Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1442
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1442*
Original research article

FETOMATERNAL OUTCOME AMONG PREGNANT WOMEN PRESENTED WITH OBSTETRIC CHOLESTASIS

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(Received, 27th August 2024, Revised 20th December 2024, Published 30th December 2024)

Abstract: *Obstetric cholestasis is a significant condition in pregnancy, associated with adverse fetomaternal outcomes, particularly at term. Timely diagnosis and management are crucial to mitigate complications.* ***Objective:*** *The aim of this study was to evaluate the fetomaternal outcomes among pregnant women diagnosed with obstetric cholestasis at term.* ***Methods:*** *This cross-sectional study was conducted from January 1, 2024, to July 1, 2024, in the Department of Obstetrics and Gynecology. Consecutive non-probability sampling was used to recruit women aged 18-40 years diagnosed with obstetric cholestasis at term. Patients with acute hepatitis, chronic kidney disease, or drug-induced hepatitis were excluded. Demographic data such as age, BMI, educational status, occupation, socioeconomic status, and residence area were recorded. Fetomaternal outcomes, including emergency cesarean section, sleep disturbances, postpartum hemorrhage, low birth weight (<2.5 kg), APGAR score <7, NICU admission, and meconium-stained liquor, were assessed.* ***Results:*** *A total of 120 patients were included in the study. The mean age of participants was 28.56 ± 6.40 years, and the majority were within the 18-30 years age group. Fetomaternal outcomes showed that 35% of the women required an emergency cesarean section. Sleep disturbances were observed in 54.2%, and postpartum hemorrhage occurred in 11.7% of cases. Low birth weight was recorded in 20.8% of neonates, while 10% had an APGAR score <7. NICU admission was required for 23.3% of the neonates, and meconium-stained liquor was present in 35.8% of deliveries.* ***Conclusion:*** *The study demonstrated significant fetomaternal outcomes in obstetric cholestasis, emphasizing the need for early detection and careful management to reduce complications such as higher rates of emergency cesarean sections, sleep disturbances, postpartum hemorrhage, low birth weight, and NICU admissions.*

Keywords: Obstetric cholestasis, fetomaternal outcomes, emergency cesarean section, NICU admission, low birth weight, sleep disturbances, postpartum hemorrhage.

Introduction

Obstetric cholestasis is a hepatic condition that occurs during the late second and early third trimester of gestation. Obstetric cholestasis is characterized by pruritus, elevated serum bile acids, and alterations in liver function tests. The pathophysiology of intracranial pressure remains incompletely elucidated. The symptoms as well as biochemical abnormalities quickly resolve following delivery. Obstetric cholestasis is linked to a heightened risk of negative obstetric outcomes, which encompass a stillbirth, respiratory distress syndrome, meconium passage, as well as fetal asphyxiation. (1, 2) The incidence ranges from 0.1% to 15.6%, influenced by geographic and ethnic factors. The reported rate of obstetric cholestasis among Indian women is approximately 1%, while in Eastern Nepal, it is noted to be 1.15%. (3)

The etiology of obstetric cholestasis remains inadequately understood, characterized by a complex and multifactorial nature. Proposed mechanisms include genetic susceptibility, hormonal influences, and environmental factors. A correlation exists between the cholestatic attributes of reproductive hormones within genetically predisposed women and obstetric cholestasis. The evidence supporting the genetic susceptibility hypothesis is based on observations of familial clustering patterns, increased incidence among first-degree relatives, and an elevated risk of disease recurrence in subsequent pregnancies. (4, 5)

Liver function tests, which encompass serum bile acid levels, are indicated for pregnant women who present with pruritus. Serum bile acids serve as a highly sensitive and specific indicator for the diagnosis and monitoring of obstetric cholestasis of pregnancy. The test is presently unavailable in all locations. The Royal College of Obstetricians and Gynecologists guideline indicates that, in the absence of bile acid testing, obstetric cholestasis of pregnancy may be diagnosed in a woman presenting with typical pruritus and abnormal liver function tests, provided that both conditions resolve following delivery. (6, 7)

Genetic as well as hormonal factors are significant contributors. The condition exhibits a higher prevalence in females experiencing multifetal pregnancies, typically manifesting during the third trimester. Certain women who have a history of obstetric cholestasis may experience a recurrence of symptoms upon the use of oral contraceptives. (8, 9)

Obstetric cholestasis is characterized by elevated bile acids, leading to symptoms such as pruritus, and has been associated with increased risks for both the mother and fetus. The study on fetomaternal outcomes among pregnant women with obstetric cholestasis is crucial in understanding

the potential risks and complications associated with this condition, which affects the liver during pregnancy.

Methodology

The study was conducted in the Department of Obstetrics and Gynecology using a cross-sectional design over a six-month period, at MERF General Hospital, Peshawar from January 1, 2024, to July 1, 2024. Consecutive non-probability sampling was employed to recruit participants. Patients aged 18 to 40 years, diagnosed with obstetric cholestasis at term as per the operational definition, were included in the study. Those with acute hepatitis, chronic kidney disease, or drug-induced hepatitis were excluded.

Approval for the study was obtained the hospital. Patients meeting the inclusion criteria were enrolled after providing informed written consent. The study purpose was explained to the participants, and they were assured that their participation posed no risk. Demographic details, including age, BMI, educational status, occupation status, socioeconomic status, and residence area, were recorded. Pregnant women at term diagnosed with obstetric cholestasis were evaluated for outcomes such as emergency cesarean section, sleep disturbances, postpartum hemorrhage, low birth weight (defined as less than 2.5 kg), APGAR scores below 7, neonatal intensive care unit (NICU) admissions, and the presence of meconium-stained liquor. This evaluation was conducted under the supervision of a consultant with at least five years of post-fellowship experience. All relevant details were documented on a designated proforma.

Data analysis was carried out using IBM SPSS software, version 23. Numerical data, such as age, gestational age, weight, height, and BMI, were analyzed for means and standard deviations. Categorical data, including fetomaternal outcomes, education status, occupation status, socioeconomic status, and residence area, were analyzed for frequencies and percentages. The study results were presented in the form of tables and graphs for clarity and comprehensiveness.

Results

Our study on fetomaternal outcomes among pregnant women with obstetric cholestasis analyzed a cohort of 120 participants. The mean age was 28.56 ± 6.402 years, with the majority falling within the age range of 18 to 30 years (n = 71, 59.2%) compared to 31 to 40 years (n = 49, 40.8%) (Figure 1). The mean BMI was 28.1695 ± 1.81995 kg/m², while the average gestational age was 39.51 ± 1.577 weeks. In terms of educational status, 57 participants (47.5%) were literate, while 63 (52.5%) were illiterate. Regarding employment, 49 women (40.8%) were employed, whereas 71 (59.2%) were unemployed. Rural residency was reported in 74 cases (61.7%), and 46 women (38.3%) resided in urban areas. Socioeconomic status was distributed as low income (< 20,000 Rs/month) in 33 cases (27.5%), middle income (20,000 to 50,000 Rs/month) in 65 cases (54.2%), and high income (> 50,000 Rs/month) in 22 cases (18.3%) (Table 1)

Fetomaternal outcomes showed that sleep disturbances were noted in 65 women (54.2%). Postpartum hemorrhage was recorded in 14 cases (11.7%), while 106 women (88.3%) did not experience it. Emergency caesarean section occurred in 42 cases (35.0%), and 78 women (65.0%) delivered through other methods. Low birth weight (< 2.5 kg) was documented in 25 neonates (20.8%), whereas 95 neonates (79.2%) had normal birth weight. APGAR scores below 7 were observed in 12 neonates (10.0%), with the majority scoring ≥ 7 (n = 108, 90.0%). Neonatal intensive care unit (NICU) admission was required for 28 newborns (23.3%), while 92 (76.7%) did not require admission. Meconium-stained liquor was present in 43 cases (35.8%), with the remaining 77 cases (64.2%) showing clear liquor (Table 2)

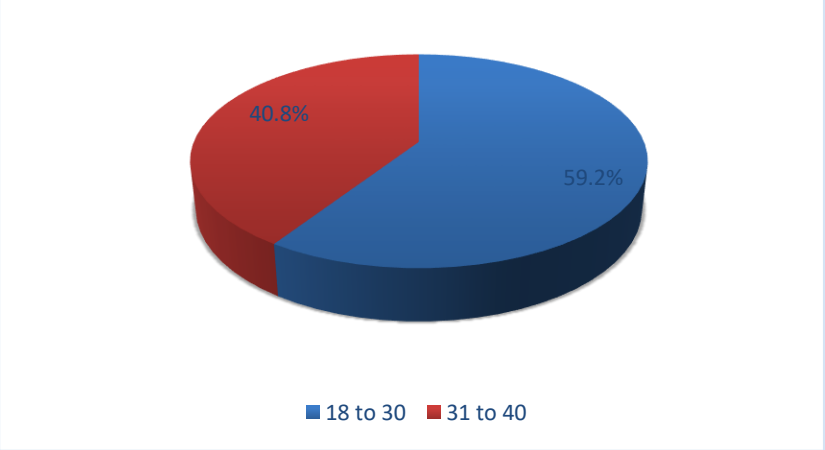

Figure 1 Age distribution of the patients (Years)

Table 1 Demographics

Demographics		N	%
Education status	Literate	57	47.5%
	Illiterate	63	52.5%
Occupation status	Employed	49	40.8%

	Unemployed	71	59.2%
Residence area	Rural	74	61.7%
	Urban	46	38.3%
Socioeconomic status	Low (< 20K Rs/Month)	33	27.5%
	Middle (20 to 50K Rs/Month)	65	54.2%
	High (> 50K Rs/Month)	22	18.3%

Table 2 Fetomaternal outcomes

Fetomaternal outcomes		**N**	**%**
Sleep disturbance	Yes	65	54.2%
	No	55	45.8%
Postpartum hemorrhage	Yes	14	11.7%
	No	106	88.3%
Emergency caesarean section	Yes	42	35.0%
	No	78	65.0%
Low birth weight (< 2.5 Kg)	Yes	25	20.8%
	No	95	79.2%
APGAR < 7	Yes	12	10.0%
	No	108	90.0%
NICU admission	Yes	28	23.3%
	No	92	76.7%
Meconium stained liquor	Yes	43	35.8%
	No	77	64.2%

Discussion

The mean age of participants in our study was 28.56 years, predominantly within the 18 to 30-year range (59.2%). This demographic aligns with the findings of Arthuis et al., who reported a median age of 29 years in their cohort, and Sitaula et al., who noted a mean age of 27.5 years in their study from Nepal. (10, 11) This age bracket reflects the reproductive age group most susceptible to the condition. Additionally, the socioeconomic profile of our participants predominantly comprised middle-income groups (54.2%), which is consistent with reports suggesting a higher burden in socioeconomically constrained populations.

One of the most common maternal symptoms in our cohort was sleep disturbance, affecting 54.2% of the women. This finding resonates with the study by Medda et al., where sleep disruption was a significant morbidity in 60% of cases due to pruritus. (12) The biochemical abnormalities in obstetric cholestasis, such as elevated transaminases and bile acids, likely contribute to these symptoms. Despite these parallels, some variation exists in the reported severity and management approaches across studies.

In terms of delivery outcomes, our study noted an emergency cesarean section rate of 35%, comparable to the 33.33% reported by Akram et al., (13) but lower than the 69.5% observed by Sitaula et al. (11) The variations in cesarean rates may be attributed to differences in obstetric practices, patient populations, and thresholds for intervention. Meconium-stained amniotic fluid was identified in 35.8% of cases in our study, slightly lower than the 42% reported by Medda et al., (12) yet higher than the 32.5% observed by Ghimire et al. (3) This consistency across studies underscores the association of cholestasis with fetal compromise, warranting vigilant intrapartum monitoring.

Neonatal outcomes in our study highlighted a low birth weight prevalence of 20.8%, aligning with findings from Medda et al. (32%) and Akram et al. (22.5%). (12, 13) However, Arthuis et al. noted a slightly lower mean birth weight in their cholestasis group compared to controls, emphasizing the variability of neonatal outcomes based on population and management strategies. (1) APGAR scores below 7 were observed in 10% of neonates in our study, which is within the range reported across studies such as the 9.22% by Akram et al. (13) Neonatal intensive care unit (NICU) admissions were required for 23.3% of our cases, closely mirroring the 23.33% reported by Anwar et al., (14) and slightly higher than the 17.1% found by Arthuis et al. (10)

Postpartum hemorrhage (PPH), a critical maternal complication, was recorded in 11.7% of our cohort. This is consistent with Arthuis et al., who noted a PPH rate of 25% in cholestatic pregnancies, reflecting the increased risk of bleeding complications. (10) The differences in prevalence may stem from variations in vitamin K supplementation and other management protocols.

Gestational age at delivery was another crucial variable, with an average of 39.51 weeks in our study. Comparatively, Medda et al., reported a mean gestational age of 37.28 weeks, with active interventions leading to earlier deliveries. (12) This discrepancy highlights differences in practice, particularly regarding the timing of induction or cesarean to mitigate risks associated with stillbirth and other adverse outcomes, as emphasized in studies such as that by Arthuis et al. (10)

Conclusion

In conclusion, the study highlighted significant fetomaternal outcomes in women diagnosed with obstetric cholestasis,

with higher rates of emergency cesarean sections, sleep disturbances, postpartum hemorrhage, low birth weight, and NICU admissions. These findings emphasize the need for early diagnosis and careful management to mitigate the adverse outcomes associated with this condition.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department Concerned. (IRBEC-MERF-099663/23)
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

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References

1. Adaramodu O, Venyo AK-G. Obstetric Cholestasis: A Review and Update. European Journal of Clinical Medicine. 2020;1(1).
2. Smith DD, Rood KM. Intrahepatic cholestasis of pregnancy. Clinical obstetrics and gynecology. 2020;63(1):134-51.
3. Ghimire SP, Ghimire A, Jha GS, Chhetry M, Kumar M. Feto-maternal outcomes in intrahepatic cholestasis in pregnancy in a tertiary care centre in Eastern Nepal. Journal of Nobel Medical College. 2016;5(1):20-5.
4. Turunen K, Helander K, Mattila KJ, Sumanen M. Intrahepatic cholestasis of pregnancy is common among patients' first-degree relatives. Acta Obstetricia et Gynecologica Scandinavica. 2013;92(9):1108-10.
5. Pataia V, Dixon PH, Williamson C. Pregnancy and bile acid disorders. American Journal of Physiology-Gastrointestinal and Liver Physiology. 2017;313(1):G1-G6.
6. Saxena R. An Evidence-based Clinical Textbook in Obstetrics & Gynecology for MRCOG-2: JP Medical Ltd; 2017.
7. Guarino M, Cossiga V, Morisco F. The interpretation of liver function tests in pregnancy. Best practice & research Clinical gastroenterology. 2020;44:101667.
8. Williamson C, Geenes V. Intrahepatic cholestasis of pregnancy. Obstetrics & Gynecology. 2014;124(1):120-33.
9. Piechota J, Jelski W. Intrahepatic cholestasis in pregnancy: review of the literature. Journal of clinical Medicine. 2020;9(5):1361.
10. Arthuis C, Diguisto C, Lorphelin H, Dochez V, Simon E, Perrotin F, et al. Perinatal outcomes of intrahepatic cholestasis during pregnancy: an 8-year case-control study. PloS one. 2020;15(2):e0228213.
11. Sitaula D, Timalsina S, Sharma B, Pokharel B, Thapa R. Prevalence and pregnancy outcomes of intrahepatic cholestasis of pregnancy. 2021.
12. Medda S, Sengupta S, Palo U. A study of the outcome of pregnancy complicated by obstetric cholestasis. Int J Reprod Contracept Obstet Gynecol. 2018;7(3):996-1001.
13. Akram A, Sadaf J, Aziz A, Ara S, Rafiq T, Malik AM. The frequency of feto-maternal complications in patients with intrahepatic cholestasis of pregnancy. The Professional Medical Journal. 2022;29(02):212-7.
14. Anwar R, Razzaq K, Noor N, Ansari A, Imran A. Impact of Obstetric Cholestasis on Fetomaternal Outcome. Pakistan Armed Forces Medical Journal. 2022;72(SUPPL-2):S379-83.