

Frequency of Fetomaternal Complications Due to Intrahepatic Cholestasis of Pregnancy

SHEEBA REHMAN¹, SARA GULBAZ², SHAHNILAH ZAFAR³, SANUM ASIF⁴, IRAM ASLAM⁵, JAVARIA ASLAM⁶

¹Assistant Professor Gyne and Obs Rai Medical College Sargodha

²Consultant Gynecologist Indus Hospital Lahore

³Senior Registrar Gyne and Obs Faima Memorial Hospital Shadman Lahore

⁴Senior Registrar University of Lahore

⁵Associate Professor of Gyne Independent Medical College Faisalabad

⁶Specialist in Obs and Gyne Indus Hospital Lahore

Correspondence to: Sheeba Rehman, Email: Sheebarehmanahasham.ali@gmail.com, Cell: 03344539103

ABSTRACT

Objective: To study frequency of complications in fetus and mothers developed due to intrahepatic cholestasis during pregnancy.

Materials and methods: This is a cross sectional study conducted in the department of gynecology and obstetrics Rai medical College Sargodha. Study was commenced in July 2022 and completed in December 2022. Study sample was calculated using WHO sample size calculator. Pregnant ladies presenting with intrahepatic cholestasis of pregnancy having age 16-40 years were included in this study. Patients with multiple pregnancies, or having carcinoma of liver, presence of chronic liver disease or history of alcohol addiction were excluded from the study. Proper follow ups were done in all pregnant women till the delivery having gestational age \leq 41 weeks. All necessary data regarding fetomaternal outcomes was documented on a proforma like mode of delivery, APGAR Score, postpartum hemorrhage, low birth weight, meconium stained liquor, premature birth or intrauterine fetal death.

Results: This study was conducted on 130 cases with intrahepatic cholestasis, cesarean section was done in 55(42.3%) cases, post-partum hemorrhage reported in 09(6.9%), APGAR score was <7 at five minutes in 11(8.5%), preterm birth happened in 29(22.3%), low birth weight reported in 12(9.2%), intrauterine death of the fetus reported in 08(6.1%) and meconium stained liquor was noted in 41(31.5%) cases. Mean age of the mothers was 24 ± 3.7 years.

Practical Implication: In our community we have to consider this health issue seriously if we want to reduce mortality due to ICP and its associated complications in our community.

Conclusion: This study concluded that intrahepatic cholestasis of pregnancy is related to poor fetomaternal outcomes that can be prevented by some serious recommendations for such high risk pregnancies. It will reduce fetomaternal morbidity and mortality rate in our setups.

Keywords: Intrahepatic cholestasis, Intrauterine death, Pregnancy, Fetomaternal complications, Postpartum hemorrhage,

INTRODUCTION

Intrahepatic cholestasis of pregnancy (ICP) is a liver disease that occurs specifically during pregnancy and its patients often present with severe generalized pruritus without skin rash.¹ This is a temporary skin condition associated with elevated level of liver enzymes.² Its proper pathology is not understood completely yet, but a general concept has been developed suggesting genetic cause of the disease.³ Demographic variations and consanguineous marriages are its important risk factors. According to a previous study its incidence in Sweden is 1-1.5% while in Chile-Bolivia 6-27% that is a very high number.⁴ Its incidence is 1.2-1.5% among Asian women. ICP disturbs fetomaternal life and increases stress of the pregnancy by the risk of adverse outcomes, intense pruritus and disturbed sleep pattern.⁵ At present fetomaternal care has been improved but still ICP causes negative fetal outcomes like premature birth, meconium stained amniotic fluid, bradycardia of the fetus, fetal respiratory distress and ultimately leading to intrauterine death of the fetus.⁶ ICP is associated with increased maternal and fetal morbidity and mortality. According to a report it causes 14% maternal and 60% perinatal mortality.⁷ In ICP vit K deficiency happens due to its malabsorption and increasing risk of postpartum hemorrhage.⁸ Poor fetal outcomes due to ICP is not understood completely but according to a general concept it is due to increased maternal serum bile acids level (>40 $\mu\text{mol/L}$).⁹ Another study described that due to ICP rate of cesarean section increases upto 46.25%, low birth weight in 22.5% cases, low APGAR score <7 at 5 minutes in 13.75%, meconium stained amniotic fluid in 32.5%, intrauterine death of the fetus reported in 6.25% and premature birth in 10% cases. ICP is an important cause of fetomaternal complications worldwide.¹⁰ Early diagnosis of this condition and prompt management can prevent complications. This study has been conducted to determine frequency of fetomaternal complications due to ICP in our population. This data will help us to understand actual burden of the disease and emphasizes on designing proper

recommendations and protocol to deal with such high risk cases. Though previously such studies have been conducted but there are very few studies conducted locally so this study will provide very useful data on our population and will help us to improve fetomaternal care.

MATERIALS AND METHODS

This is a cross sectional study conducted in the department of obstetrics and gynecology Rai medical College Sargodha. Study was completed in six months duration from July 2022 to December 2022. Study sample was calculated using online WHO sample size calculator using 4% margin of error, 95% confidence level and incidence of intrauterine fetal death as 6.25%. Non-probability consecutive sampling technique was used for sample selection. Ethical approval was taken from institutional ethical review board. All Pregnant women with gestational age ≥ 28 weeks according to last menstrual period (LMP) presenting with intrahepatic cholestasis of pregnancy having age 16-40 years, having skin pruritus, Fasting serum bile acids level > 10 $\mu\text{mol/L}$, serum AST > 40 U/L and ALT level > 45 U/L were included in this study. Patients with multiple pregnancies, or having carcinoma of liver, presence of chronic liver disease or liver failure, history of alcoholic liver disease or renal failure were excluded from this study. Patients having biliary obstruction due to obstructed gall stones were also excluded from the study.²³⁻²⁴ Informed consent was taken from all the study cases. They were given standard management according to the protocol of department. Proper follow ups were done in all pregnant women till the delivery having gestational age ≤ 41 weeks. All necessary data regarding fetomaternal outcomes according to operational definitions was documented on a proforma like mode of delivery, APGAR Score <7 on 5 minutes, postpartum hemorrhage, low birth weight, meconium stained liquor, premature birth or intrauterine fetal death, gestational diabetes mellitus, age, BMI, preeclampsia and eclampsia. All collected data was analyzed using SPSS software version 20.

Means and standard deviations were determined for quantitative variables like parity, age, BMI and gestational age. Percentages were determined for qualitative variables like gestational diabetes mellitus, pregnancy induced hypertension, postpartum hemorrhage, cesarean section etc. Chi square test was applied on the data. P-value <0.05 was considered statistically significant.

RESULTS

Total 130 cases with intrahepatic cholestasis due to pregnancy were studied, cesarean section was done in 55(42.3%) cases, post-partum hemorrhage reported in 09(6.9%), APGAR score was <7 at five minutes in 11(8.5%), preterm birth happened in 29(22.3%), low birth weight reported in 12(9.2%), intrauterine death of the fetus reported in 08(6.1%) and meconium stained liquor was noted in 41(31.5%) cases. Age of the mothers was 16-40 years with mean age of 24.4±3.7 years. Gestational diabetes mellitus was present in 16(12.3%), pregnancy induced hypertension in 28(21.5%) cases. Mean BMI of the mothers was 28.31 ± 2.7 kg/m² and mean parity was 2.21 ± 0.74.

Table-1: Characteristics of the patients in study group (n=130)

		n	%age	Mean ±SD
Age	15-30	84	64.6	24.4 ± 3.7
	>30	46	35.4	
	Total	130	100.0	
BMI	≤30	79	60.8	28.31 ± 2.7 kg/m ²
	>30	51	39.2	
	Total	130	100.0	
Parity	≤2	81	62.3	2.21 ± 0.74
	>2	49	37.7	
	Total	130	100	
Residential area	Rural	77	59.2	
	Urban	53	40.8	
	Total	130	100.0	
Gestational diabetes mellitus	Yes	16	12.3	
	No	114	87.7	
	Total	130	100.0	
Hypertension (Pregnancy induced)	Yes	28	21.5	
	No	102	78.5	
	Total	130	100.0	

Table-2: Fetomaternal outcomes in study cases with intrahepatic cholestasis of pregnancy (n=130)

Outcomes	%age	
	Yes	No
Cesarean section	44(33.8%)	86 (66.2%)
Post-partum Hemorrhage	09 (6.9%)	121 (93.1%)
Preterm delivery	29 (22.3%)	101(77.7%)
Meconium stained liquor	41 (31.5%)	89(68.5%)
APGAR Score< 7 at 5 minutes	11 (8.5%)	119 (91.5%)
Intrauterine fetal death	08 (6.1%)	122 (93.9%)
Low birth weight	12 (9.2%)	118 (90.8%)

DISCUSSION

Intrahepatic cholestasis of pregnancy is a condition that can happen in pregnant ladies which causes complications in mothers and fetus.¹¹ These complications include deranged liver enzymes in mothers, skin pruritus, meconium stained liquor, postpartum hemorrhage, preterm delivery, low birth weight baby, poor APGAR score and intrauterine fetal death.¹² Exact mechanism of these complications is not understood completely but researches on animals explain that increased level of bile acids may cause negative effect on cardiac myocytes and cause fetal cardiac arrhythmias leading to intrauterine fetal death.¹³ This increased level of bile acids also cause vaso-constrictive effect on the blood vessels in chorionic villi and causing fetal distress, hypoxia and fetal death. In this study 130 pregnant women with intrahepatic cholestasis due to pregnancy were studied, cesarean section was done in 55(42.3%) cases, post-partum hemorrhage reported in 09(6.9%), APGAR score was <7 at five minutes in 11(8.5%), preterm birth happened in 29(22.3%), low birth weight reported in 12(9.2%), intrauterine death of the fetus reported in 08(6.1%) and

meconium stained liquor was noted in 41(31.5%) cases. In a similar previous study fetomaternal outcomes were reported as cesarean delivery done in 46.25%, poor APGAR score in 13.75%, premature birth in 10%, meconium stained liquor in 32.5%, low birth weight baby reported in 22.5% and intrauterine fetal death (IUFD) in 6.25%.¹⁴ A study explained that poor fetomaternal outcomes reported in 33% of cases with intrahepatic cholestasis of pregnancy like poor APGAR score, meconium stained liquor, birth asphyxia and IUFD.¹⁵ A study done on 1250 pregnant ladies reported cholestasis in 2.5% cases, mean age of the patients was 25.8 years. There were 42.8% women with first pregnancy while 57.2% were having one or more babies already. In their study most common complaint of the patients was pruritus in 91.3% cases.¹⁶ A study conducted in India by Binay et al reported that first symptoms of cholestasis appeared in 34-36 weeks of pregnancy in 66% cases and in 32-34 weeks in 15%, before 32 weeks in 14% while at 37 weeks in 5% cases.¹⁷ Another similar study by Eshadi et al reported vaginal delivery in 56.7% and cesarean section in 43.3% cases.¹⁸ Aftab et al found perinatal outcomes in their study as 29% cases had meconium stained liquor, abnormal CTG detected in 17%, 18% had intrauterine retarded growth, 26% were premature births while 3% had intrauterine fetal death.¹⁹ Gupta et al conducted study on 215 pregnant ladies having cholestasis. They found incidence of cholestasis about 3%. They found that 60% ladies had bile acids level between 10-40umol, 36.7% had bile acids level between 41-100 umol while 3.3% had bile acids level >100umol.²⁰ Fetal outcomes are mainly associated with the serum level of bile acids and severity of cholestasis. A recent study reported premature birth in 77% cases. They also found that incidence of premature birth was 5.3 times more among singleton pregnancies with severe ICP as compared to singleton pregnancies without ICP.²¹ In our community we have to consider this health issue seriously if we want to reduce mortality due to ICP and its associated complications in our community. Medical resources, diagnosis, and treatment must improve in developing countries. There are limited resources: access to medical and health resources; knowledge about disease; awareness, trainings, and awareness about health. Health literacy is mandatory for any disease and facilitates the patients access to resources, databases, and trainings about the disease.²⁴⁻³⁰

CONCLUSION

Considering the results of our study we have concluded that intrahepatic cholestasis of pregnancy is a serious health problem among pregnant ladies associated with severe fetomaternal outcomes like postpartum hemorrhage, meconium stained liquor, premature birth, low birth weight of the baby, low APGAR score, increased frequency of cesarean section and intrauterine fetal death, so there should be proper recommendations to deal with such problem. Public awareness programmes are very important in this regard so that early treatment may be provided to prevent the complications

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