variables with the perinatal outcome.

Parameter	Perinatal outcome		p value
	Discharged without issues	NICU admission	
Mode of delivery			
FTND	4 (8%)	5 (10%)	0.23
Emergency LSCS	27 (54%)	14 (28%)	
Birth weight in kg			
< 2 kg	3 (6%)	16 (32%)	< 0.001*
2.10-2.5 kg	15 (30%)	3 (6%)	
> 2.5 kg	13 (26%)	0 (0%)	
Gestational age			
28-32 weeks	0 (0%)	5 (10%)	< 0.001*
33-37 weeks	13 (26%)	12 (24%)	
38-42 weeks	18 (36%)	2 (4%)	
Congenital anomalies			
Present	0 (0%)	2 (4%)	0.06
Absent	31(62%)	17 (34%)	
Parity			
Primigravida	18 (36%)	9 (18%)	0.46
Multipara	13 (26%)	10 (20%)	
AFI			
< 8	29 (58%)	18 (36%)	0.864
> 8	2 (4%)	1 (2%)	
Doppler study			
Normal	25 (50%)	8 (16%)	0.002*
Abnormal	6 (12%)	11 (22%)	

Table 2: Relationship between diagnosis in the patient and the perinatal outcome.

Diagnosis	Discharged	NICU admission	Total	p value
Severe PE	5 (10%)	10 (20%)	15 (30%)	0.006
Hypothyroidism	4 (8%)	2 (4%)	6 (12%)	0.802
Breech	3 (6%)	1 (2%)	4 (8%)	0.577
IUGR	3 (6%)	1 (2%)	4 (8%)	0.577
Fever	1 (2%)	1 (2%)	2 (4%)	0.721
Rh Negative	2 (4%)	0 (0%)	2 (4%)	0.258
Gestational Diabetes	0 (0%)	1 (2%)	1 (2%)	0.197
Anaemia	1 (2%)	0 (0%)	1 (2%)	0.429
Nil	12 (24%)	3 (6%)	15 (30%)	0.086
Total	31 (62%)	19 (38%)	50 (100%)	-

DISCUSSION

A total of 50 pregnant females with oligohydramnios were studied to evaluate the maternal and fetal outcomes. In the present study, majority (44%) of the females were in the age group of 26-30 years. The maximum number of participants were in the age group of 20-30 years in studies conducted by Ghimire S et al, and Bhat et al.^{4,5}

There were also studies where maximum number of participants were in the age group of 20-25 years.^{6,7}

Even though it is thought that oligohydramnios is common in teenage and elderly pregnant women, the probable reason for the younger age group in our study is because this is the common age at which Indian woman get married and become pregnant.⁸

Majority (54%) of the participants were primigravida and these findings were similar to that of Ahmar R et al and Ghimire S et al.^{4,6} The study conducted by Biradar KD et al however, showed that maximum number of participants were multigravida.⁷ Mean gestational age in our study was 36.42 which was similar to a study done by Vidyasagar V et al where mean gestational age was 36.39.⁹ It was slightly higher in the study done by Biradar KD et al where it was quoted as 38.5.⁷

In the present study, 41 (82%) participants underwent emergency LSCS. These results were close to a study done by Ghimire et al where the incidence of LSCS was 85% in patients with oligohydramnios.⁴ In the study done by Biradar KD et al, the incidence of LSCS was 62% and still lower i.e. 47% in study done by Ahmar R et al.⁶ There is a common belief that less liquor is associated with complications like intrauterine growth retardation, birth asphyxia due to meconium aspiration and sudden death. Thus, to safe guard the child, continuous intrapartum monitoring and a good neonatal care is required, which, sometimes may be difficult. Thus, to avoid this crisis situation, LSCS was considered a better option.

The study showed that higher the birth weight and gestational age, better is the perinatal outcome. This is in contrast to the results obtained by Tripathi M et al and Guptha SK et al where it was seen that birth weight did not have any association with perinatal outcome.^{10,11} This study results were similar to that obtained by Hsieh et al, where it was concluded that pregnancies complicated by a markedly diminished amniotic fluid volume, assessed antenatally by ultrasound, were significantly more frequently associated with adverse perinatal outcomes such as preterm delivery, low or very low birth weight, low Apgar scores, intrauterine fetal death, small-for-gestational-age newborns, meconium staining, cesarean delivery, neonatal intensive care, and neonatal death.¹² Lesser the gestational age, higher the incidence of respiratory distress and this could be the probable reason for adverse perinatal outcome.

Abnormal Doppler study was associated with unfavorable perinatal outcome in the present study. However, Patel PK et al in their study concluded that oligohydramnios although associated with an increased incidence of Doppler abnormalities did not affect the duration of labor, need for oxytocin augmentation, need for neonatal resuscitation, Apgar score at 5 minutes, NICU admission and birth weight of neonates.¹³ The study found an association of severe preeclampsia with unfavorable perinatal outcome. Offer Erez et al in his study concluded that in patients with preterm preeclampsia, oligohydramnios is an independent risk factor for fetal and/or neonatal morbidity.¹⁴

CONCLUSION

Oligohydramnios is a frequent occurrence in obstetrics and this condition requires intensive surveillance and proper

antenatal care. Increase in LSCS in oligohydramnios is because of the fear of high perinatal mortality and morbidity and also that vaginal delivery requires strict vigilance. Incidence of LSCS also increases if there is an additional risk factor like preeclampsia along with oligohydramnios. The decision between vaginal delivery and caesarean section should be well balanced so that unnecessary untoward incidents can be prevented.

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

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