

OLIGOHYDRAMNIOS RISK FACTORS IN 3RD TRIMESTER OF PREGNANCY AT ONE OF HOSPITALS OF SOUTH PUNJAB

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ABSTRACT

Objective: To Ascertain The Third Trimester Of Pregnancy's Risk Factors For Oligohydramnios. Compared To Controls, Cases Had A Higher Incidence Of Women Whose Gestational Ages Are Greater Than 39 Weeks.

Methods: Following Clearance From The Ethics Review Committee, The Study Was Carried Out. Consultant Radiologists With At Least Five Years Of Post-Fellowship Experience Assessed Women Who Met The Inclusion Criteria And Presented To The Obg Department's Outpatient Department For Oligohydramnios. Women Classified As Cases Had An Afi ≤ 5 Cm, Whereas Controls Had An Afi > 5 Cm. Following Informed Consent, 63 Cases And 63 Controls Were Enrolled In Total. Records Were Kept On The Patient's Age, Gestational Age, Gravidity, Gestational Diabetes, And Hypertension. Every Woman's Bmi Was Calculated Using The Operational Definition. As Per Routine Hospital Procedure, Two Milliliters Of Venous Blood Were Taken From Each Participant, And The Blood Was Tested For Hemoglobin (Hb) In A Single Laboratory. The Consultant Radiologist Measured The Estimated Fetal Weight. The Researchers Conducted All Of The Assessments Without Being Aware Of The Individuals' Case-Control Status. Proformas Was Used To Record All Of The Data.

Results: Most Of The Respondents Were In The Age Range Of 20 To 45 Years. The Frequency Of Oligohydramnios Was Higher Among Women From Low Socioeconomic Status Groups (79%), Farmers (54.4%), And Women Who Had Babies Vaginally (80%). The C-Section Rate Was 18.9%. All Of The Outcomes Were Live Deliveries With No Perinatal Deaths, And The 11.1% Of Babies That Required Nicu Care Did So Primarily For Observation Before Respiratory Distress. In Five Minutes, 87.8% Of The Apgar Scores Were Between Seven And Ten, And 12.2% Were Between Four And Six. Individuals From Lower Socioeconomic Classes Exhibited A Lower Afi, With A Statistically Significant Difference ($X^2=8.176$, $P=0.017$). A Statistically Significant Connection ($P<0.05$) Was Seen Between The Degree Of Afi And Several Outcomes, Including Greater Rates Of Cesarean Sections, Longer Hospital Stays, Malpresentation, Lower Baby Weight, Nicu Admissions, And Longer Nicu Hospitalizations.

Conclusion: Low Birth Weight Is Significantly Correlated With Oligohydramnios. These Days, Oligohydramnios Occurs Frequently. For The Mother And The Newborn To Survive And Thrive, A Thorough Evaluation, Intense Parental Counseling, Fetal Observation, And Appropriate Antepartum And Intrapartum Care Are Required.

The Research of Medical Science Review

Keywords: *Low Birth Weight, Oligohydramnios, Afi, Foetal Surveillance, Apgar, Nicu*

INTRODUCTION

The most frequent amniotic fluid condition is oligohydramnios, which is defined by decreased amniotic fluid or amniotic fluid volume that is below what is typical for gestational age (Madendag Y, 2019). When the largest vertical pocket or deepest pocket is less than 2 cm, or when the amniotic fluid index (AFI) is less than 5, oligohydramnios is diagnosed (Gunasingha H, 2022).

Poor maternal and fetal/neonatal outcomes are linked to oligohydramnios. These outcomes include restricted growth within the uterus, fetal distress, asphyxia at birth, prolonged labor, and an increased risk of caesarean section, which is frequently caused by compression of the umbilical cord, aspiration of meconium, or uteroplacental insufficiency (Saxena R, 2020), (Bibi DR, 2023).

Up to 6.5% of stillbirths in low- and middle-income countries are caused by oligohydramnios (Twesigomwe G, 2022). Worldwide, oligohydramnios affects 0.5–1% of term pregnancies (Levin G, 2022). It has been discovered that oligohydramnios is linked to a number of maternal, placental, and fetal factors, such as ruptured amniotic membranes, fetal abnormalities, genetic factors (Hiromoto K, 2023), maternal illnesses, nutrition status, multiple pregnancies, use of non-steroidal anti-inflammatory drugs (NSAIDs) (D'Ambrosio V, 2023), and use of specific angiotensin converting enzyme inhibitors (ACEIs) (Fu J, 2021).

Forty-six (9.4%) of the 426 women Twesigomwe G et al. enrolled developed oligohydramnios. Pregnancy history of malaria (31.6% vs. 8.4%, $P = 0.008$), primigravida status (15.2% vs. 5.1% (in 2-4 gravida), $P = 0.002$), and gestational age > 39 weeks (70% vs. 45.3%) were found to be substantially linked with the likelihood of having oligohydramnios (Twesigomwe G, 2022).

In the third trimester, Satti I et al. investigated risk variables in 247 pregnant cases with oligohydramnios and 247 healthy pregnancies as the control group. Risk factors included idiopathic disease (45.7%), congenital abnormalities (14.60%), diabetic mellitus (5.3%), preeclampsia and hypertension (13.8%), and antiphospholipid antibody syndrome (1.2%) (Satti I, 2021).

The purpose of this study is to identify the different risk variables that contribute to oligohydramnios in the third trimester of pregnancy in women who come to our local setting. In order to raise the level of suspicion among healthcare professionals providing prenatal care, it is imperative to provide evidence regarding characteristics linked with decreasing alcohol consumption in the third trimester. This will allow for the planning of relevant measures, such as delivery mode and time.

MATERIALS AND METHODS

Study was done at Department of obstetrics & gynecology, Ibn-e-Siena hospital Multan Study design. Study was Case Control, duration of the study was 6-months (April 2024 to September 2024). Sample size was calculated through WHO sample size calculator using for formula for case-control study. Where, frequency of women with gestational age >39 -weeks in cases = 70%, Frequency of women with gestational age >39 -weeks in controls = 45.4%. 80% significance level = 5% test odds ratio = 2.0. Sample size was 126 (63 cases and 63 controls). Sampling technique was Non-probability consecutive sampling. Inclusion Criteria included pregnant women 20–45 years of age, singleton term (37-42 weeks on LMP method) pregnancy visiting for regular follow-up. Exclusion Criteria included women already under treatment for oligohydramnios, with rupture of membrane and in active labour were excluded. Data collection procedure: The study was conducted after the ethics review committee approval. Women presenting to OPD of OBG department and fulfilling the inclusion criteria were screened for oligohydramnios by consultant radiologist with ≥ 5 -year post fellowship.

Women with AFI ≤ 5 cm were labeled as cases and > 5 -cm as controls. A total of 63 cases and 63 controls were enrolled after informed consent. Patient characteristics like age, gestational age, gravidity, gestational diabetes and hypertension was recorded. BMI of all the women was assessed as per operational definition. Two milliliters of venous blood were drawn from all the participants and assessed for Hemoglobin (Hb) from a single laboratory as per standard hospital protocol. Estimated fetal weight was measured by consultant radiologist using the Hadlock formula. All the assessment was done by the researchers without knowledge of case-control status of the participants. All the data was recorded on proforma. Data analysis: Data was

The Research of Medical Science Review

analysed through SPSS version 23. Normality of numerical data was assessed through Shapiro-Wilk test. Maternal age, gestational age, estimated fetal weight, BMI and Hb levels were presented as mean and standard deviation (median and interquartile range if not normally distributed). Gravidity, gestational diabetes and hypertension were presented as frequency and percentages. The risk factors i.e. maternal age >30-years, gestational age >39-weeks, gravidity >3, anemia (Hb <11 g/dl in third trimester), body mass index >25 kg/m², estimated fetal weight >3.5 kg, gestational diabetes mellitus and gestational hypertension between case and controls was assessed through chi-square test and odds ratio with 95% CI was calculated.

RESULTS

Table 1 : Socio-demographic and clinical features of the study subjects

Age	Frequency	Percent
20-25	35	11.1
25-30	55	77.8
30-35	25	10
35-45	15	1.1
Total	120	100
Occupation		
Housewife	30	7.8
Farmer	60	36.7
Labourer	25	54.4
Sedentary job	15	1.1
Total	120	100
Socio-economic status		
Upper lower	44	21.1
Lower middle	76	78.9
Total	120	100
Gestational age at delivery		
36 weeks	15	10.0
37 weeks	5	5.6
38 weeks	33	25.6
39 weeks	51	45.6
40 weeks	13	10
41 weeks	3	3.3
Total	120	100

The sociodemographic characteristics of the study individuals are displayed in Table 1. The respondents' average age was 23.27 ± 2.04 years. Twenty-three was the median age. The majority of the participants belonged to the age range of 21–25, with those in the 15-20 age range coming in second. 54.4% of workers were farmers, 36.7% were laborers, 7.8% were housewives, and 1.1% held sedentary employment. The modified BG Prasad socioeconomic status classification placed 21.1% in the upper lower class and 78.9% in the lower middle class. According to chief complaints, 2.2% of respondents reported vaginal bleeding or discomfort in the abdomen, 25.6% reported lower back or abdominal pain, 58.9% reported diminished fetal movements, and 1.1% reported a pregnancy that had occurred after the fact. 45.6% of patients in this study delivered at 39 weeks, 25.6% at 38 weeks, and 10.0% at 36 weeks gestational age at delivery.

the subjects' labor and delivery. Of the participants, 64.4% experienced spontaneous labor, whereas 18.9% underwent induced labor. 2.2% of participants had fetal distress, 5.6% had severe oligohydramnios, and 32.2% had mild/moderate oligohydramnios as the reason for induction of labor. About 60% of births occurred without the need for labor induction. Eighty percent of the individuals delivered vaginally, one

The Research of Medical Science Review

percent had an instrumental birth, and eighteen percent had a C section. For half of the individuals, their hospital stay lasted between 48 and 72 hours. It was <48 hours in 23.3% of women, >7 days in 18.9%, and 3-5 days in 6.7% of women. Ninety percent of the individuals presented normally, eight percent presented breech, and one percent presented unstable. Details about neonatal health are displayed in Table 2. With one exception—a newborn who weighed a normal amount—nearly all of the babies were born weighing less than 2.5 kg. About 11% of the cases required admission to a NICU. 10% of newborns spent less than 24 hours in the NICU, and 1.1% spent between 24 and 48 hours there. About 1% of NICU admissions were due to respiratory distress, while the majority of instances were for the newborn to be kept under surveillance. In 5 minutes, the Apgar score was collected. In 88% of the neonates, the score was between 7 and 10, while in 12.2% of the neonates, it was between 4-6.

Table 2 : Details related to neonatal health

Neonatal weight	Frequency	Percent
<1.5kg	10	5.6
1.5-2kg	79	76.7
2-2.500kg	26	16.7
2.500-3.00kg	6	1.1
Total	120	100
NICU Admission		
No	100	88.9
Yes	20	11.1
Total	120	100
Duration of NICU Stay		
<24 hours	15	10
24-48 hours	5	1.1
NA	100	88.9
Total	120	100
Reason of NICU Admission		
Under Observation	15	10
Respiratory Distress	5	1.1
NA	100	88.9
Total	120	100

Table displays the relationships between several variables and AFI. The aforementioned table demonstrates that there was a statistically significant difference in the AFI between subjects from lower socioeconomic classes. A statistically significant ($p < 0.05$) correlation was found between lower AFI scores and higher rates of cesarean sections, longer hospital stays, malpresentation, lower birth weight, NICU admissions, and longer NICU stay duration when the degree of AFI was linked to different outcomes. 38.9% of the subjects had an AFI of 5.1-7.9 cm, 7.7% had an AFI of up to 3 cm, and nearly half of the participants had an AFI of 3.1-5 cm. The amniotic fluid of every research subject was clear, and no anomalies were found.

DISCUSSION

Amniotic fluid functions as a gauge of the health of the fetus. Reduced amniotic fluid content in pregnancies without an early rupture of the membranes indicates a fetus under chronic stress, with blood being diverted from other organs, such as the kidneys, and toward the brain, adrenal glands, and heart (Ghosh R, 2018). Reduced urine production and oligohydramnios are the outcomes of reduced renal perfusion. Therefore, measuring the volume of amniotic fluid during the prenatal stage is a useful method for identifying women who may have unfavorable perinatal outcomes. The average mother age in the current study was 23 years old, which was in line with research by Chauhan SP, Everett, and Manisha Sharma (Everett F, 2003). Every

The Research of Medical Science Review

woman included in the current study was a primigravida. According to studies done in 2016 by Chaitra et al. and in 2017 by Mathuriya G. and al., primigravida were more likely to have oligohydramnios.

On the other hand, age and parity did not significantly correlate with oligohydramnios, according to a research by Casey et al (Casey BM, 2000). Similar to studies by Moses V et al. (2016) and Sathyapriya K. (2018), the prevalence of oligohydramnios was higher in women with a gestational age of 35–39 weeks in this study (Moses V, 2016).

The amniotic fluid index (3.1–5 cm) of 53.3% of the women in this study was comparable to that of studies by Manisha Sharma, Chauhan SP, PK Jain, Everette F, and Kamlesh R Chaudhari (Everett F, 2003). Maternal dehydration, placental insufficiency, preeclampsia, gestational diabetes, anemia, etc. are the causes of decreased AFI; however, none of these linked factors were identified in the current investigation, which may have been because of the limited sample size. Similar to a study by Tiparse A et al., oligohydramnios were shown to be substantially correlated with socioeconomic status in this investigation (Tiparse A, 2017).

This study's findings were in contrast to those of studies conducted by Sharma M, Jandial C et al, and Guien et al, which reported 50%, 58%, and 56% of cases with mild/moderate oligohydramnios, respectively, at 18.9%. In line with the findings of the Chate P. Khatri and study by Kamlesh R. Chaudhari, the mode of delivery in this study was 80% vaginal delivery and 18.9% C section. Sharma M., on the other hand, claimed that the primary mode of delivery in the study (44%) was C section.

In contrast to the current study, which found that timely and early management of oligohydramnios can help females deliver normally with better outcomes, the study by Sathyapriya K. and Sonal Anto found that caesarean section was highly preferred mode of delivery in order to improve maternal and foetal outcomes (Sathyapriya K, 2019).

The findings of the study by Sharma M, Kamlesh R Chaudhari, and Sriya R indicated that 75% of newborns weighed less than 2 kg, which was nearly identical to our findings. Every newborn included in this study was alive. Nonetheless, the 11% newborn admission rate is comparable to the findings of the Casey BM trial. 88% of newborns had Apgar scores between 7 and 10, which was comparable to research done by Chate P Khatri and Guien et al (Guin G, 2011).

A higher rate of cesarean sections with low AFI was statistically significant in the current study, as was also noted by Chauhan et al. and Chaudhari K et al. Longer stay was also linked to lower AFI, which might be because that group had more cesarean sections. Malpresentations were observed in lower AFI with significant ($p < 0.05$) differences from the Guien et al. investigation (Guin G, 2011). The study found that babies born to women with lower AFI had lower birth weights, necessitating NICU admission and longer NICU stays. Additionally, this link was observed to be statistically significant.

CONCLUSION

Regular prenatal checkups allow for the early detection of oligohydramnios through clinical examination and routine ultrasonography. While postdated pregnancies, PIH, and maternal dehydration are the most common idiopathic reasons of low amniotic fluid in the third trimester, they can also occur. A larger sample size is necessary in order to gain comprehensive understanding of the correlation with these causes. Lower AFI levels were linked to higher rates of cesarean sections, longer hospital stays, more NICU admissions, low baby weight, malpresentation, and longer NICU stays, according to the current study. The result of a normal delivery with prompt intervention and careful intrapartum care was on par with that of a cesarean delivery. In order to avoid needless maternal morbidity, a balanced decision on vaginal delivery versus cesarean section should be made.

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The Research of Medical Science Review

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