ORIGINAL RESEARCH

Study of abnormal liver function test during pregnancy in a tertiary care hospital in Jammu

[1]Dr. Neha Mahajan, [2]Dr. Jasleen Kour, [3]Dr. Abhilasha, [4]Dr. Kamakshi

[1]Assistant Professor, [2,3]Senior Resident, Department of Gynaecology and Obstetrics, SMGS Jammu, India
[4]Senior Resident, Department of Gynaecology and Obstetrics, MMMCH Solan, India

Corresponding author
Dr. Jasleen Kour
Senior Resident, Department of Gynaecology and Obstetrics, SMGS Jammu, India

Received date: 27 January, 2024 Acceptance date: 22 February, 2024

ABSTRACT

Background: The goal of the current study was to evaluate the range of liver illness in pregnancy as well as its progression and impact on mother and fetal outcomes. **Methods:** In the Obstetrics and Gynaecology department of the Govt Medical College Jammu, the current study was carried out as a prospective follow-up study overone year. Women who were pregnant and had symptoms that might point to an underlying liver condition between the ages of 18 and 35 were chosen. All participants gave their sociodemographic information, clinical history, and underwent a liver function test (LFT). Until two weeks after delivery, every patient was monitored. Results regarding the mother and the fetus were recorded. **Results**: The incidence of abnormal liver function tests was 6.7%. The mean value of bilirubin was more in infective hepatitis. There were 4 cases of intra uterine deaths. Pregnancy-induced hypertension (PIH) was the most common cause of abnormal LFT (46.66%); approximately 57.5% of patients delivered at term among which 96% had live birth; 59% of patients delivered vaginally. **Conclusions:** Although liver disease is rare in pregnant Indian women, our study demonstrates that it is strongly correlated with significant maternal and perinatal morbidity. In pregnant women with liver illness, a high index of suspicion for liver disease, early diagnosis, rapid referral to a higher center when necessary, adequate supportive care, and a proactive policy of early delivery where warranted may enhance maternal and fetal outcomes. Therefore, LFT should be performed routinely as a test in all pregnant women during the first and second trimesters.

Keywords: Acute fatty liver of pregnancy, Hyperemesis gravidarum, Liver function test, Pre-eclampsia.

INTRODUCTION

It's important to interpret abnormal liver function tests (LFTs) during pregnancy appropriately in order to pr event errors in diagnosis.A diagnostic workup must st art as soon as feasible after the diagnosis is obtained b ecause there could be catastrophic ramifications for bo th the mother and the fetus.A pregnant woman who is experiencing no symptoms may have abnormal liver f unction tests, whereas a pregnant woman who is exper iencing a fulminant version of the disease may present with serious health issues that could be fatal.Numbne ss, vomiting, and stomach pain are all common pregnancy symptoms that can be perplexing to medical professionals. Additionally, as a result of the physiological changes of pregnancy, laboratory test results demonstrate a decrease in the levels of antithrombin III and protein S, serum albumin, and total proteins as well as an increase of three to fourfold in alkaline phosphatase levels. Prothombin time, liver transaminase enzyme level, and serum bilirubin level had not changed much. Past studies have shown a variety of findings regarding the use of liver function tests to predict poor maternal outcomes. High levels of AST, ALT, LDH, and bilirubin, however, have been linked in some studies to worse outcomes, while other research have found weaker or no correlations.The presence of presumptive preeclampsia is indicated by an increase in liver enzymes including AST, ALT, and serum glutamic pyruvic transaminase. According to a Delphi survey of international specialists, blood pressure and proteinuria rank second and third, respectively, as indications of maternal and fetal problems in preeclampsia.7 Poor pregnancy outcomes for both the mother and the fetus have been linked by several studies to elevated levels of maternal blood liver enzymes.

These studies have not frequently employed a large enough sample size for reliable estimations of accuracy. Each study uses a distinct definition of preeclampsia and a different set of outcomes. Methods like systematic literature reviews can be

utilized to identify gaps in the evidence and dispel any present doubts.10 There are presently no comprehensive studies on this.Examining the clinical characteristics of the participants, the frequency and potential causes of abnormal liver function tests, as well as the outcome for both the mother and the fetus during pregnancy, were some of the objectives of this study.

METHODS

The study was conducted in the department of Obstetrics and Gynaecology, Govt Medical college at Jammu, J&K over a period of one year. All pregnant women with abnormal LFTs were studied prospectively.

Inclusion criteria

Included all the pregnant women admitted in the study period in our obstetric unit of hospital with abnormal liver function tests.

Exclusion criteria

Included women with chronic liver disease and drug induced abnormal liver function tests were excluded.

After obtaining the demographic profile, the specific symptoms related to liver dysfunction such as persistent vomiting, pruritus, yellowish discoloration of urine, diminished urine output and epigastric pain were asked. History of blood transfusion and drug intake were also noted.

Detailed general and obstetric examination was carried out in all. Lab investigations like LFT, RFT, LDH, Complete blood count, urine analysis, RBS and peripheral smear were also done. In cases of abnormal liver parameters, viral markers of hepatitis also done. These women were properly diagnosed, managed and followed up till delivery and along with their neonates up to 7 days postpartum. The results were statistically analysed using median, mean and mode.

Diagnostic criteria for different underlying pathologies were based upon following parameters.

Pre-eclampsia related liver dysfunction: BP > 140/90 mm Hg, Proteinuria, elevated transaminases and bilirubin.

HELLP Syndrome: Hemolysis (elevated LDH, fragmented RBCs in peripheral smear), Elevated liver enzymes, Low platelet count.

Intra hepatic cholestasis of pregnancy: Pruritus with elevated liver enzymes.

Acute fatty liver of pregnancy: Six or more of the following: vomiting, abdominal pain, encephalopathy, leucocytosis, elevated bilirubin, elevated transaminases, marked hypoglycemia, renal impairment, coagulopathy, elevated uric acid, ascites or bright liver on USG.

Viral hepatitis: Positive serlogy with elevated transaminases and bilirubin.

RESULTS

There were 100 cases with abnormal LFT amongst 1906 admissions giving incidence of 5.24% in our study. Majority of the women were young and aged less than 30 years. Most of them were referred cases from periphery, booked outside our hospital. Majority of the patients were in the age group 21-30 yrs and were primigravida. 93 % of the women presented in third trimester (>32 weeks) of pregnancy. The most common presenting symptoms were oedema, vomiting followed by yellow discolouration of urine (Table 1).

Table 1: Demographic profile

Demographic feature	Number	Percentage(%)
AGE		
Less than 20	9	9
21-30	55	55
More than 30	36	36
PARITY		
P0	52	52
P1	37	37
P2 and above	11	11
ANC Care		
Booked case	88	88
Unbooked case	12	12
Trimester wise		
first	3	03
second	26	26
third	71	71

In our study,9% patients belong to the age group of less than 20 years, 55% lies in age group of 21-30 yrs and rest are above age of 30 yrs. 88% were booked cases and 12% were unbooked. Also most cases of abnormal LFT's were seen in third trimester.

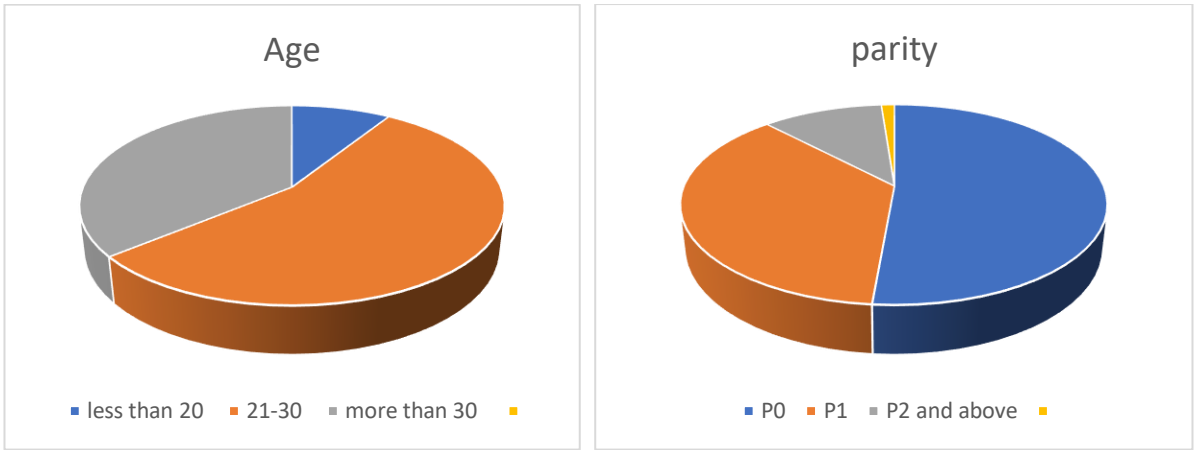


Table 2: Symptomatology diagnosis of abnormal LFT

Trimester	Symptoms	Cases
First	Hyperemesis gravidarum	3
Second	Hyperemesis gravidarum	6
	pruritus	18
	Pain upper abdomen	14
	Itch marks	22
Third	pruritus	32
	Pain upper abdomen	14
	Itch marks	28
	Hyperemesis gravidarum	16
	Decreased fetal movements	60

In our study, 3 % of patients in first trimester had hyperemesis gravidarum. In second trimester , maximum cases had symptoms of itch marks(22%) followed by pruritus(18%). In third trimester , main symptom was decreased fetal movements (60%), pruritus(32%), itch marks(28%), and hyperemesis gravidarum (16%).

Bar diagram showing distribution of patients according to symptoms.

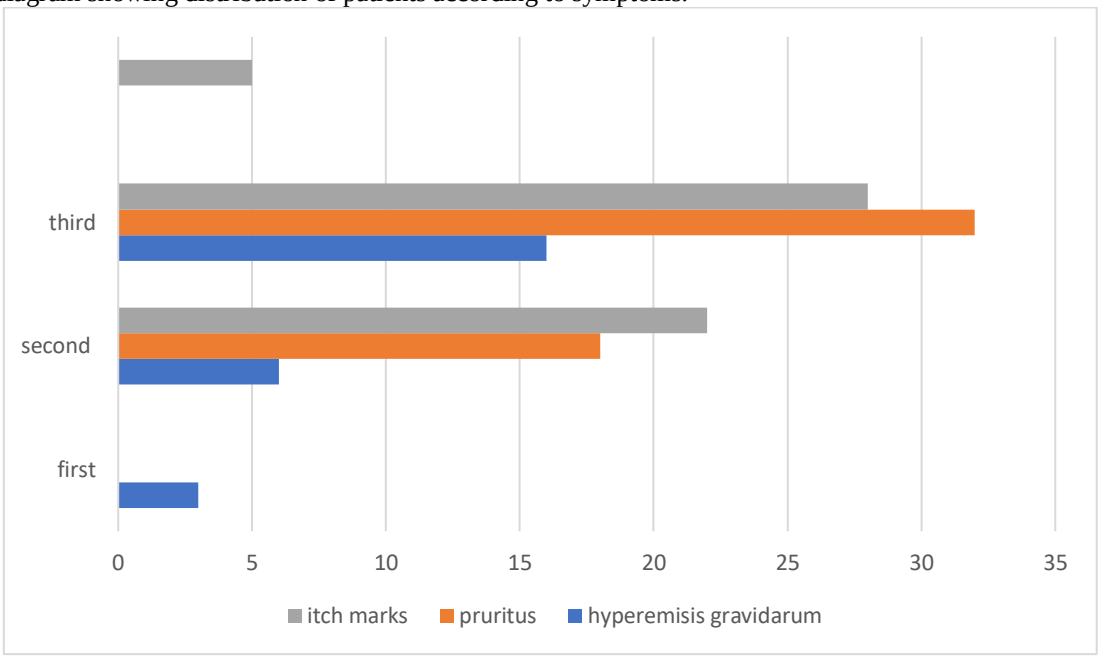


Table 3: Distribution of cause of abnormal LFT

Trimester	Causes	Number	Percentage(%)
First	hepatitis	01	01
	Preclampsia	03	03
second	HELLP syndrome	5	05
	hepatitis	03	03
	Acute fatty liver of pregnancy	01	01
	Sickle cell disease	00	00
Third	Intrahepatic cholestasis of pregnancy	05	05
	preeclampsia	18	18
	eclampsia	09	09
	Acute fatty liver of pregnancy	00	00

Main cause of abnormal LFT in first trimester is preclampsia(3%). In second trimester, main cause is HELLP sybdrome (5%), and hepatitis(3%). In third trimester, main causes are preclampsia(18%), eclampsia (9%), and intrahepatic cholestatsis of pregnancy (5%).

Table 4: Mean LFT's of pregnant women with comorbidities

Comorbidities	Serum bilirubin(T)	AST	ALT	Alkaline phospahatase	LDH
preclampsia	0.8	114	108	384	284
Eclampsia	0.6	234	118	256	302
HELLP Syndrome	1.2	324	308	288	662
Viral hepatitis	0.9	174	116	332	440
ICP	0.4	178	102	224	278

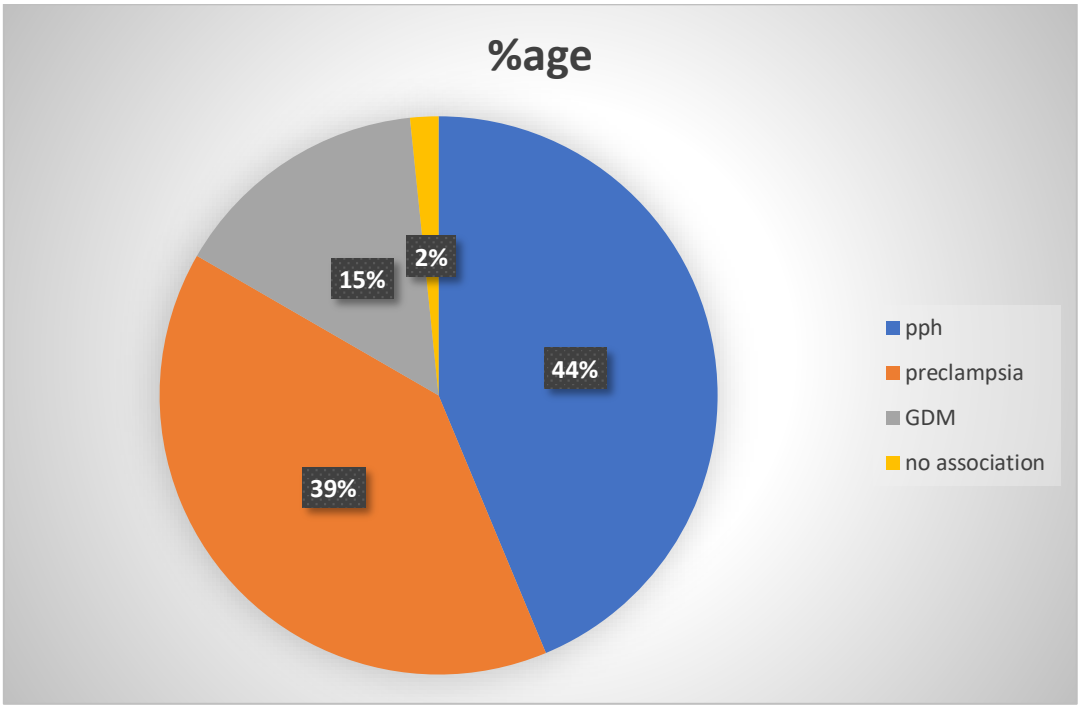


Table 5:

Variables	Frequency	Percentage(%)
Postpartum hemorrhage	32	32
preclampsia	29	29
Gestational diabetes mellitus	11	11
No association	28	28

In this study, 32% had associated postpartum hemorrhage, 29% patients have associated preclampsia.

Table 6: Mode of delivery

Mode of delivery	Number	Percentage(%)
Vaginal delivery	58	58
C- section	42	42

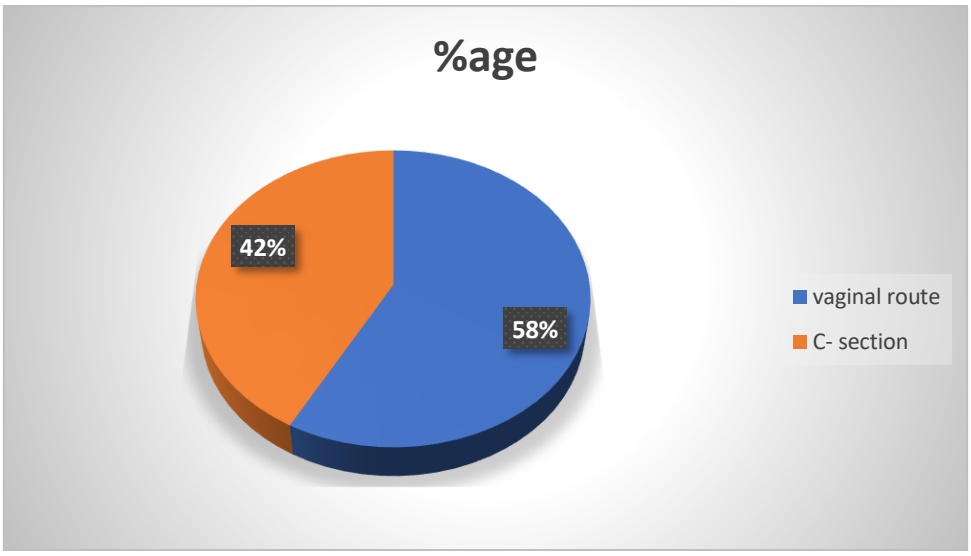


Table 7: Sex of baby

Sex	Number
Male	49
Female	51

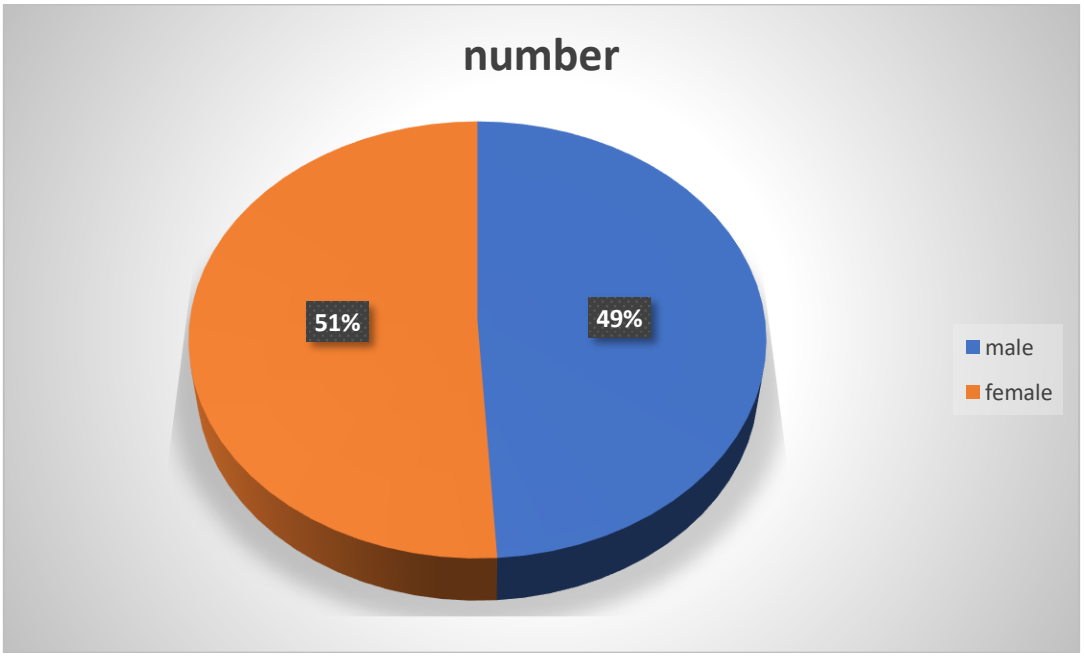
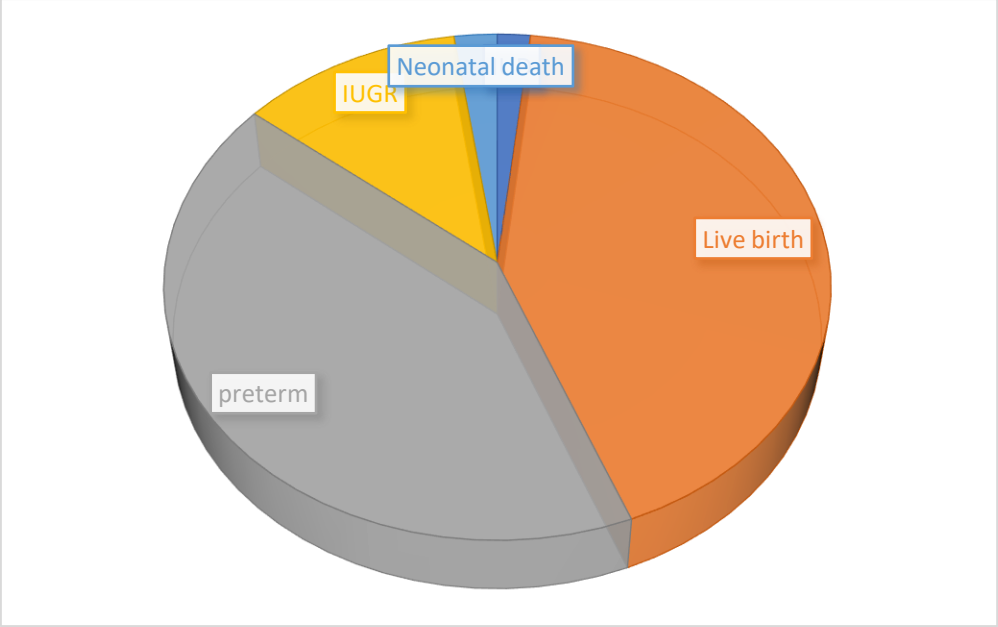


Table 8: Fetal outcome:

Fetal outcome	Number	%
IUD	4	4
Live birth	96	96
Preterm	92	95
IUGR	26	27
Neonatal death	5	5.2

In our study, most of fetus had live birth (96%), intrauterine demise occurred in 4% of fetus. Out of all live birth, 5.2% had neonatal death. Preterm delivery occurred in 95% of females IUGR is seen in 27% of fetus.



DISCUSSION

Pregnancy with liver illness is challenging for both mother and fetus. Younger age groups have a higher frequency of aberrant LFT during pregnancy. According to study, younger age groups have a higher prevalence of pregnancy-related LFT abnormalities. The most common gestational period for abnormal liver function tests was the third trimester, and pregnancies-related factors, notably pre-eclampsia-related diseases, were the most frequent causes of abnormal liver function tests. The majority of the women in our study had poor socioeconomic status, were seen outside, and were typically only admitted to the hospital in cases of emergency. Other Indian studies have also noted similar facts. The third trimester of pregnancy was the most frequent gestational time for abnormal liver function tests, and pregnancy-related factors were most frequently to blame, notably pre-eclampsia.

The majority of research claim that disorders related to pregnancy are to blame for abnormal LFT. The relationship between liver illnesses and gestational age has a highly odd pattern, and hyperemesis gravidarum is the most common presenting symptom in the first trimester.

The etiopathological factor in the third trimester is a pregnancy-specific cause like ICP, AFLP, or more frequently a preeclampsia-related disease, but in the second trimester it is frequently caused by co-incidental and non-pregnancy-specific reasons. Main cause of abnormal LFT in first trimester is preclampsia(3%). In second trimester , main cause is HELLP sybdrome (5%), and hepatitis(3%). In third trimester , main causes are preclampsia(18%), eclampsia (9%), and intrahepatic cholestatsis of pregnancy (5%).

The most widely utilized indicators of hepatocyte damage are AST and ALT. Patients with viral hepatitis have ALT values that are high to several thousand units per liter. Compared to ALT and AST, LDH is less focused. In the HELLP syndrome, LDH is noticeably high, which indicates hemolysis.

Because there were so many cases of pre-eclampsia-related obstetric problems, the induction rate in our study was significant. Poor maternal and fetal prognoses, including a high maternal mortality rate, are linked to HELLP syndrome and AFLP. These patients are at a high risk of developing complications such acute renal failure, liver rupture, DIC, and placental abruption.

CONCLUSION

Obstetric disorders associated with pre-eclampsia also had a worse prognosis for the fetus. In our study, there were 4% of cases of intrauterine death. SGA babies were more prevalent as well. This might be the case since the majority of our cases involved pre-eclampsia-related obstetric problems, which by themselves could result in these unfavorable outcomes, and because the women who displayed abnormal LFT represented more severe manifestations of the illness spectrum.

REFERENCES

1. Joshi D, James A, Quaglia A, Westbrook RH, Heneghan MA. Liver disease in pregnancy. Lancet. 2010;375(9714):594-605.
2. Mitra AK, Patki PS, Mitra SK. Liver disorder during pregnancy and their management. Antiseptic. 2008;105(4):193-6.
3. Ching LY, Barge N, Dalal AR. Study of Jaundice in pregnancy in a tertiary care institute in India. Bombay Hosp J. 2011;53(2):181-3.
4. Nagaria T, Agarwal S. Fetomaternal outcome in jaundice during pregnancy. J ObstetGynecol Ind. 2005;55(5):424-7.
5. Shukla S, Mehta G, Jais M, Singh A. A prospective study on acute viral hepatitis in pregnancy;

seroprevalence, and fetomaternal outcome of 100 cases. J Biosci Tech. 2011;2(3):279-86.
6. Gupta A, Kakkar T, Gupta Y. Cholestasis of pregnancy. J ObstetGynecol Ind. 2009;59(4):320-3.
7. Wong HY, Tan JY, Lim CC. Abnormal liver function tests in the symptomatic pregnant patient: the local experience in Singapore. Annals-academy of medicine singapore. 2004;33(2):204-8.
8. Tank PD, Nandanwar YS, Mayadeo NM. Outcome of pregnancy with severe liver disease. Int J Gynecol Obstet. 2002;76:27-31.
9. Harish K, Nitha R, Harikumar R, Sunil KK, Varghese T, Sreedevi NS, et al. Prospective evaluation of abnormal liver function tests in pregnancy. Tropical gastroenterology: official J Digestive Diseases Foundation. 2005;26(4):188-93.
10. Pratt DS, Kaplan MM. Evaluation of abnormal liver enzyme results in asymptomatic patients. N Engl J Med. 2000;342:1266-71.
11. Krishna R, Valawan RT, Satyanarayanan V, Rajendiran C. Acute fatty liver of pregnancy: a case report a review of the literature. Trop Gastroenterol. 2003;24(3):135-6.
12. Pokharel SM, Chattopadhyay SK, Jaiswal R, Shakya P. HELLP syndrome-a pregnancy disorder with poor prognosis. Nepal Med Coll J. 2008;10(4):260-3.