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Retrospective study of effect of Oligohydramnios on Maternal and Foetal outcome in a tertiary care hospital.

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Abstract

Introduction: Oligohydramnios is a condition of reduced amniotic fluid volume and commonly seen obstetric complication especially during the 3rd trimester of pregnancy. It is being diagnosed more frequently nowadays because of the wide usage of ultrasonography and its ready availability in the OBG departments. Amniotic fluid is a dynamic component of the amniotic layer of a pregnant woman that surrounds the fetus in the intrauterine life and provides low resistance space suitable for growth and development. So, an adequate amount of amniotic fluid is an essential prerequisite for a good fetal outcome. Due to oligohydramnios, Intrapartum complications, Perinatal morbidity and mortality increases. So early detection of oligohydramnios and its management is important.

Aims and objectives: To find out the maternal and perinatal outcome associated with oligohydramnios among the obstetric cases attending to a tertiary level hospital.

Material and methods: A retrospective study was done on 56 cases of singleton pregnancies with oligohydramnios admitted and treated in the OBG department of Anil Neerukonda Hospital, a tertiary care hospital, Visakhapatnam, from Jan 2021 to May 2022, after considering inclusion and exclusion criteria. History of the patient along with general physical and obstetric examinations, clinical pelvimetry, bishop score, AFI (Amniotic fluid index) by USG and doppler study findings were collected and analyzed.

Results: The incidence of oligohydramnios was 3% of the total admissions during the study period. The maximum number of cases were in the age group of 20 to 25 years with a mean age of 23.9 ± 3.3 years. The incidence was more in multipara, i.e. 57.14% of the cases. The mean gestational age was 35.36 ± 2.3 weeks. Mean AFI was 3.32 ± 1.12 cms and 42.86% of the cases were small for the gestational age (SGA). Mode of delivery, LSCS were 28(50%), Vaginal 26(46.43%) and two cases were instrumental (3.57%). Still birth in one

case (1.79%). APGAR score was less than 7 in 29 cases (51.78%). In these cases, 4 cases were shifted to the NICU. The reason for LSCS in the majority of the cases was due to fetal distress (64.29%), followed by idiopathic (17.86%) and hypertensive disorders of pregnancy (7.14%).

Conclusion: Oligohydramnios is associated with adverse perinatal outcome, with increased perinatal morbidity and mortality. Especially in severe form, it is associated with increased Caesarean section rate, and high rate of admission to neonatal care unit. So, an intense surveillance and proper antenatal, perinatal and postnatal care is essential.

Keyword: Oligohydramnios, maternal outcome, perinatal outcome, LSCS, AFI.

Introduction

The amniotic fluid that surrounds an unborn fetus during pregnancy, is a clear liquid.It is present in the amniotic sac and is faintly alkaline having a specific gravity of 1.010. The volume of amniotic fluid is related to the period of gestation.It is about one litre at 36 to 38 weeks and thereafter diminishes and measuring around 600 to 800 ml at term.

Decrease in amniotic fluid volume is called as oligohydramnios.It is defined as amniotic fluid volume< 5^{th} percentile for gestational age,AFI< 5 cms, single deepest vertical pocket < 2 cms.Incidence of oligohydramnios is 0.5 to 5% of normal pregnancies.It poses challenge to obstetrician, when it is diagnosed before term, because it is associated with multiple fetal complications such as low birth weight, congenital anomalies, intrauterine growth restriction, fetal distress in labour, meconium aspiration syndrome, severe birth asphyxia, low APGAR scores,NICU admissions and stillbirths.

Oligohydramnios is also associated with maternal morbidity in terms of increased rates of induction and operative interference.In 1987, J P Phelan Et al[1] introduced AFI to assess the amount of amniotic fluid in the amniotic sac using 4 quadrant technique.

Amniotic fluid is necessary for proper growth and development of the fetus.It acts as cushion and protects the fetus from sudden impact of external injury or effects of uterine contractions.It also regulates temperature.

During labour the predominant mechanical action of amniotic fluid is to provide an adequate cushion for umbilical cord.If it is inadequate, compression of the cord between the fetus and the uterine wall may occur and thus can cause severe fetal heart rate decelerations.

Thus, it appears prudent to evaluate amniotic fluid volume (A.F.V) for the assessment of fetal status in-utero whether as a part of antenatal testing protocol or in labour.

By using ultrasonography, a non-invasive technique during pregnancy, the accurate diagnosis of oligohydramnios can be made out.

Early detection of oligohydramnios and its management may help in the reduction of perinatal morbidity and mortality and also decrease in the operative rates.Hence, this retrospective study was undertaken by me.

Aims and objectives

To find out the maternal and perinatal outcome associated with oligohydramnios among the obstetric cases attending to a tertiary care hospital.

Material and methods

The present study is retrospective in nature and was conducted in the department of obstetrics and Gynaecology, Anil Neerukonda hospital, Visakhapatnam from January 2021 to May 2022.

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The study group comprised of 56 patients of Singleton pregnancy with the diagnosis of oligohydramnios both clinically and by ultrasonography

Inclusion criteria

- Singleton pregnancy
- Intact membranes
- AFI < 5 cms by USG
- Gestational age > 30 weeks

Exclusion criteria

- Abnormal position and presentation
- Associated congenital anomalies
- Polyhydramnios
- PROM (pre rupture of membranes)
- Multiple pregnancies

Socio demographic data, relevant history, general physical examination, baseline investigations that were already done and recorded in case sheets were studied.Also, obstetric examination, clinical pelvimetry findings, Bishop score,AFI by USG and Doppler study findings were collected and analysed.

The relevant data thus obtained was entered in a pre-designed proforma.All the pregnant women of study population, who are subjected to ultrasonographic examination for the assessment of amount of liquor amnii are studied and evaluated.

The Amniotic fluid index measurement technique wasfollowed in these cases,the patient was allowed to settle in a supine position and then a linear curvilinear transducer was used.

Maternal abdomen is divided into 4 quadrants considering the umbilicus, symphysis pubis and fundus of the uterus as the reference points.Now with the ultrasound they measured the deepest vertical pocket in each quadrant.The sum of 4 measurements is the AFI in centimeters.

Oligohydramnios was defined when the single deepest vertical pocket of liquor is less than 2 centimeters or when amniotic fluid index is less than 5 centimeters. AFI 5 to 8 centimeters is borderline oligohydramnios and 8 to 18 centimeters is considered as normal amniotic fluid index.

Effects of oligohydramnios on pregnancy outcome and fetal outcome also recorded with respect to induction of labour and mode of delivery,incidence of meconium-stained liquor during intrapartum, fetal distress and neonatal morbidity and mortality by APGAR score and NICU admission rates.

Data entry was analysed using the Microsoft Excel 2010 version.

Results

In this retrospective studythe pregnant women above 30 weeks of gestational age,who were screened and diagnosed as oligohydramnios were studied during the study period i.e., from January 2021 to May 2022.Out of those the incidence of oligohydramnios was found to be 3% i.e., 56 cases.

The incidence of oligohydramnios was 3% of the total admissions i.e., 1867 during the study period i.e., 56 cases.

The distribution of NST (Non-StressTest) pattern among the study group shows 30 women were non-reactivei.e., 53.5%, whereas 26 women were reactive i.e., 46.5%.

Abnormal Doppler ultrasound was observed in 13 patients i.e., 23.21%, in the form of either decreased diastolic flow in umbilical artery or increased diastolic flow in middle cerebral artery,whereas it was normal in 43 patients i.e., 76.79%.

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Table 1: Distribution of cases according to age

Age	Number of cases	Percentage (n=56)
<20 years	7	12.50%
20 to 25 years	30	53.57%
25 to 30 years	13	23.21%
>30 years	6	10.72%
Total	56	100%

Maximum number of cases were in the age group of 20 to 25 years i.e., 53.57% with a mean age of 23.9±3.3 years.

Table 2: Distribution of cases according to gestational age

Gestational age in weeks	Number of cases	Percentage (n=56)
30-32 weeks	4	7.14%
32-34 weeks	7	12.50%
34-36 weeks	23	41.07%
36-38 weeks	14	25%
38-40 weeks	6	10.72%
>40 weeks	2	3.57%

Regarding gestational age, maximum number of cases were in 34 to 36 weeks i.e., 23 cases with a mean age of 35.36±2.3 weeks i.e., 41.07%.

The incidence was more in multiparai.e., 57.14% of the cases i.e., 32 cases compared to primipara which was in 24 cases i.e., 42.86%.

Table 3: distribution of cases according to AFI (Amniotic Fluid Index)

AFI on admission	Number of cases	Percentage(n=56)
0	0	0
1	3	5.36%
2	5	8.92%
3	8	14.29%
4	23	41.07%
5	17	30.36%
Total	56	100%

AFI on admission among the cases of oligohydramnios was ranged between 4 to 5 in maximum number of cases i.e., 40 cases (71.43%). Mean AFI was 3.32±1.12 cms.

Among these cases of oligohydramnios, 24 cases were small for gestational age (SGA)i.e., 42.86% and 32 cases were appropriate for gestational age (AGA)i.e., 57.14%.

Regarding birth outcome of these cases live birth was seen in 55 cases i.e., 98.21% and stillbirth was seen in one case i.e., 1.79%. The cause of death for stillbirth was prematurity.

Table 4: APGAR score in new born babies

Apgar score	Number of cases	Percentage (n=56)
<7	29	51.78%
>7	27	48.12%
Total	56	100%

Table 5: Distribution of cases with Apgar score < 7

Apgar score	Number of cases	Percentage (n=56)	NICU admission
<7 in one minute	20	35.71%	1
<7 in five minutes	9	16.07%	3

Apgar score was < 7 in 29 cases i.e., 51.78%, whereas it is > 7 in 27 cases i.e., 48.12%. Among the cases of < 7 APGAR score i.e., 29 cases, in 20 cases i.e., 35.71%APGAR score < 7 in one minute and in 9 cases i.e., 16.07%, APGAR score < 7 in 5 minutes. 4 cases were admitted in NICU i.e., neonatal intensive care unit.

Among 56 cases studied 28 cases delivered by caesarean section, 26 cases delivered by normal vaginal delivery and 2 cases by instrumental delivery.

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Table 6: Indications for LSCS among study population

Parameter	Number of cases	Percentage % (n=28)
Fetal distress	18	64.29%
Idiopathic	5	17.86%
Hypertensive disorder of pregnancy	2	7.14%
Post maturity	2	7.14%
Failure of induction	1	3.57%
Total	28	100%

Indications for LSCS in majority of the cases was found to be fetal distress whichwas 64.29% followed by idiopathic 17.86% and hypertensive disorders of pregnancy and post maturity,7.14% each.

Among the 4 new-born cases of NICU admission 3 were with meconium aspiration i.e., 75% and one was with respiratory distress syndrome i.e., 25%.

Discussion

Women under risk with potentially adverse perinatal outcome can be identified by the assessment of amniotic fluid volume during the antenatal period.

In the present retrospective study incidence of oligohydramnios in the total admissions during study periodis 56 i.e., 3%. Similar observations were seen in the study done by Bansal DEt al[2] and Varma TR Et al[3]i.e., 3% and 3.1% respectively.These are incompatible with the study done by Biradar KD Et al[4] where the incidence is 14%.

Non stress test NST is reactive in 26 cases i.e., 46.5% and non-reactive in 30 cases i.e., 53.5%. Doppler ultrasound findings are abnormal in 13 cases i.e., 23% and normal in 43 cases i.e., 77%.

Mean age of participants was 23.9±3.3 years and mean gestational age was 35.36±2.3 weeks in the present study.Similar findings were seen in the studies done by Biradar KD Et al[4], Vidyasagar V Et al[5], Jagatia K Et al[6] and Bhat Set al[7].About 53.57% patients belonged to 21 to 25 years age group.

In the study group 32 i.e., 57.14% were multipara and 24 i.e., 42.86% were primipara.In the similar studies conducted by Bangal VBEt al[8], BhatS Et al[7], Jagatia Et al[6], primipara were 54%, 53.66%, 52% respectively. These observations were in contrast to the study done by Ghosh Ret al[9] and Biradar KD Et al[4].

The AFI at the time of admission in majority of the study population was ranging between 4 and 5 i.e., 40 cases 71.43%. Mean AFI was 3.32±1.12 cms. Similar observations were seen in the studies done by Ghosh Ret al[9] and Bangal VB Et al[8].

Among 56 cases of oligohydramnios, small for gestational age (SGA) was observed in 24 new-born babies i.e., 42.86%, whereas 32 babies were appropriate for gestational age (AGA)i.e., 57.14%. Similar findings were seen in the studies done by Philipson EH Et al[10] and Manning FA Et al[11].It is in contrast to the study done by Sariya Ret al[12] where AGA was 83.4% and SGA was 16.6%.

APGAR score was < 7 in 29 cases (51.78%) and > 7 in 27 cases (48.22%). Among these cases of 29 where APGAR score is < 7, in 20 cases it was < 7 in 1 minute and< 7 in 5 minutes in 9 cases, with NICU admissions in 4 cases.Similar observations were seen in the study done by Sariya R Et al[12].

In the study population 28 women underwent LSCSi.e., 50%, vaginal delivery in 26 cases i.e., 46.43% and instrumental delivery in 2 cases i.e., 3.57%. Our observations were compatible to the study done by Ghosh Ret al[9], Uma Jain[13], but in contrast to the study done by Jagatia Ket al[6].

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Indications for LSCS in majority of the cases was due to fetal distress i.e., 18 cases (64.29%), followed by idiopathic i.e., 5 cases (17.86%), hypertensive disorder of pregnancy,post maturity and failure of induction were the causes in rest of the cases i.e., 7.14%, 7.14% and 3.57% respectively.

Conclusion

The management of oligohydramnios depends on early identification, assessment of the origin and severity of the condition, and estimation of gestational age. If intensive foetal monitoring is done both before and during childbirth, there will likely be a better maternal and foetal outcome. To balance the hostile intrauterine environment and prematurity, timely intervention is also necessary to lower the risk of perinatal morbidity and mortality.

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