International Journal of Psychosocial Rehabilitation, Vol. 12, Issue 01, 2008
ISSN: 1475-7192

Assessment of liver function tests in pregnant women at a tertiary care center

Dr. Kanwaljeet Kaur
Assistant Professor, Department of Pathology, Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, Punjab

ABSTRACT

Background: Liver physiology may change during pregnancy, which later on may progress to liver disease. The severity of the disease is related to morbidity and mortality. The present study was conducted to assess liver function tests (LFT) in pregnant women at a tertiary care center.

Materials & Methods: 74 pregnant women with abnormal LFT were carefully examined. Symptoms were recorded. The definition of abnormal LFT pertained to values higher than the normal range as defined by the local laboratory (bilirubin >24mol/L, alkaline phosphatase (ALP) >103 U/L, gamma-glutamyltranspeptidase (GGT)>26 U/L, ALT >51 U/L, aspartate aminotransferase (AST)>33 U/L).

Results: In 1st trimester causes of abnormal LFT was hyperemesis gravidarum in 36, typhoid in 4. In 2nd trimester, hyperemesis gravidarum in 5 and choledocholisthesis in 3. In 3rd trimester, acute fatty liver of pregnancy in 6, drug induced in 4, HELLP syndrome in 1, hepatitis B flare in 3, intrahepatic cholestasis of pregnancy in 3, PET in 2, partial HELLP syndrome in 3 and unknown in 4 cases. The difference was significant ($P< 0.05$). LFT in Hyperemesis Gravidarum, PET and partial HELLP Syndrome such as total bilirubin (µmol/L) was 22.5, 14.6 and 15.4, in ALP (U/L) was 53.5, 201.5 and 192.1, in GGT (U/L) was 43.8, 17.3 and 35.8, in ALT (U/L) was 101.5, 112.8 and 143.6, in AST (U/L) was 74.2, 64.2 and 83.7 and albumin (g/L) was 35.3, 29.5 and 32.5 respectively. The difference was significant ($P< 0.05$).

Conclusion: Anxiety can be reduced and proper obstetric planning for the delivery date can be made possible by being aware of the probable causes of an abnormal LFT at different stages of pregnancy. Given the possibility of a more severe seroconversion reaction in the immediate postpartum period, more care should be used when evaluating an obstetric patient's abnormal LFT if they have HBsAg.

Keywords: Liver physiology, liver function, pregnant

Introduction

Liver physiology may change during pregnancy, which later on may progress to liver disease. The severity of the disease is related to morbidity and mortality. Some liver diseases are specific to pregnancy, like acute fatty liver of pregnancy (AFLP) and Intrahepatic cholestasis of pregnancy (IHCP); some are multi-systemic diseases with hepatic manifestations, for example, preeclampsia5, which is a widespread cause of maternal and perinatal mortality.[1]

It is difficult to diagnose abnormal liver function tests (LFT) in pregnant women because pregnancy-specific diseases must be taken into account in addition to the factors that affect the general population.[2] The illness spectrum is diverse, and an abnormal LFT may be modest with no lasting effects or severe enough to cause maternal and fetal death.[3] Therefore, the question of whether the abnormal LFT is connected to pregnancy and if

prompt obstetric intervention is required frequently presents a challenge to gastroenterologists and obstetricians.[4] Therefore, it would be helpful to know the distribution of the several likely reasons of aberrant LFT in the pregnant population in order to guide clinical management.[5]

Acute fatty liver of pregnancy, hemolysis, elevated liver enzymes and low platelets (HELLP) syndrome, pre-eclampsia toxaemia (PET), and partial HELLP syndrome are among the pregnancy-related causes of abnormal LFT in the third trimester. While these conditions can be lethal, the abnormalities in LFT typically go away after delivery.[6,7] The present study was conducted to assess liver function tests (LFT) in pregnant women at a tertiary care center.

Materials & Methods

The study was carried out on 74 pregnant women with abnormal LFT. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. All were carefully examined. Symptoms were recorded. The definition of abnormal LFT pertained to values higher than the normal range as defined by the local laboratory (bilirubin >24mol/L, alkaline phosphatase (ALP) >103 U/L, gamma-glutamyltranspeptidase (GGT)>26 U/L, ALT >51 U/L, aspartate aminotransferase (AST)>33 U/L). Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Causes of abnormal LFT based on trimester

Trimester	Diagnosis	Number	P value
1st trimester	Hyperemesis gravidarum	36	0.01
	Typhoid	4	
2nd trimester	Hyperemesis gravidarum	5	0.90
	Choledocholisthesis	3	
3rd trimester	Acute fatty liver of pregnancy	6	0.76
	Drug induced	4	
	HELLP syndrome	1	
	Hepatitis B flare	3	
	Intrahepatic cholestasis of pregnancy	3	
	PET	2	
	Partial HELLP syndrome	3	
	Unknown	4	

Table I, graph I shows that in 1st trimester causes of abnormal LFT was hyperemesis gravidarum in 36, typhoid in 4. In 2nd trimester, hyperemesis gravidarum in 5 and choledocholisthesis in 3. In 3rd trimester, acute fatty liver of pregnancy in 6, drug induced in 4, HELLP syndrome in 1, hepatitis B flare in 3, intrahepatic cholestasis of pregnancy in 3, PET in 2, partial HELLP syndrome in 3 and unknown in 4 cases. The difference was significant (P< 0.05).

Graph I Causes of abnormal LFT based on trimester

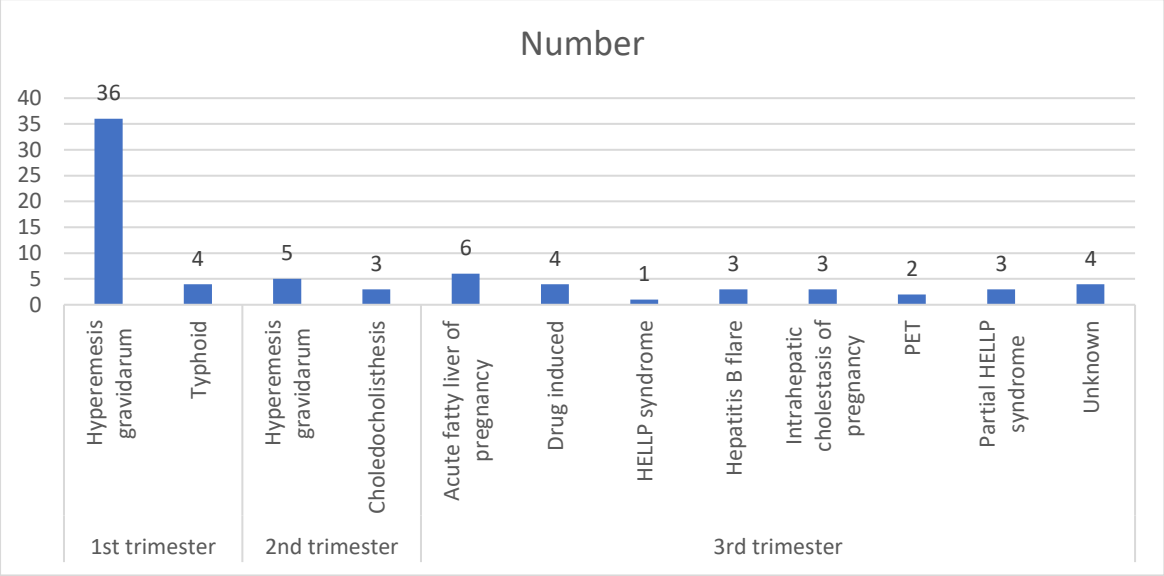
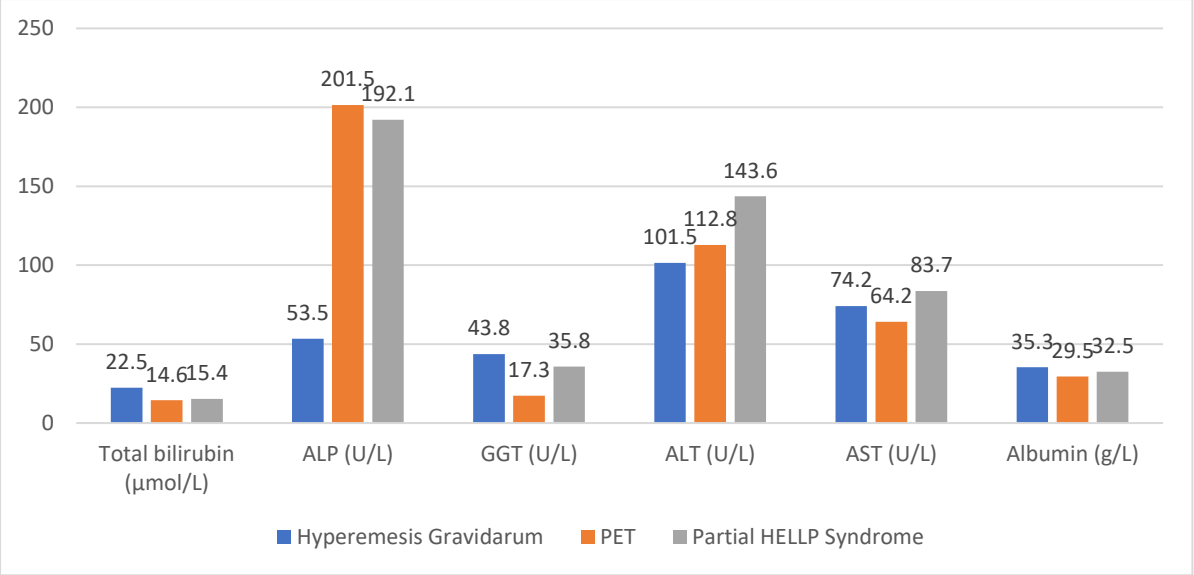


Table II LFT for patients with Hyperemesis Gravidarum, PET and Partial HELLP Syndrome

LFT	Hyperemesis Gravidarum	PET	Partial HELLP Syndrome	P value
Total bilirubin (µmol/L)	22.5	14.6	15.4	0.05
ALP (U/L)	53.5	201.5	192.1	0.01
GGT (U/L)	43.8	17.3	35.8	0.03
ALT (U/L)	101.5	112.8	143.6	0.17
AST (U/L)	74.2	64.2	83.7	0.05
Albumin (g/L)	35.3	29.5	32.5	0.24

Table II, graph II shows that LFT in Hyperemesis Gravidarum, PET and partial HELLP Syndrome such as total bilirubin (µmol/L) was 22.5, 14.6 and 15.4, in ALP (U/L) was 53.5, 201.5 and 192.1, in GGT (U/L) was 43.8, 17.3 and 35.8, in ALT (U/L) was 101.5, 112.8 and 143.6, in AST (U/L) was 74.2, 64.2 and 83.7 and albumin (g/L) was 35.3, 29.5 and 32.5 respectively. The difference was significant ($P< 0.05$).

Graph II LFT for patients with Hyperemesis Gravidarum, PET and Partial HELLP Syndrome



Discussion

Pregnancy-related liver problems are more common than expected and may require specialized care1. Approximately 3% of pregnancies are affected by it. Pregnancy causes a number of physiological changes that affect the baby's growth and structural development.[8,9] The severity of liver damage can determine the symptoms of liver dysfunction, which can range from fever, vomiting, nausea, and abdominal discomfort to the warning signals of acute liver failure.[10] Pregnancy-related physical examination abnormalities include palmar erythema and spider angioma, however their existence may not indicate the presence of underlying chronic liver disease.[11] These days, the pathophysiology and explanation of liver illness during pregnancy are more understood. There are numerous traditional diagnostic tests available, and numerous others are being studied.[12,13] The present study was conducted to assess liver function tests (LFT) in pregnant women at a tertiary care center.

We found that in 1st trimester causes of abnormal LFT was hyperemesis gravidarum in 36, typhoid in 4. In 2nd trimester, hyperemesis gravidarum in 5 and choledocholisthesis in 3. In 3rd trimester, acute fatty liver of pregnancy in 6, drug induced in 4, HELLP syndrome in 1, hepatitis B flare in 3, intrahepatic cholestasis of pregnancy in 3, PET in 2, partial HELLP syndrome in 3 and unknown in 4 cases. Wong et al[14], 50 cases of abnormal liver function tests in pregnant patients, who presented from 1998 to 2001, were analysed. Their presenting symptoms included persistent vomiting (48%), pruritis (14%), jaundice (26%), upper abdominal discomfort (24%) and hypertension (46%). Pregnancy-related causes accounted for 84% of the abnormal liver function tests. Abnormal liver function tests occurred more frequently in the first (34%) and third (58%) trimesters than in the second trimester (8%). Hyperemesis gravidarum (94%) and partial haemolysis, elevated liver enzymes and low platelets (HELLP) syndrome (31%) were the commonest causes in the first and third trimesters respectively. Hepatitis B flare resulted in 2 maternal deaths. Seven patients with pre-eclampsia toxaemia, acute fatty liver of pregnancy or partial/complete HELLP syndrome had their liver function tests measured sequentially before and after delivery. All of them showed rapid improvement postpartum with their alanine aminotransferase (ALT) dropping 50% within 3 days.

We found that LFT in Hyperemesis Gravidarum, PET and partial HELLP Syndrome such as total bilirubin (µmol/L) was 22.5, 14.6 and 15.4, in ALP (U/L) was 53.5, 201.5 and 192.1, in GGT (U/L) was 43.8, 17.3 and 35.8, in ALT (U/L) was 101.5, 112.8 and 143.6, in AST (U/L)

was 74.2, 64.2 and 83.7 and albumin (g/L) was 35.3, 29.5 and 32.5 respectively. Wallstedt et al[15] reported elevations of either AST or ALT in 50% of 12 patients with this condition; 67% of them had abnormal AST, ALT, albumin or bilirubin values. Mild hyperbilirubinemia (less than 68 mmol/l) with elevation of both direct and indirect fractions has been found in half the women hospitalised for this condition. Alkaline phosphatase (ALP) may be elevated to twice the normal value, and aminotransferase values can rise to as much as 200 U/l (six times the upper limit of normal).

Jarnfelt- Samsioe A et al[16] in their study, 102 healthy pregnant women, of whom 62 complained of nausea, were followed throughout pregnancy. Liver function tests were performed to ascertain whether emesis gravidarum is related to impaired hepatic function. In this series, all values were within the normal ranges. Serum levels of total bilirubin and gamma-glutamyl-transferase were significantly decreased and those of total serum bile acids significantly increased in emetic women compared to nonemetic subjects. Furthermore, the metabolic load on the liver seems to follow a biphasic course as there is an apparent minimum in liver function variables in the second trimester. It is concluded that a slow adaptation to the increased hormonal load on the liver might be responsible for the condition of emesis gravidarum.

The shortcoming of the study is small sample size.

Conclusion

Authors found that anxiety can be reduced and proper obstetric planning for the delivery date can be made possible by being aware of the probable causes of an abnormal LFT at different stages of pregnancy. Given the possibility of a more severe seroconversion reaction in the immediate postpartum period, more care should be used when evaluating an obstetric patient's abnormal LFT if they have HBsAg.

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