Section: Obstetrics and Gynaecology

Original Research Article

A PROSPECTIVE ANALYSIS OF SPECTRUM OF LIVER DISORDERS IN PREGNANCY AND ITS FETOMATERNAL OUTCOME IN A TERTIARY CARE CENTRE

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Received : 10/12/2024
Received in revised form : 22/01/2025
Accepted : 06/02/2025

Keywords: Liver diseases , HELLP syndrome, Pre eclampsia, Viral Hepatitis, Acute Fatty Liver of Pregnancy ,DIVC.

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DOI: 10.47009/jamp.2025.7.1.131

Source of Support: Nil
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (1); 664-668

Abstract

Background: Liver is a vital organ with metabolic , excretory , haematological functions. Spectrum of liver diseases complicates almost 3% of pregnancies worldwide. Diagnosing a Liver disease in pregnancy is challenging and thereby its management to safeguard maternal and fetal health. **Materials and Methods:** A Prospective Observational study conducted in tertiary care centre from 1st January 2023 to 31st December 2023. 111 cases were identified with deranged liver function tests. They were followed up until delivery. Spectrum of Liver diseases and its maternal and fetal outcome were analysed. **Results:** 77% of study population belonged to the age group of 20 -29 years. Incidence of Liver disorders was high in 3rd trimester of pregnancy. Most common Liver disorder complicating pregnancy is HELLP syndrome followed by Chronic Liver Diseases. Out of 84 babies delivered 26were preterm, 8 babies expired. Most common maternal complication was Postpartum Hemorrhage. Out of 33 viral Hepatitis cases, 31 were Hepatitis B positive. Of 111 patients ,5 mothers expired, cause being HELLP(60%) DIVC (20%) Pre Eclampsia (20%). **Conclusion:** Timely admission, rapid diagnosis and appropriate management with multidisciplinary approach can make significant difference in mortality and morbidity rates of mother and fetus due to Liver ailments in pregnancy.

INTRODUCTION

Pregnancy can be considered as a typical clinical state during which various physiological changes occur in the body that influence each and every organ in our body. Liver disorder complicates 3% of pregnancies and constitutes an important cause of neonatal and maternal morbidity and mortality.[1]

High levels of serum oestrogen and progesterone affects all the major functions of the liver such as metabolic, synthetic and excretory function during pregnancy. Liver diseases in an acute or chronic course can alter the fetomaternal outcome due to various hormonal, hemodynamic and immunological changes of pregnancy. Findings such as elevated serum alkaline phosphatase level, palmar erythema, spider angioma which are typical clinical markers of liver diseases, can also be seen during normal pregnancy as a consequence of the hyperestrogenic state. These changes usually pose a diagnostic dilemma and hence requires detailed evaluation.

It is customary to divide liver diseases complicating pregnancy into three broad categories.[2]

- Diseases specifically related to pregnancy (resolve spontaneously or following delivery) like hepatic dysfunction from Hyperemesis gravidarum, Intrahepatic cholestasis of pregnancy, Acute fatty liver of pregnancy, Hepatocellular damage with pre-eclampsia , HELLP syndrome.
- Acute hepatic disorders that is coincidental to pregnancy such as acute viral hepatitis.
- Chronic liver disease that predate pregnancy such as chronic hepatitis, cirrhosis, portal hypertension, oesophageal varices.

The key to maternal and fetal wellbeing is an early diagnosis and appropriate management.[3] Therefore, the present study was designed to see the incidence, spectrum and outcome of the liver disease in pregnancy.

MATERIALS AND METHODS

After obtaining ethical approval from institutional Ethical committee the present prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Coimbatore Medical

ISSN (O): 2687-5365; ISSN (P): 2753-6556

College Hospital between 1st January 2023 to 31st December 2023. Out of 5,520 complicated admissions to high dependency unit in the obstetric ward,111 cases with deranged liver function test or with suspicion of liver diseases in pregnancy were taken and analysed . Diagnosed cases were followed up till discharge. Spectrum of different liver diseases and its maternal and fetal outcome were observed.

RESULTS

Table 1: Age distribution of the subjects in the study population.

S.No.	Age (in years)	Number	Frequency %
1.	<20	8	7.2
2.	20-29	77	69.4
3.	30-40	25	22.
4.	> 40	1	0.9

Among the studied population group 77% belongs to age group 20-29 years and the least common age group is >40 years of age.

Table 2: Trimester distribution of the subjects in the study population

S.No.	Type of Trimester	Number	Frequency %
1.	Trimester I	6	5.4
2.	Trimester II	18	16.2
3.	Trimester III	66	59.5
4.	Postnatal	18	16.2
5.	Post Abortal	3	2.7

The occurrence of liver disorders was high during third trimester accounting for 59.5%

Table 3: Distribution of the type of parity in the study population

S. No.	Type of Parity	Number	Frequency %
1.	Primigravida	55	49.5
2.	Multigravida	56	50.4

Out of 111 women studied, 49.5% were Primigravida and 50.4% were Multigravida.

Table 4: Pregnancy outcome

S.No.		Total	Percentage
1.	Delivered	87	78.4
2.	Undelivered	24	21.6

87 out of 111 patients delivered during their course of stay in the Hospital.

Table 5: Outcome of Pregnancy

S. No.		Total	Percentage
1.	Abortion	7	8.3
2.	LSCS	47	56
3.	Hysterotomy	4	4.8
4.	Labor Natural	23	27.4
5.	Assisted vaginal delivery	2	2.4
6.	Laparotomy (Ectopic)	1	1.2

From the study, the most common mode of delivery was by LSCS accounting for 56% and only 29.8% delivered vaginally.

Table 6: Frequency distribution of spectrum of clinical presentation in the study population

S. No.	Spectrum of clinical presentation	Number	Frequency
1.	Hyperemesis,[4]	2	1.8
2.	AFLP,[9-11]	1	0.9
3.	Intrahepatic cholestasis of pregnancy.[5,6]	Nil	Nil
4.	HELLP.[7,8]	25	22.5
5.	HELLP with severe pre eclampsia	7	6.3
6.	HELLP with AP eclampsia	2	1.8
7.	Acute Viral Hepatitis	3	2.7
8.	Chronic Viral hepatitis	30	27
9.	Hemolytic anaemia	2	1.8
10.	Sepsis Induced Liver dysfunction	6	5.4
11.	Chronic Liver disorder	14	12.6
12.	Hemoglobinopathies	5	4.5
13.	Blood transfusion reaction	2	1.8
14.	Obstructive Jaundice	1	0.9

ISSN (O): 2687-5365; ISSN (P): 2753-6556

15.	Others 1. Pancytopenia 2. Ischemic hepatitis 3. Tropical hepatosplenomegaly/ Malaria 4. Isolated splenomegaly	4	10.8

The most common cause of hepatic disorders from our study group is HELLP (30.6%)

Table 7: Fetal Outcome

S. No.	Parameter	Number	Frequency %
1.	Maturity of Baby		
	Preterm	26	31.3
	Term	46	55.4
	Abortion	11	13.3
2.	Birth State of the Baby		
	Born Alive	64	88.9
	Death (IUD + Perinatal)	8	11.1
3	NICU Admission		
	YES	32	44.4
	NO	40	55.6
4	Birth weight of the Baby		
	Weight	Number	Frequency %
	<1 Kg	2	2.8
	2 Kg	19	26.4
	2-3 Kg	42	58.3
	3 Kg	9	12.5

Out of 84 babies delivered 26 were Preterm.
Out of 72 babies, 64 were born alive and 8 expired.
Out of 72 deliveries, 44.4% of babies needed NICU admission at the time of birth.
Out of 72 babies, 58.3% of babies weighed between 2-3 Kg.
Two babies weighed <1 Kg which were resuscitated and had a good outcome.

Table 8: Distribution Of Various Maternal Complication

S.No.	Type of Complication	Number
1.	Abruption	4
2.	Acute kidney Injury	2
3.	Atonic PPH	4
4.	Hepatic Encephalopathy	1
5.	DIVC	2
6.	Pulmonary Edema	3
7.	Blood transfusion reaction	2
8.	PPCM	3
9.	AP Eclampsia	3
10.	Pulmonary thromboembolism	1
11.	Hysterectomy followed by PPH	2
12.	Covid +ve	2
13.	Ectopic pregnancy	1
14.	Factor V Leiden mutation/PPH	1

The most common complication being PPH
Total number of patients given blood transfusion – 52
Total number of patients who needed Mechanical ventilation – 24

Table 9: distribution of viral markers in the study population

S.No.	Type of viral marker	Number	Frequency %
1	Negative	78	70.3
2.	HAV positive	Nil	-
3.	HBs Ag Positive	28	25.2
4.	HCV positive	2	1.8
5.	HBeAg positive	3	2.7

Out of 33 Viral hepatitis patients, 31patients (27.9%) associated with Hepatitis B.

Table 10: Description Of Maternal Mortality in The Study Population

S. No	Type of outcome	Number(n)	Frequency %
1.	Discharged	106	95.5
2.	Maternal death	5	4.5

From our study group of 111 patients, 106 patients (95.5%) were discharged in good condition. 5 patients (4.5%) expired.

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Table 11: cause of death

DIVC	1
HELLP/PPCM	1
HELLP/AP Eclampsia / ARF	1
HELLP/ AFLP/ DIVC	1
Sickle cell crisis/ Pulmonary thromboembolism	1

Women expired. Out of 5 women 3 had HELLP (60%), DIVC (20%), pulmonary thromboembolism (20%).

DISCUSSION

Comparison of age: In our study most of the patient belong to age group of 20-30 years. Which is comparable to Swati et al study,[12] Meena et al,[13] and Pranithi mitta et al.[15]

In our study, 49.5% were primigravida comparable to Meena et al,[13] where primigravida were 49%.Whereas it was 66.6% in Swati et al,[12] study and 61.9% of multigravida in the study done by Pranithi mitta et al.[15]

Comparison of Parity

Previous study	Primigravida	Multigravida
Meena et al	49%	47.3%
Swati et al	66.6%	33.4%
Pranithi mitta et al	38.09%	61.9%
Our study	49.5%	50.4%

Comparison of cause of Jaundice

Previous studies	HELLP	AFLP	Viral	Cholestasis	PHT	Hemolytic
Meena et al	0	0	62	23.6	0	0
Swathi et al	46.3	0	46.7	6.7	0	0
Brijesh et al	18.3	0	44.8	22.4	0	10.2
Krishnamoorthy et al	13.7	0	50.98	0	7.84	0
Our study	30.6	0.9	29.7	0	12.6	1.8

In our study, HELLP is the commonest cause of jaundice whereas Meena et al,[13] Swati et al,[12] Brijish et al,[14] and Krishnamoorthy et al,[16] Viral Hepatitis is the commonest cause of jaundice.

Comparison of deliveries

Previous Studies	Vaginal delivery	Caesarean delivery
Meena et al	81%	19%
Swati et al	100%	0
Brijish Patel et al	82.3%	17.7%
Pranithi mitta et al	69.2%	30.8%
Our study	39.2 %	60.8

In our study, caesarean section rate was 60.8%.

Comparison of Complications

Previous studies	MODS	HE	ARF	PPH	DIVC	Hepatic failure
Meena et al	9%	20%	11%	22%	44%	24%
Swati et al	13.3%	3.3%	13.3%	60%	20%	0
Brijish et al	0	18.3%	10.2%	8.1%	26.5%	0
Pranithi mitta et al	0	0	7.14%	4.76%	11.9%	0
Krishnamoorthy et al	0	7.87%	3.9%	9.8%	5.8%	0
Our study	0	0.9%	1.8%	3.6%	1.8%	0

Comparison of fetal maturity:

Previous Study	Preterm	Term
Meena et al	43.6%	31%
Swati et al	26.7%	73.3%
Brijish Patel et al	68.8%	31.1%
Pranithi mitta et al	35%	62.2%
Our study	31.3 %	55.4%

In our study the fetal birth at term were 55.4%. In Swati et al,[12] and Praniti et al,[15] majority of babies were born at term. In other studies by Meena et al,[13] and Brijish et al,[14] majority of babies were born preterm.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Comparison of Neonatal outcome:

Previous study	Live Birth	LBW	IUFD	Preterm	NICU admission
Meena et al	67%	50%	22%	43.6%	50%
Swati et al	0	0	13.5%	26.7%	
Brijish et al	90.3%	87.7%	16.2%	68.8%	54.8%
Praniti mitta et al	79.4%	85.7%	20.55%	35%	---
Krishnamoorthy et al	73.3%	--	26.6%	35%	---
Our study	88.9%	29.2%	11.1%	31.3%	44.4%

Comparing with other studies the incidence of live birth is 88.9% which is comparable with Brijish et al study (90.3%).[14] In our study the incidence of Intrauterine death (11.1%) is comparable to that of Swati et al (13.5%).[12]

Summary

The study was conducted in 111 patients with liver disorders complicating pregnancy. The incidence of liver disorders in pregnancy accounts to 2% of complicated maternal admissions. The most common age group affected by the disease are 21-30 years and mainly occurs in the third trimester of pregnancy. In our study both primigravida and multigravida are equally affected. The LSCS rate in our study was 60.8%. The most commonest cause of liver disorder found in this study is HELLP accounting for 30.6%. Out of 72 babies delivered 64 born alive, 3 were IUD and 5 died in the postnatal period. 44.4 % of babies needed NICU admission.

Nearly 47% of mothers needed blood and blood products transfusion. The most common maternal complication being postpartum haemorrhage. Out of 111 patients 5 women expired. and 60% contributed by HELLP, 20% DIVC, 20% Pulmonary Embolism.

CONCLUSION

Our study re-emphasises on the fact that there is increased maternal and fetal morbidity and mortality in pregnancy complicated with liver dysfunction and hence requires high degree of suspicion and early identification with early intervention such as liver supportive treatments, timely induction of labour, PPH prophylaxis, adequate blood and blood products transfusion to overcome associated coagulopathy. Intensive monitoring of both mother and fetus is essential which requires Team work of Obstetrician, Neonatologist, Gastroenterologist and Haematologist.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556