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Original Research Article

A prospective clinical study of foetomaternal outcome in relation to oligohydramnios in pregnancies beyond 36 weeks of gestation

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ABSTRACT

Background: Amniotic fluid is contributed by both mother and foetus. It plays a vital role in foetal growth. The main purpose of this study was to evaluate the foetomaternal outcome in pregnant females with oligohydramnios beyond 36 weeks of gestation.

Methods: This study was conducted on 230 pregnant females beyond 36 weeks of gestation with decreased liquor clinically and confirmed sonographically. It was conducted from May 2018 to May 2019. Females with leaking per vaginum, patients who did not give consent and with intrauterine foetal death were excluded. Complete labour record was made. Assessment of maternal outcome was done in terms of mode of delivery and foetal outcome was done in terms of birth weight, Apgar score at one and five-minute, respiratory distress, meconium aspiration, seizures in first 24 hours of life, congenital malformations, neonatal intensive care unit admission and death of baby.

Results: A total of 230 pregnant females met the inclusion criteria who were having AFI <5. 121 (53%) females were primigravida and 119 (52%) underwent for caesarean section. Most common indication of LSCS was foetal distress. Apgar score at 1 minute was <7 in 97 (42%) babies and after 5 minutes, it was <7 in 93 (40%) babies. Other neonatal outcome results were IUGR in 59 (26%) babies, meconium aspiration syndrome in 52 (23%) babies, respiratory distress in 92 (40%) babies, congenital malformation in 6 (3%) babies, NICU admission of 93 (40%) babies and neonatal death of 11 (5%) babies.

Conclusions: Oligohydramnios increases the chances of maternal morbidity and perinatal morbidity and mortality.

Keywords: Amniotic fluid index, Apgar score, Oligohydramnios, Single vertical pocket

INTRODUCTION

The amniotic fluid is contributed by both mother and foetus.¹ Its volume is controlled by the interactions among foetal, placental and maternal compartments.² It is composed of both organic and inorganic compounds which help in the growth of the foetus. It is alkaline in nature having a specific gravity of 1.010.³ Initially, dye dilution method was used which is a standard method to measure amniotic fluid volume. Currently, it is not practiced as it is being found an invasive one. So, other methods including single deepest vertical pocket (SVP) method by Chamberlain and amniotic fluid index (AFI)

by Phelan are being used.^{4,5} Oligohydramnios is defined as AFI<5 or SVP<2. Its incidence is 1 to 5% of total pregnancies.⁶ It is caused by maternal conditions like hypertension, post-term pregnancy which affect blood supply towards foetus and cause a decrease in amniotic fluid production. Drugs like ACE inhibitors, NSAIDs affect foetal urine production. Foetal malformations like hydronephrosis, renal agenesis, polycystic kidney, chromosomal abnormalities can also cause oligohydramnios. There is an increased blood flow towards brain rather than kidneys in growth restricted babies, ultimately, leading to decrease urine production.⁷ Oligohydramnios increases maternal morbidity by

increasing the rate of caesarean section and thus increases blood loss and infection and perinatal morbidity by causing limb deformities, cord compression leading to passage of meconium and meconium aspiration syndrome, lower Apgar scores, intensive care unit admission and neonatal mortality.⁸⁻⁹ Management depends on the period of gestation. When diagnosed before 36 weeks of gestation in the presence of normal anatomy and growth, then it can be managed expectantly by increasing maternal hydration and also with drugs like L-arginine which releases nitric oxide and thus causes vasodilation. Amnioinfusion is done to decrease the cord compression during pregnancy. After 36 weeks, delivery is conducted according to maternal and foetal indications.

METHODS

This study was being conducted in pregnant females beyond 36 weeks of gestation with decreased liquor clinically and confirmed sonographically. It was conducted for a period of one year from May 2018 to May 2019. 230 pregnant females participated in the study.

Inclusion criteria

- Pregnant females beyond 36 weeks of gestation
- Decreased liquor clinically and confirmed with ultrasonography
- Membranes should be intact.

Exclusion criteria

- Females with leaking per vaginum
- Patients who did not give consent
- Intrauterine foetal death.

After applying both the inclusion and exclusion criteria, 230 pregnant females beyond 36 weeks of gestation with decreased liquor clinically and confirmed sonographically, were selected. Informed and written consents were taken. These patients with oligohydramnios were admitted and delivered according to maternal and foetal condition. Complete labour record was made. Complete physical examination of both mother by obstetrician, and baby by paediatrician was done.

Assessment of maternal outcome in terms of mode of delivery and foetal outcome in terms of birth weight, Apgar score at one and five-minute, respiratory distress, meconium aspiration, seizures in the first 24 hours of life, congenital malformations, neonatal intensive care unit admission and death of baby was done in this study.

Statistical analysis

Linear variables were summarized as mean and standard deviation, whereas, nominal/categorical variables were presented as proportions (%). Unpaired t test was used for

analysis of linear variables and chi-square test and Fischer exact test were used for nominal/categorical variables. p value <0.05 was taken as significant. Medcalc 16.4 version software was used for statistical calculations.

RESULTS

In a one year of study, there were 230 pregnant females who fulfilled the criteria. As per Table 1, it was found that most of the females 189 (82%) were in between 21 to 30 years of age group and 121 (53%) were primigravida. 129 (56%) females were booked and belonged to middle socioeconomic status. Mostly females 202 (88%) were Hindu and from urban areas 137 (57%).

Table 1: Sociodemographic parameters of patients.

Characteristics	No. of patients	Percentage	
Age (in years)	<20	12	5%
	21 to 30	189	82%
	>30	29	13%
Gravidity	Primi	121	53%
	Multi	109	47%
Booking status	Booked	129	56%
	Unbooked	101	44%
Residence	Rural	98	43%
	Urban	132	57%
Religion	Hindu	202	88%
	Muslim	28	12%
Socio-economic status	Low	101	44%
	Middle	129	56%

Hypertension 62 (27%) was the most common maternal condition associated with oligohydramnios followed by hypothyroidism, asthma, heart disease and diabetes. No cause was detected in 142 (62%) of the pregnancies as shown in Table 2.

Table 2: Maternal conditions associated with oligohydramnios.

Maternal conditions	No. of cases	Percentage
Hypertension	62	27%
Hypothyroidism	23	10%
Asthma	1	0.4%
Heart disease	1	0.4%
Diabetes	1	0.4%
No associated maternal condition	142	62%

Table 3: Maternal outcome associated with oligohydramnios.

Mode of delivery	No. of patients	Percentage
Vaginal delivery	111	48%
LSCS	119	52%

Maternal outcome was assessed in terms of mode of delivery. There were 119 (52%) females who underwent for caesarean section whereas 111 (48%) delivered vaginally as seen in Table 3. Most common indication of LSCS was foetal distress followed by failed induction.

Table 4: Foetal conditions associated with oligohydramnios.

Foetal condition	No. of cases	Percentage
Growth Restriction	59	26%
Malpresentation	18	8%
Congenital malformation	6	3%

As shown in Table 4, 59 (26%) babies were growth restricted. Malpresentation was found in 18 (8%) patients and 6 (3%) were having malformations like hydronephrosis and polycystic kidney.

Table 5: Foetal outcome in oligohydramnios group.

Foetal outcome	No. of cases	Percentage
Apgar score <7 at 1 minute	97	42%
Apgar score <7 after 5 minutes	93	40%
Meconium aspiration syndrome	52	23%
Respiratory distress	92	40%
Seizures	2	1%
NICU Admission	93	40%
Death	11	5%

As shown in Table 5, there was poor foetal outcome in patients with oligohydramnios. Out of the 230 babies, 97 (42%) babies had Apgar score <7 at 1 minute, 93 (40%) had Apgar score <7 after 5 minutes. 52 (23%) aspirated meconium and 92 (40%) had respiratory distress and seizure occurred in 2 (1%) babies. There were 93 (40%) babies who were admitted in NICU and 11 (4.78%) babies died after birth.

DISCUSSION

Pregnancies with oligohydramnios are high risk pregnancies. It can be diagnosed clinically and confirmed by ultrasonography. In this study, it was found that 53% of the pregnant females were primigravida and 47% were multigravida. In a study done by Ghimire et al, 58% were primigravida and 42% were multigravida.¹⁰ Garmel et al supported that 67% of women with oligohydramnios were nulligravida and Charu et al supported that 66% of women were nulligravida.^{11,12} There were 82% of the females which were in between 21 to 30 years of age in this study. Similarly, in a study done by Gita G et al, there were 70.7% of the pregnancies belonged to 21 to 30 years age group and 87.4% in a study by Rizwan Ahmer et al.^{13,14} In this study, 52% underwent for caesarean section. "LSCS was done in 80% patients in Ghimire et

al, study whereas 42.8% underwent for caesarean delivery in a study done by Gita G et al and 40% in a study by Ahmer R et al.^{10,13,14} There were 26% growth restricted babies in this study. There were 12.7% growth restricted babies in a study by Tajinder K et al, in study by Ahmer R et al.^{14,15} No significant difference in birth weight was observed in Ghimire et al study.¹⁰ Casey BM et al and Manning et al reported IUGR in 24% and 36% babies, respectively.^{9,16} Hypertension was found in 27% of the females. Similar observations were seen in studies by Tajinder K et al, (17.5%) and Ahmer R et al 27.78%.^{14,15} Malpresentation was seen in 7.8% of the pregnancies in the present study. It was present in 17% of the subjects in Gita G et al study.¹³ There were congenital malformations in 2.6% babies in the present study. It was 4.2% in Gita G et al study, 3.33% in Ahmer R et al study and 7.9% in a study by Tajinder K et al.¹³⁻¹⁵ Most common congenital anomaly in all the studies was of genitourinary system. Foetal outcome was assessed in terms of Apgar score <7 at 1 minute which was 42.17%, Apgar score at 5 minute which was 40.43%, meconium aspiration syndrome in 22.60% babies, respiratory distress in 40% of the babies and 1% babies had seizures. In a study conducted by Ghimire et al, low Apgar score was seen in 20% babies and meconium aspiration syndrome in 9% babies.¹⁰

In Ahmer R et al study, 25% babies had low Apgar score, in Manning et al 15% babies had Apgar score <7.^{14,16} 40.43% babies got admitted in NICU. 7% got admitted in Casey BM et al study, 20% in Ahmer R et al study, 20% in Johnson et al study and 29.4% in Zhang J et al study and 58.8% in Kaur T et al study.^{9,14-16,18} In this study, 4.78% babies died. There were 12% neonatal deaths in oligohydramnios group in Ghimire et al, 9.9% in Chamberlain et al, 6.4% in Casey et al, 12.6% in Gita G et al, 7.2% in Wolff et al studies.^{4,9,10,13,19}

CONCLUSION

Oligohydramnios increases the incidence of maternal morbidity and perinatal morbidity and mortality.

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Conflict of interest: None declared

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

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