Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

A Retrospective Study On Feto-maternal Outcome In Obstetric Cholestasis Patients In a Tertiary Level Hospital

Sucheta Biswas[1], Debasish Char [2]

1. **Associate Professor, Department of physiology, Prafulla Chandra Sen Government Medical College & Hospital , Arambagh , Hooghly, West Bengal , India.**

2. **Assistant Professor, Department of Obstetrics & Gynaecology, NRS Medical College, Kolkata, West Bengal, India.**

ABSTRACT

Objective(s): To study the incidence and feto-maternal outcome of pregnancy complicated by obstetric cholestasis(OC)

Materials and Methods: This retrospective case control study includes 93 cases of obstetric cholestasis(oc) at a tertiary medical college and hospital from May 2023 to April 2024. The mode of delivery and feto-maternal outcome of OC group were compared with the rest of deliveries. Statistical analysis was performed by t test & Fisher exact test using MEDCALC statistical software. A p value <0.05 was considered statistically significant.

Results: The incidence of OC was 5.16%. The rise of aminotransferases and alkaline phosphatase were statistically significant(p value <0.05) in the OC group. The Caesarean Section rate was 62.37%. The higher incidence of PPROM(8.6% vs 3.6% p value <0.05) was noted without an increase in preterm delivery(7.53% vs 5.28%,not significant), fetal distress(11.83% vs 8.61%,not significant), or meconium stained amniotic fluid(12.90% vs 11.39%, not significant). There was no statistically significant difference in the following parameters like IUGR, still birth, Apgar score <7 or NICU admission. There was no statistically significant difference in the incidence of PPH between the both groups.

Conclusion: The incidence of obstetrics cholestasis is high in general population. Perinatal outcome is good with active interventions. Higher studies are needed to access actual incidence of OC in general population. Perinatal outcome is good with active intervention, at a cost of higher Caesarean section rate.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

Keywords: Feto maternal outcome, LFT, Obstetric Cholestasis.

Corresponding author: Dr Debasish Char. Email: debasishchar@gmail.com, Mobile no: 7044759960

INTRODUCTION

Obstetric cholestasis(OC) is a pregnancy specific liver disorder characterized by generalized pruritus without any skin rash, elevated serum aminotransferases and bile acid levels with onset in the second or third trimester of pregnancy, and spontaneous relief of sign and symptoms within two or three weeks following delivery[1-3]. Diagnosis should be reconsidered if there is persistent symptoms and abnormalities of liver function tests. In India the incidence varies from 0.8-1.4%. The Pathophysiology of obstetric cholestasis is not clearly understood, but several study indicates a combination of hormonal, genetic & inflammatory factors which impair bile acid secretion resulting in raised serum bile acid and liver enzyme levels.[1]

The importance of obstetric cholestasis lies in the fact that it is associated with adverse feto-maternal outcome. Though maternal prognosis is good (a small risk of post partum haemorrhage), but the potential risk for foetus includes prematurity, meconium stained amniotic fluid, fetal distress, and intrauterine fetal death.[4,5]

This study was aimed at determination of incidence as well as evaluation of feto-maternal outcome of obstetric cholestasis patients in our hospital.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

Though measurement of bile acid in blood is diagnostic for obstetric cholestasis, but it is not commonly available, so we use LFTs for diagnosis of obstetric cholestasis in our study.

MATERIALS AND METHODS

This retrospective case control study was conducted in the Department of Obstetrics and Gynaecology, NRS Medical College & Hospital, Kolkata after approval from the institutional ethics committee. The study was carried out in 1800 deliveries including 93 cases of obstetric cholestasis of pregnancy from May 2023 to April 2024. Their mode of delivery, maternal and fetal complications of obstetric cholestasis was compared with the rest of deliveries. Systematic random selections of 360 pregnancies (taking every 5th patient) in the control group was done and their liver function tests were carried out comparison.

Inclusion criteria includes - raised serum aminotransferases(>35 IU/L) and alkaline phosphatases

(>300 IU/L) in patients with localized or generalized pruritus of pregnancy without any skin rash with onset in the second or third trimester and normalization of LFT and remission of pruritus following delivery.

Exclusion criteria includes - presence of any dermatosis, viral hepatitis, cholelithiasis, and autoimmune liver diseases during pregnancy.

The monitoring of patient with obstetric cholestasis included regular weekly antenatal check up, with LFTs every two weekly. Fetal surveillance was done

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

by daily fetal movement count, CTG, modified BPP, or colour Doppler USG twice a week after 32 weeks of gestation.

Any complication during pregnancy including preterm premature rupture of membrane, preterm labor, and IUGR were noted. The mode of delivery, abnormal CTG findings during fetal monitoring, the presence of meconium during delivery, Apgar score of 1 and 5 minutes and the need of NICU admission or any perinatal mortality were noted. LFT were repeated at 2 weekly interval following delivery.

Statistical analysis was performed by t test ans fisher exact test using MEDCALC statistical software. A p value <0.05 was considered statistically significant.

RESULT

During our study period 1800 women were delivered and out of these 93 women (5.16%) were diagnosed as obstetric cholestasis.

Table 1 shows general profile of cases and control regarding age, gravidity and time of delivery. (gestational age in weeks). There were no statistical difference in maternal age, gravidity and time of delivery between two groups. The mean age of women in two groups were slightly more than 27yrs (Mean 27.23+/- 3.20 in OC vs 27.87+/- 3.62 in control groups) and majority were primigravida (Mean 1.42+/- 1.08 in OC vs 1.37+/- 1.27 in control groups). The mean gestational age of delivery in OC groups was 37.33+/-1.09 vs 37.36+/-1.11 in control groups.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

TABLE 1

General profile of cases and controls

Maternal Characteristics	Cases n=93	Control n=360	t value of difference	p value
Age	27.23+/- 3.20	27.87+/- 3.62	1.555	0.1207
Gravida	1.42+/- 1.08	1.37+/- 1.27	0.348	0.7277
Time of delivery (GA in weeks)	37.33+/- 1.09	37.36+/- 1.11	0.233	0.8157

Table 2 shows biochemical parameters of cases and controls. There was no significant elevation in serum bilirubin (p=0.0684) between the two groups, the level of alanine aminotransferases (ALT) and aspartate aminotransferases (AST) in our study was significantly raised(p=<0.0001 for ALT and <0.001 for AST). The level of rise of alkaline phosphatase was also significant(p=<0.001). There was two to three times rise in serum aminotransferases and three to four times rise of alkaline phosphatase levels above the control groups in most of the cases.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

TABLE 2

Liver function tests in cases and control groups

LFTs	Cases n=93	Controls n=360	p value
Serum bilirubin	0.892+/- 0.96	0.708+/- 0.84	0.0684
ALT	186.12+/- 103.2	34.42+/- 23.76	p<0.0001
AST	192.56+/- 112.73	32.53+/- 18.24	p <0.001
ALP	621.83+/- 373.22	178.25+/- 63.29	p <0.001

Table 3 compares feto maternal complications between the two groups. The incidence of PPROM was significantly higher in OC group compared to the control group (8.6% vs 3.6%,p=0.0415). The incidence of Caesarean section rate(62.37% vs 51.94%),preterm delivery(7.53% vs 5.28%), fetal distress (11.83% vs 8.61%), meconium stained amniotic fluid(12.90% vs 11.39%) were higher in the OC groups as compared to the control group but these differences were not statistically significant. There was no statistically significant difference in the incidence of PPH in either groups. There were no statistically significant difference in the incidence of IUGR, still Birth, Apgar score<7 or NICU admissions.

TABLE 3

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

Feto-Maternal complications of cases and controls

Complications	cases n=93 %	Controls n=360 %	p value
Caesarean section	58(62.37%)	187(51.94%)	0.0723
PPROM	8(8.6)	13(3.61)	0.0415
Preterm delivery	7(7.53)	19(5.28)	0.4062
fetal distress*	11(11.83)	31(8.61)	0.3404
meconium staine amniotic fluid	12(12.90)	41(11.39)	0.6866
IUGR	9(9.68)	37(10.28)	0.8646
stillbirth	1(1.08)	6(1.67)	0.6816
Apgar score <7	4(4.30)	11(3.06)	0.5520
NICU admission	9(9.68)	23(6.39)	0.2702
PPH	2(2.15)	8(2.22)	0.9674

*fetal distress manifested by fetal bradycardia, abnormal CTG.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

DISCUSSION

The Pathogenesis of obstetric cholestasis is multifactorial, genetic, environmental as well as higher estrogen level plays a role in the pathogenesis[6]. The incidence of obstetric cholestasis in Indian women has been reported to be around 1%[7,8]. In our study, the incidence was quite high which was around 5.6%. As our study was done in a tertiary level hospital and the incidence of high risk complicated pregnancy is higher. So the incidence of obstetric cholestasis is higher than the general Indian women.

The mean age was 27.23 years though some authors have reported relatively higher mean age.[9] and there is no significant difference between the two groups regarding maternal age or gravidity.

The main biochemical alterations in LFTs are elevated serum bile acid and transaminases levels[3]. There is 2-10 fold elevations of serum transaminases, 4 fold rise of alkaline phosphatase, and bilirubin may be 5mg/dl. In our study, there is two to three fold rise of serum aminotransferases and three to four fold rise of alkaline phosphatase which was statistically significant. There were two cases of clinical jaundice. The highest level of bilirubin noted in our study was 5.0mg/dl. As bile salt assessment is not available we could not measure the level of bile salt in our patients.

Obstetric cholestasis has been associated with increase incidence of perinatal complications like preterm labour (up to 44%), meconium staining if amniotic fluid(up to 45%), fetal distress(up to 22%) and stillborn(up to 4.0%)[9,10]. In our study we noted significant increase in incidence of PPROM in 8.60% of

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

cases. Like other studies, there were no significant increase in the incidence of preterm delivery, meconium staining of amniotic fluid, fetal distress or stillborn. Association of IUGR and neonatal ICU admission were not significant.[9,11,12]. Apgar score was more than 7 in 95.7% of babies of obstetric cholestasis group. There is one unexplained stillbirth(1.08%) in 35 weeks of gestation. IUFD may be linked to acute anoxia due to cardiotoxic effects of bile acids or vasoconstriction of placental blood vessels[13,14]. Most of the fetal death occurs after 37-38 weeks of gestation. To avoid fetal death in near term, we planned early elective delivery around 37-38 weeks either by induction of labour or Caesarean sections. In our study Caesarean section rate(62.37%) was higher in pregnancy with obstetric cholestasis and similar to other studies[4], But not significantly higher than the control group.

PPH occurs in 2.15% cases in our study which was quite similar to other studies[7,11]. All women routinely received vitamin k. Only two cases PPH Occurs in our study whose coagulation profile was abnormal.

CONCLUSION

As the study was done in a tertiary medical college, so the incidence of obstetric cholestasis is quite high. All complicated cases were referred from peripheral government and private health care centres. Further studies are necessary to access the actual incidence in general populations. Higher Caesarean section rates may be due to active intervention at 37-38weeks or due to complications of the disease conditions.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in this article.

SOURCE OF FUNDING: None.

Acknowledgement: We thank Dr. Sucheta Biswas, Associate Professor, department of Physiology, PCSGMCH , Arambagh, Hooghly for her technical help, writing assistance and statistical analysis.

REFERENCES

1. Lammert F, Marschall HU, Glantz A, et al. Intrahepatic cholestasis of pregnancy: molecular pathogenesis, diagnosis and management. J Hepatol. 2003;33:1012–1021.

2. Beures U, Pusl T. Intrahepatic cholestasis of pregnancy—a heterogeneous group of pregnancy-related disorder? Hepatology. 2006;43:647–649.

3. Kenon AP, Girling JC. Obstetric cholestasis. In: Studd J, editor. Progress in obstetrics and gynaecology. Edinburgh: Churchill Livingstone; 2005. p. 36-7

4. Heinonen S, Kirkinen P. Pregnancy outcome with intrahepatic cholestasis. Obstet Gynaecol. 1999;94:189–193.

5. Catherine W, Laura H, Dimtrios G, et al. Clinical outcome in a series of cases of obstetrics cholestasis identified via a patient support group. BJOG. 2004;111:676–681.

6. Reyes H. The spectrum of liver and gastrointestinal disease seen in cholestasis of pregnancy. Gastroenterol Clin North Am. 1992;21:905–921.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 02, 2025

7. Ray A, Tata RJ, Balsara R, et al. Cholestasis of pregnancy. J Obstet Gynaecol India. 2005;5:247–250.

8. Kenon AP, Piercy CN, Gorling J. Obstetric cholestasis, outcome with active management: a series of 70 cases. BJOG. 2002;109:282–288.

9. Pata O, Vardareli E, Ozcan A, et al. Intrahepatic cholestasis of pregnancy: correlation of preterm delivery with bile acids. Turk J Gastroenterol. 2011;22(6):602–605.

10. Fisk N.M., Storey G.N. Fetal outcome in obstetric cholestasis. Br J Obstet Gynaecol. 1988;95:1137–1143.

11. Kenyon A.P., Piercy C.N., Girling J., et al. Obstetric cholestasis, outcome with active management: a series of 70 cases. BJOG. 2002;109:282–288.

12. Alsulyman O.M., Ouzounian J.G., Ames-Castro M., et al. Intrahepatic cholestasis of pregnancy: perinatal outcome associated with expectant management. Am J Obstet Gynecol. 1996;175:957–960.

13. Greenes V, Willamson C. Intrahepatic cholestasis of pregnancy. World J Gastroenterol. 2009;15(17):2049–2066.

14.Kondrackiene J, Kupcinskas L. Intrahepatic cholestasis of pregnancy-current achievements and unsolved problems. World J Gastroenterol. 2008;14(38):5781–5788.