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Original Research Article

A study on risk factors and pregnancy outcomes associated with oligohydramnios during pregnancy

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ABSTRACT

Background: Oligohydramnios is one of the most common complications in pregnant women, leading to the various complications like intrauterine growth restriction (IUGR), and low birth weight. This study evaluated the risk factors contributing, perinatal and maternal outcomes of oligohydramnios in pregnant women.
Methods: The study was conducted at Government General Hospital, Karimnagar from July to December 2024. Out of collection of 450 pregnant women, 106 patients satisfying inclusion and exclusion criteria of present prospective observational study. Pregnant women, the data was analyzed according to the parameters like age, amniotic fluid index (AFI) value, and risk factors.
Results: Upon distribution of patient data based on age it is observed that maximum number of 39.6% (42) are from the age group of 23-27 years and distributed based on risk factors, 30% (32) patients with pregnancy induced hypertension, 46% (49) patients with hypothyroidism,11% (12) patients of diabetes mellitus, 11% (12) patients with advanced age,43% (46) patients with dehydration. Analysis of data based on outcomes of oligohydramnios, maximum number of samples with 42% (45) found with low birth weight. Distribution of data according to the gestational age the peak number of (101) patients were from 28-42 weeks.
Conclusion: We found hypothyroidism, pregnancy induced hypertension as the major risk factors contributing to the oligohydramnios and low birth weight and IUGR as major adverse outcomes associated with it. Rate of caesarean section was higher in patients with oligohydramnios and more common of neonate's admission into NICU and has a significant correlation with adverse perinatal outcome.

Keywords: Oligohydramnios, Pregnancy, Amniotic fluid index, Perinatal outcomes

INTRODUCTION

Oligohydramnios (oligo) is the term which is used to describe the amniotic fluid volume (AFV) that is less than expected at a given gestational age.[1] In this condition liquor amnio is deficient amniotic fluid index (AFI) measures <8 cm.[2] The incidence of oligohydramnios varies based on characteristics and gestational age of population.[3] Border line oligohydramnios is the condition in which AFI measures between 5-8 cm.[4] Oligo is mainly caused by maternal conditions such as dehydration.[5] Hypertensive disorders like preeclampsia, utero-placental insufficiency, idiopathic condition and foetal conditions including foetal renal abnormalities, spontaneous rupture of membrane (SROM), foetal chromosomal abnormalities, intra uterine infections (IUI), drugs: ACE inhibitors and NSAID'S like indomethacin, post term pregnancy.[6] Hypertensive disorders, pre-mature rupture of membrane (amniotic sac), hypothyroidism, dehydration, congenital anomalies, and advanced age are the major risk factors for the oligohydramnios.[7]

Major complications of the oligohydramnios are intra-uterine growth restriction (IUGR) in which the total urine production was decreased, it may lead to chronic hypoxemia condition.[8,9] Finally, it results in decreased urine output, urine flow and also the blood flow through the umbilical cord to the foetus is decreased it will lead to the deficient nutrition supplied to the to the foetus hence their growth is restricted may leads to intra-uterine death (IUD), preterm labour, decreased foetus movements due to utero-placental insufficiency, irritable uterus which induces labour.[10-12] Low birth weight, pulmonary hypoplasia, and fetal anomalies are the other complications with oligohydramnios.[11]

Oligohydramnios causes altered foetal heart rate like decelerations due to umbilical cord compression making it necessary for emergency or caesarean delivery.[13] In the present study we have evaluated the concludes that the major risk factors contributing to the oligohydramnios are found as hypothyroidism pregnancy induced hypertension and the major adverse outcomes associated with the oligohydramnios are low birth weight and intra uterine growth restriction.[14-17]

METHODS

This study was conducted in inpatients units of Government District Hospital/Mother and Child Healthcare Hospital in the Obstetrics and Gynaecology department with oligohydramnios condition. The present study was conducted for a duration of 6 months from July-December 2024 by following the prospective observational study designs. The total number of oligohydramnios patients involved in the present study was 150 and their amniotic fluid index was less than 8 cm.

Inclusion criteria

Inclusion criteria included pregnant women with decreased amniotic fluid less than 8 cm, pregnant women with the age less than 49 years and pregnant women with single foetal gestation.

Exclusion criteria

Exclusion criteria included non-pregnant women, pregnant with the normal AFI women with multi foetal gestation and age greater than 49 years.

The data was collected from the hospitalized patients of pregnant women with the low amniotic fluid index that is less than 8 cm in Inpatients of government district hospital/mother and child healthcare hospital in the department of obstetrics and gynaecology.

Study procedure

The study was initiated at single centre by selecting the patients based on Inclusion criteria of the study. Patients with age greater than 18 years age enrolled in our studies who have decreased amniotic fluid. Patients were enrolled in this study based upon demographic details and laboratory details. The study commenced with an extensive literature review and meticulous preparation of the research protocol to establish a strong theoretical foundation and clear methodological framework. Following this, a structured data collection form was designed to ensure systematic and consistent recording of relevant variables. Once the form was finalized, data collection was undertaken carefully, adhering to the predefined inclusion and exclusion criteria. After the data were gathered, statistical analysis was performed.

RESULTS

The study titled as “a prospective study on maternal and perinatal outcomes of oligohydramnios in pregnancy” was conducted at Mother and Child Healthcare hospital, a unit of Government General Hospital, Karimnagar, Telangana. A total number of 106 pregnant women with oligohydramnios were included in this study and duration was 6 months from July to December 2024.

Arrangement of oligohydramnios cases on the basis of age criteria

In this study, it is observed from the table 1that maximum number of 42 (39.6%) cases from 23-27 years and 9 (8.4%) cases from greater than 33years patients according to age criteria (Table 1).

Table 1: Age criteria.

Age (in years)	No. of patients	Percentage (%)
18-22	34	32
23-27	42	39.6
28-32	21	19.8
>33	9	8.4

Mostly oligohydramnios occurs in the patients with gestational age of 28-42 weeks. Among the 106 cases, 16% (17) patients with <3 cm (severe oligo), 42.5% (45) having 3-5 cm, (moderate) and 41.5% (44) cases with the AFI value 5-8 cm, it was considered as mild oligohydramnios.

Dissemination of study cases based on risk factors

The collected patient data was divided as per the risk factors and were mentioned in Table 2. Pregnancy-induced hypertension (PIH) was observed in 32 cases (30%), indicating a significant correlation between hypertensive disorders and reduced amniotic fluid levels. Hypothyroidism was the most common condition, seen in 49 cases (46%), suggesting that thyroid dysfunction may play a crucial role in the pathophysiology of oligohydramnios.

Diabetes mellitus and advanced maternal age were each present in 12 cases (11%), both of which are known risk

factors that can affect placental function and fetal well-being. Dehydration was noted in 46 cases (43%), highlighting the importance of adequate maternal hydration in maintaining normal amniotic fluid volume. No cases of congenital anomalies were reported in this study, suggesting that fetal structural abnormalities were not a contributing factor in this cohort. Lastly, 3 cases (2.8%) had no significant identifiable maternal or fetal risk factors, indicating that oligohydramnios can occasionally occur without an obvious underlying cause.

Table 2: Patients data based on risk factors.

Risk factors	No. of cases	Percentage (%)
Pregnancy induced hypertension (PIH)	32	30
Hypothyroidism	49	46
Diabetes mellitus	12	11
Advanced age	12	11
Dehydration	43	40.5
Congenital anomalies	0	0
Nothing significant	3	2.8

The study cases categorized based on approximate gestational age (AGA)

Out of the 106 patients studied, the vast majority of oligohydramnios cases—101 patients (95.2%)—were identified in the third trimester (28–42 weeks), indicating that this condition is most commonly diagnosed in the later stages of pregnancy. Only 4 patients (3.8%) were in the second trimester (13–27 weeks), and just 1 patient (0.9%) was in the first trimester (0–13 weeks), highlighting the rarity of early gestational oligohydramnios. This distribution suggests that late pregnancy is the most critical period for monitoring amniotic fluid levels to prevent complications. Furthermore, cases were categorized based on the birth weight of the babies, which helps to assess the impact of oligohydramnios on fetal growth and neonatal outcomes (Table 3).

Scattering of oligohydramnios cases on the basis of complications

The distribution of complications among patients with oligohydramnios was shown in Table 4 and reveals a range of adverse perinatal outcomes. Intrauterine growth restriction (IUGR) was seen in 17 cases (16%), suggesting impaired fetal development likely due to reduced placental perfusion. Intrauterine death (IUD) occurred in 2 cases (1.8%), indicating the severe impact oligohydramnios can have on fetal survival.

Low birth weight (LBW) was the most frequent complication, noted in 45 cases (42%), reflecting compromised fetal growth and development. Placental insufficiency was identified in 5 cases (4%), further supporting the role of inadequate placental function in these pregnancies. Preterm labour was observed in 8 cases (7.5%), showing that oligohydramnios can contribute to early onset of labor. Additionally, there were 2 cases (1.8%) of miscarriage and 1 case (0.9%) with fetal anomalies, both of which underscore the potential severity of the condition. Interestingly, 26 cases (24.5%) showed no associated complications, indicating that a subset of oligohydramnios cases may have relatively favorable outcomes, especially with timely diagnosis and management (Table 4).

Table 3: Case details based on AGA.

AGA (weeks)	No. of cases	% of cases
0-13	1	0.9
13-27	4	3.8
28-42	101	95.2

Table 4: Complications in oligohydramnios.

Complications	No. of cases	Percentage (%)
IUGR	17	16
Intra-uterine death	2	1.8
Low birth weight	45	42
Placental insufficiency	5	4
Preterm labour	8	7.5
Miscarriage	2	1.8
Anomalies	1	0.9
No complications	26	24.5

DISCUSSION

The AFI <8 cm is considered as the condition called Oligohydramnios. AFI can be predicted by USG. Estimation of AFI can predict the risk of foetus and mother. The present study performed to evaluate the complications in pregnant women suffering with oligohydramnios.

One hundred and six (106) pregnant women are enrolled in this study with oligohydramnios. In this study oligohydramnios is mostly seen in patients of age less than 30 years (<90 patients/84.9%). Among 106 patients only 0.9% patient with 0-13 weeks AGA, 3.8% patient were with 13-37 weeks and 95.25% patient with 28-42 weeks and these results were similar to the reports of Madhavi et al.[18]

In this current study among 106 pregnant women, the major risk factor was hypothyroidism contributing to the oligohydramnios that was found in 46% patients and other risk factors such as pregnancy induced hypertension, diabetic mellitus, advanced age, dehydration, congenital anomalies were found in 30%, 11%, 11%, 40.5%, 0% patients. Similar findings were found in the study conducted by Biradar et al.[19]

In this current study out of 106 patients, 17 (16%) of patients are diagnosed with IUGR. The present study depicts the difficulties of oligohydramnios in pregnant women. In the present study high rate of LBW babies were observed (<2.5 kg) 42%. This observation reflects the contribution of oligohydramnios in birth weight. The results of the present study were similar to the reports of Shaveta et al.[20]

Limitations

The study was single center study with a relatively small sample size; hence our findings may not be generalized in all the pregnancies.

CONCLUSION

The present study concludes that the major risk factors contributing to the oligohydramnios are hypothyroidism and pregnancy induced hypertension and the major adverse outcomes associated with the oligohydramnios are low birth weight and intra uterine growth restriction. Mostly oligohydramnios occurs in the patients with gestational age of 28-42 weeks. The caesarean delivery is more common in women with oligohydramnios than women with normal amniotic fluid volume. The FHR is not much affected by the oligohydramnios. Most of the null parity pregnant women are affected with oligohydramnios than primipara and multipara patients. Rate of caesarean section was higher in patients with oligohydramnios and higher number of neonates were admitted to the NICU amongst the patients of oligohydramnios and has a significant correlation with adverse perinatal outcome.

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