



OLIGOHYDRAMNIOS : MATERNAL AND PERINATAL OUTCOME AT A TERTIARY CARE CENTER

Obstetrics & Gynaecology

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ABSTRACT

Background: Amniotic fluid provides a important environment for the growing fetus. Oligohyramnios is defined as amniotic fluid volume less than 5 cm. It can lead to adverse maternal and fetal outcomes. **Objectives:** To study the risk factors, maternal and perinatal outcome in pregnancies with oligohydramnios (AFI $\leq$ 5 cm). **Materials and Methods:** A prospective observational study was conducted on all pregnant women admitted in labour room from the year October 2020 to 2022. Around 300 women with gestational age $>$ 28 weeks and AFI $\leq$ 5 cm were included in the study and maternal and perinatal outcome was studied. **Results:** About 47.6 % pregnant women belonged to the age group 21-25 years and the mean maternal age in our study was 23.0 ± 3.1 years. About 54 % women were primigravida and 46% women were multigravida. Almost 83.3 % pregnant women were in the gestational age group of ≥ 37 - 42 weeks. The cause of oligohydramnios could not be identified (idiopathic) in about 53.3% of cases. About 24.3 % cases of oligohydramnios were associated with postdated pregnancy and hypertensive disorder of pregnancy was associated in 15.9 %. Around 62.6 % women had vaginal delivery and 37.4 % women underwent cesarean section. The indication of cesarean section was fetal distress in majority of the cases. About 73 % babies had a birth weight $>$ 2.5 kg and 1.3 % were still birth, about 11.4 % babies required NICU admission, almost 2.7 % babies had Apgar score $<$ 7 at 5 minutes and needed neonatal resuscitation. **Conclusion:** Oligohydramnios is associated with adverse perinatal and maternal outcomes, thus early detection of risk factors and timely intervention can prevent maternal morbidity and improve perinatal outcome.

KEYWORDS

Oligohydramnios, AFI, Maternal outcome, Perinatal Outcome

INTRODUCTION

Oligohydramnios is a severe and common complication of pregnancy and the incidence of this is reported to be around 1 to 5 % of total pregnancies^[1] Amniotic fluid serves several roles during pregnancy. It creates physical space for fetal movement which is necessary for musculoskeletal development. It permits fetal swallowing essential for gastrointestinal tract development and fetal breathing necessary for lung development. It has bacteriostatic properties also. Oligo hydramnios is defined as when the maximum vertical pockets of liquor is less than 2 cm or when AFI is less than 5 cm or 10th centile.^[2,3]

Oligohydramnios in pregnancy is commonly caused by one of the following -Pregnancy induced hypertension, Post term pregnancy, Preterm rupture of membranes, maternal systemic diseases. Most oligohydramnios cases, however, are idiopathic. In mother there is increased incidence of induction of labor and caesarean deliveries for better perinatal outcome Oligohydramnios is associated with adverse perinatal outcome such as preterm delivery, low birth weight, fetal distress in labor, meconium passage, low Apgar score, neonatal resuscitation and NICU admission^[4,5]. 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. As ours is a tertiary care centre with 19000 per year, hence this study was prompted to study the significance of oligohydramnios in determining maternal and perinatal outcomes of women with oligohydramnios in pregnancy.

MATERIALS AND METHODS

This was a prospective observational study was conducted on all women coming to the labour room in the Department of Obstetrics and Gynecology, at Government Medical College, Aurangabad from the year October 2020 to October 2022.

Inclusion criteria

1. All pregnant woman who have AFI($\leq$ 5 cm) and willing to participate in study
2. Singleton live pregnancy
3. All pregnant woman with gestational age $>$ 28 weeks
4. Intact membranes

Exclusion criteria

1. Gestational age $<$ 28 weeks
2. AFI $>$ 5 cm

3. Premature rupture of membranes
4. Patient who don't give consent to get included in study

After enrollment in women coming to labour room, the socio-demographic parameters were collected which was including age, parity, booked status, religion, socioeconomic status, occupation of women, education and referral from peripheral centers was noted.

All the admitted patients underwent ultrasound examination to assess the liquor. AFI was measured using Phelan's 4 quadrant ultrasound technique. The uterus was arbitrarily divided into 4 quadrants by the umbilicus transversely and the linea nigra vertically. The largest vertical pocket free of fetal parts and umbilical cord loops in each quadrant was measured and sum of these measurements gave AFI in cm. Three hundred women with AFI $\leq$ 5 cm were included in the study. Women not in labour and away from term were managed conservatively with rest, hydration, left lateral position, steroid cover and control of risk factors was done if possible. Fetal surveillance was done using electronic fetal monitoring, non stress test(NST). Possible etiology for oligohydramnios such as hypertensive disorder in pregnancy, postdated pregnancy, idiopathic etc was be studied. Decision of termination & mode of delivery was taken by senior obstetrician on floor.

Maternal outcomes regarding the need for inducing labour, mode of delivery, operative delivery, and any maternal morbidity was studied. Perinatal outcome in terms of, Neonatal Intensive Care Unit(NICU) admission, birth weight, Apgar score of newborn babies in relation to oligohydramnios at 1 min and 5 min, the incidence of congenital malformations, perinatal death, any perinatal complications such as facial distortion, respiratory distress syndrome, pulmonary hypoplasia, live or stillbirth child was noted. Babies admitted to NICU were followed up for 7 days. Data were entered into excel and analysis was performed in SPSS Statistics for Windows, Version 21.0. SPSS Inc., Chicago.

RESULTS

Table 1 :- Basic parameters of study population

Parameter	Frequency (n=300)	Percentage (%)
Age Group (in years)	18-20	100
	21-25	143
	26-30	50
		33.3
		47.6
		16.6

	>30	7	2
Gravidity	Primigravida	162	54
	G2-G4	135	45
	>G5	3	1
Booking status	Booked	228	76
	Unbooked	72	24
Risk factors*	Idiopathic	172	53.3
	Postdated Pregnancy	78	24.3
	Gestational Hypertension	32	10
	Severe preeclampsia	19	5.9
	IUGR	19	5.9
Gestational Age at the time of admission	28-32 weeks	8	2.66
	≥ 32-37 weeks	42	14
	≥37-42 weeks	250	83.3

*One case may be having more than one risk factor.

Table 1 shows that about 47.6 % pregnant women belonged to the age group 21-25 years. About 54 % women were primigravida and 46% women were multigravida. Among risk factors 53.3 % cases were idiopathic and about 24.3 % cases of oligohydramnios were associated with postdated pregnancy, and hypertensive disorders of pregnancy was associated in 15.9 % (including gestational hypertension and severe preeclampsia). Maximum women belonged to the gestational age ≥37-42 weeks at the time of admission.

Table 2 : NST findings of study population

Gestational age in weeks	NST (n=281)	
	Reactive (n=228)	Nonreactive (n=53)
28-32	5(1.7)	3(1)
≥32-37	35(12.4)	6(2.1)
≥37-42	188(66.9)	44(15.6)

Table 2 depicts that about 81 % cases had reactive NST and 19 % had non reactive NST tracing. The babies of the 3 cases between 28-32 weeks with nonreactive NST were stillborn during the course of the labour. Around 36 cases with nonreactive NST at 37-42 weeks gestational age had cesarean section due to fetal distress.

Table 3 : Maternal Outcome

Maternal Outcome		Gestational age at the time of delivery in weeks* (n=300)		
		28-32 (n=8)	≥32-37 (n=42)	≥37- 42 (n=250)
Onset of labour	Induced	4(1.3%)	16(5.3%)	80(26.6%)
	Spontaneous	4(1.3%)	26(8.6%)	170(56.6%)
Mode of delivery	Vaginal delivery	7(2.3%)	32(10.6%)	149(49.6%)
	Cesarean section	1(0.3%)*	10(3.3%)	101(33.6%)
Maternal Complication**	Preterm delivery	8(2%)	42(14%)	0(0%)
	Abruption	2(0.6%)	1(0.3%)	1(0.3%)
	Malpresentation	0(0%)	5(1.6%)	3(1%)
	Postpartum Hemorrhage	0(0%)	1(0.3%)	1(0.3%)
	Surgical site infections	2(0.6%)	2(0.6%)	6(2%)

** 5 cases between the gestational age of 28-34 weeks were managed conservatively for 48 hours and terminated after steroid coverage.

**One case in the gestational age group of 28-32 weeks required cesarean section for previous 1 cesarean section with anhydramnios with unfavorable cervix.

Table 3 shows that about 62.6 % women had vaginal delivery and 37.4 % women underwent cesarean section. Out of 300 cases, 16 % women had preterm delivery. About 49.6 % women had term vaginal delivery and 33.6 % women had term cesarean section. In about 66.6 % women induction of labour was done. Among maternal complications about 2.6 % women had malpresentations & 1.3 % pregnancies were complicated with Abruption placenta. PPH was seen in 0.6 % cases which were managed medically.

Table 4- Distribution according to indication for cesarean section

Indication for cesarean section	Number (n-112)	Percentage
Fetal Distress	44	39.2%

Either previous 1 or 2 cesarean section with oligohydramnios	41	36.6%
Cephalopelvic disproportion	8	7.1%
Primigravida with breech presentation in labor	8	7.1%
Severe preeclampsia with unfavorable cervix	5	4.4%
Transverse lie in labor	3	2.6 %
Anhydramnios at term with unfavorable cervix	1	0.8%

Table 4 shows that majority of cesarean section was done for fetal distress in 36.6 % cases followed by 36.6 % cases were operated for previous 1 or 2 cesarean section with oligohydramnios.

Table 5 :- Perinatal Outcome

Perinatal Outcome	Gestational age at the time of delivery in weeks (n=300)			Total	Percent age (%)
	28-32 (n=8)	≥32-37 (n=42)	≥37- 42 (n=250)		
Birth Weight (in kg)					
1-1.5	8	0	0	8	2.6
1.6-2.5	1	17	52	70	23
>2.5	0	24	196	220	73
Live Birth	5	41	250	296	98.6
Still birth	3	1	0	4	1.3
NICU admission					
Admitted	5	9	20	34	11.4
Apgar score					
<7	1	1	5	8	2.7
≥7	4	40	245	289	97.6
Outcome of babies admitted to NICU					
Discharged within 7 days	0	8	19	27	79
Death within 7 days	3	1	1	5	14.7
Duration of NICU stay > 7 days	2	0	0	2	5.8
Cause of death					
Severe sepsis	1	1	0	2	40
Respiratory distress syndrome(RDS)	2	0	1	3	60

Table 5 shows that majority of the term babies had birth weight >2.5 kg. Almost 98.6 % were live births. There were 11.4 % admitted to NICU and 2.7 % of these babies had APGAR score <7 at 5 minutes. 79 % babies admitted to NICU were discharged within 7 days and the cause of death in NICU was mainly due to severe sepsis and RDS.

DISCUSSION :-

The study was undertaken in tertiary care hospital to study the maternal and perinatal outcome of oligohydramnios in a total of 300 women. In our study 47.6 % pregnant women belonged to age group of 21-25 years which is consistent to the age group in comparison to other studies.^[6,7,8,9] The incidence of primigravida in our study was 54 % and it is observed that the incidence of oligohydramnios is more among primigravida which was consistent with studies conducted by Vidyadhar B. Bangal et al^[10], and Syed Masuma Rizvi et al^[9]. The risk factors associated with oligohydramnios was compared among various studies and hypertensive disorders of pregnancy was one of the common cause and the incidence of hypertensive disorders of pregnancy in our study was 15.9 %. The incidence of idiopathic cases was 53.3 % in our study which was consistent with studies conducted by Krishna Jagatia et al^[6], Ashish Prajapat et al^[11,12] in which most of cases were idiopathic. In present study the incidence of FGR was 5.9% which was significantly lower compared to other studies as every case was not followed up with Doppler study and many came in spontaneous labour.

About 83.3 % women belonged to 37-42 weeks in present study which was similar to studies conducted by Sita Ghimire et al^[13] and Punithavathi et al^[14] and the mean gestational age at delivery was 38.29±2.26 weeks. The percentage of vaginal delivery was 62.6 % in our study which was comparable to studies conducted Vidyadhar et al^[10], Noopur Nagar^[7], Bansal et al^[15]. In studies conducted by Syed Rizvi et al^[9] and Swati Kagne et al^[16] the percentage of cesarean section was more than the vaginal delivery due to the huge case load and inadequate fetal surveillance during labour in their setup and in the present study 37.4 % cases had cesarean section as continuous intrapartum fetal monitoring was possible and better practices of respectful maternal care and provision of birth companion.

About 73 % babies had birth weight >2.5 kg which was comparable to study conducted by Sita Ghimire et al^[13]. The percentage of still birth in present study is 1.3 % which is lower than the studies conducted by Bansal et al^[19], Punithavathi j et al^[14], Runoo Ghosh et al^[8] due to continuous electronic fetal monitoring and early detection of fetal distress and timely intervention.. Around 98.6 % babies were live birth which was similar to other studies^[8,14,15]. Almost 2.7 % babies had Apgar score < 7 which was lesser compared to similar studies conducted.^[7,9,16] In our study 11.4 % babies were admitted in NICU and it was similar to studies conducted by Sita Ghimire et al^[13], Noopur Nagar et al^[7], and Syed Rizvi et al^[9].

CONCLUSIONS:-

Amniotic fluid volume assessment is one of the important tool in antepartum fetal surveillance to predict the perinatal outcome. Due to increased risk of neonatal complications in severe oligohydramnios the rate of caesarean section is also increasing but decision between vaginal delivery and caesarean section should be well balanced to prevent unnecessary maternal morbidity.

Oligohydramnios also increases incidence of iatrogenic preterm delivery which is associated with adverse perinatal morbidity. Hypertensive disorder in pregnancy and postdated pregnancies are the important causes of reduced amniotic fluid hence appropriate preventive measures and early detection may help in reducing incidence of oligohydramnios.

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