

Original Research Article

Neonatal and maternal outcome in oligohydramnios: a prospective study

Rizwan Ahmar¹, Sadia Parween^{2*}, Smita Kumari², Manish Kumar³

¹Department of Paediatrics, ²Department of Obstetrics and Gynaecology, ³Department of Pharmacology, Indira Gandhi Institute of Medical Sciences, Sheikhpura, Patna, India

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*Correspondence:

Dr. Sadia Parween,

E-mail: parweensadia@gmail.com

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ABSTRACT

Background: Oligohydramnios presents a threat to the fetus and has been correlated with increased risk of intrauterine growth retardation, meconium aspiration syndrome, severe birth asphyxia, low APGAR scores and congenital abnormalities. It is associated with perinatal morbidity and mortality and maternal morbidity in a significant number of cases. Therefore, early detection of oligohydramnios and its management is important. Aim of this study was to know the fetal and maternal outcome in oligohydramnios.

Methods: 90 patients in third trimester of pregnancy with Oligohydramnios were selected after satisfying inclusion and exclusion criteria. A detailed history and examination were done. All required investigation done. Oligohydramnios confirmed by measuring Amniotic fluid index (AFI).

Results: Mean maternal age-26.1 years. Incidence of oligohydramnios was more in primipara (64.4%) in our study. And operative morbidity was also more in primipara (51.7%). Most common cause of Oligohydramnios was idiopathic (44.44%). Operative morbidity was significantly higher in Non-reassuring FHR (80%) than reassuring FHR (32%). 7 patients (7.78%) were found with fetoplacental insufficiency on Doppler study.

Conclusions: Oligohydramnios is frequent occurrence and demands intensive fetal surveillance and proper antepartum and intrapartum care so that perinatal morbidity and mortality and maternal morbidity can be reduced.

Keywords: Amniotic fluid index, Maternal and fetal outcome, Oligohydramnios

INTRODUCTION

Oligohydramnios is described as a condition with decreased amniotic fluid volume relative to gestational age. The amniotic fluid (AF) is a part of the baby's life support system. Amniotic fluid is produced soon after the amniotic sac is formed at about 12 days after conception. It is first made up of effusion that is provided by the mother's circulation and then around the 20th weeks fetal urine becomes the primary substance.¹ If the measurement of AF is too low it is called oligohydramnios. If the measurement of AF is too high it is called polyhydramnios.² Oligohydramnios was defined

as Amniotic fluid index (AFI) ≤ 5 (or less than the 5th percentile) or the absence of a pocket measuring at least 2×1 cm.³ With the help of method of amniotic fluid estimation by AFI using four quadrant techniques during transabdominal USG, as per described by Phelan et al in 1997, better identification of fetus at high risk can be done.⁴

Oligohydramnios is a common complication of pregnancy and the incidence of this is reported to be around 1 to 5 % of total pregnancies.⁵ The accurate diagnosis of oligohydramnios has become possible by ultrasonographic examination during pregnancy.

It can occur at any time during pregnancy, but it is most common during the last trimester. Amniotic fluid levels decrease by half once a pregnant patient reaches 42 weeks gestation. Oligohydramnios can complicate 12% of pregnancies that go past 41 weeks.⁶

Usually the degree of Oligohydramnios is proportional to the severity of placental hypoperfusion and IUGR (Intra Uterine Growth Restriction). The most likely cause of oligohydramnios in IUGR babies is decreased urine output.⁷ There are numerous maternal and fetal risk factors associated with a reduction of AFI.

Decreased amount of amniotic fluid, particularly in third trimester, has been associated with multiple fetal risks like cord compression, musculoskeletal abnormalities such as facial distortion and clubfoot, intrauterine growth restriction, low birth weight, fetal distress in labour, meconium aspiration syndrome, severe birth asphyxia, low APGAR scores, NICU admission, congenital abnormalities and stillbirths.⁸

The sequel from long standing oligohydramnios includes pulmonary hypoplasia, potter’s syndrome, club foot and hand and hip dislocation. However, some studies done in cases of abnormal liquor volume show that amniotic fluid index is a poor predictor of adverse outcome.^{9,10} Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity and mortality on one side and decreased caesarean deliveries on the other side.¹¹

The findings of oligohydramnios can be associated with congenital fetal abnormalities, premature rupture of membranes, uteroplacental insufficiency, growth retardation, post datism, chronic abruptio placentae, maternal illness i.e. hypertension, preeclampsia, abnormalities of twinning, history of drug intake etc. Preeclampsia, Intrauterine Growth Restriction (IUGR) and post-dated pregnancies are the commonest causes.

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.

Aim of present study was to study the effects of Oligohydramnios on fetal outcome in the form of Fetal distress, Growth retardation, NICU admission, APGAR scores, congenital malformation and neonatal mortality and to study maternal morbidity in form of operative delivery and induced labour.

METHODS

Present study was done over a period from April 2015 to March 2017 in department of Paediatrics and obstetrics and gynaecology, IGIMS, Patna. 90 patients in third trimester of pregnancy with Oligohydramnios were selected after satisfying inclusion and exclusion criteria.

Inclusion criteria

- Amniotic fluid index ≤5.0 cm for the women with oligohydramnios
- Singleton cephalic fetus.
- No gross fetal anomalies
- Antenatal patients in their third trimester
- Alive baby.

Exclusion criteria

- Premature rupture of membranes,
- Twins and multiple pregnancies.
- Antenatal patients before third trimester
- Intrauterine death of fetus.

A detailed history and examination was 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 others allowed to go in spontaneous labour. Cases were than studied for maternal and perinatal outcome.

All the information was entered in the proforma and analyzed and observations were made and accordingly discussion and recommendations were made.

RESULTS

The total number of patients included in our study was 90. Maximum number of patients were in the age group of 20-25 years which accounted for 64.4% of the patients. Mean age of the patients was 26.1 years (Table 1).

Table 1: Age distribution of patients.

Age (years)	Number of patients	Percentage
<20	5	5.5
20-25	58	64.4
26-30	21	23
>30	6	6.6

54 patients (60%) had vaginal delivery and 36 patients (40%) had undergone lower segment caesarean section (Table 2).

Table 2: Mode of delivery.

Mode of delivery	Number of patients	Percentage
Vaginal delivery	54	60
Caesarean section	36	40

Table 3: Parity and mode of delivery.

Parity	Vaginal delivery	LSCS	Total
Primigravida	28 (48.3%)	30 (51.7%)	58 (64.4%)
Multigravida	26 (81.2%)	6 (18.7%)	32 (35.6%)

Oligohydramnios was more common in primigravida patients (64.4%). The rate of lower segment caesarean section(LSCS) was also more in primigravida patients. Out of 58 primigravida, 28 patients (48.3%) delivered vaginally and 30 patients (51.7%) had undergone LSCS. Out of 32 multiparous patients, 26 patients (81.2%) delivered vaginally and 6 patients (18.7%) had undergone LSCS (Table 3).

Table 4: Causes leading to oligohydramnios.

Conditions	Number of patients	Percentage
Post dated pregnancy	18	20
Pregnancy induced hypertension	25	27.78
Idiopathic	40	44.44
Other causes	7	7.77

The most common cause of oligohydramnios was idiopathic which was present in 40 patients (44.44%). The other causes were postdated pregnancy (20 %); pregnancy induced hypertension (27.78 %) etc (Table 4).

Table 5: Method of delivery.

	Number of patients	Percentage
Induced labour	38	42.22
Spontaneous labour	40	44.44
Elective LSCS	12	13.33

In present study maximum number of patients went into spontaneous labour (40 patients, 44.44%). 38 patients (42.22%) were induced either with cerviprime gel or misoprost depending upon the condition of the cervix. 12 patients (13.33%) had to undergo elective LSCS either because of abnormal Doppler study, fetal distress with unfavorable cervix or any obstetric cause (Table 5).

In terms of fetal heart rate pattern, 75 patients had reassuring fetal heart rate pattern while 15 patients had non-reassuring fetal heart rate pattern. 51 patients (68%) with reassuring fetal heart rate pattern had delivered vaginally while 24 patients (32%) in this group had undergone LSCS. 3 patients (20%) with non-reassuring fetal heart rate pattern had delivered vaginally while 12 patients (80%) had undergone LSCS. Thus, maximum number of patients with reassuring fetal heart rate pattern delivered vaginally while maximum number of patients

with non-reassuring fetal heart rate pattern delivered by LSCS (Table 6).

Table 6: Relation of fetal heart rate pattern, Doppler USG and mode of delivery.

Mode of delivery	Fetal heart rate pattern		Doppler USG	
	Re-assuring	Non-reassuring	Normal	Abnormal
Vaginal delivery	51 (68%)	3 (20%)	53 (63.8%)	1 (14.3%)
LSCS	24 (32%)	12 (80%)	30 (36.2%)	6 (85.7%)
Total	75	15	83	7

On Doppler ultrasonography, 83 patients had normal Doppler study while 7 patients had abnormal Doppler study. 53 patients (63.8 %) of normal Doppler group were delivered vaginally while 30 patients (36.2%) had undergone LSCS. 1 patients (14.3 %) of abnormal Doppler group were delivered vaginally while 6 patients (85.7 %) had undergone LSCS.

Thus, there were more number of LSCS in abnormal Doppler study group and most of them were elective to prevent any adverse neonatal outcome (Table 6).

Table 7: Outcome of baby.

Outcome	Percentage
Growth retardation	15 (16.7%)
Apgar score <7 after 5 mins	25 (27.8%)
NICU admission	18 (20%)
Congenital anomalies	3 (3.33%)

Oligohydramnios was associated with intrauterine growth retardation in 15 babies (16.7%); APGAR SCORE <7 after 5 mins in 25 patients (27.8%); NICU admission in 18 patients (20%). 3 babies (3.33%) had congenital anomalies. Out of these 2 babies had posterior urethral valve and one baby had PUJ obstruction (Table 7).

Table 8: Perinatal outcome.

Perinatal outcome	Reassuring FHR	Non-reassuring FHR	Total
Live	72	11	83 (92.2%)
Dead	3	4	7 (7.7%)

In terms of perinatal outcome, 72 babies in the reassuring FHR group were alive while 3 babies died in this group. 11 babies in non-reassuring FHR group were alive while 4 babies in this group died. Overall perinatal mortality was 7.7%.

Babies with non-reassuring FHR had bad prognosis (Table 8).

DISCUSSION

In the present study, the mean maternal age was 26.1 years which is comparable to study done by Kaur T et al in which it was 25.8 years.¹²

In present study maximum number of patients were primigravida (64.4%). This is similar to study done by Jagatia K et al in which 52% were primigravida.¹³

Golan A et al found that, the caesarean section was performed in 35.2% of pregnancies.¹⁴ In study done by Bansal D et al, the caesarean section was performed in 47% of patients.¹⁵ These are comparable to our study in which 40% of patients had undergone caesarean section.

Preeclampsia was associated with 27.78% of cases of oligohydramnios which is comparable to 31% of preeclampsia in oligohydramnios group in Sriya R et al.¹⁶ Seventeen percent cases had post dated pregnancies in the study done by Bansal D et al which is similar to our study in which post dated pregnancy accounted for 20% of cases.¹⁵ 44.44% cases were due to Idiopathic causes similar to study done by Jagatia K et al where it was 52%.¹³

Study by Casey B et al found that, there was increased rate of induction of labour (42%) in oligohydramnios.¹⁷ This is comparable to present study in which labour was induced in 42.2% of patients.

In this study, in spite of non-reactive NST 20% patients delivered vaginally as seen in study done by Jagatia K et al (25%).¹³ The caesarean section was done more commonly in 80% patients with non-reactive NST as seen in Jandial C study and Jagatia K et al (75%).^{13,18} As these patients had oligohydramnios, a non-reactive NST + AFI <5 indicated fetal jeopardy as per revised Biophysical profile scoring by Clark et al.¹⁹ The fetal jeopardy was reflected as increase operative interference in this study.

The operative morbidity was significantly higher in patients with altered Doppler study (85.7%). In Weiss et al and Kwon JY et al⁽²¹⁾, it was 71% and 69.7% respectively which was comparable to our study.²⁰

In present study, 16.7 % babies were IUGR. This is similar to study done by Sariya R et al 16.6% babies were IUGR.¹⁶ In contrast to our study, Casey BM et al and Manning et al reported IUGR in 24% and 36% of respectively.^{17,22} In present study APGAR SCORE <7 after 5 minutes was observed in 27.8% of patients. In Manning et al 15% babies had APGAR score <7.²² In Sariya R et al, it was 38%.¹⁶

In the present study NICU admission was observed in 20% of patients. This was similar to study done by Jhonson JM et al where 20% babies had NICU

admission.²³ Zhang J et al in their study have reported 29.4% admission to NICU.²⁴

Perinatal mortality in our study was 7.7% this was similar to study done by Wolff F et al in which perinatal mortality was 7.2%.²⁵

CONCLUSION

Oligohydramnios is a frequent occurrence and demands intensive fetal surveillance and proper antepartum and intrapartum care. AFI is an important component of biophysical profile scoring and its assessment in early third trimester helps to identify women who need more ante partum surveillance so that proper management can be done for the improvement of maternal and perinatal outcome. 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 can be prevented.

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