ORIGINAL ARTICLE

Abnormal Liver Function Test during Pregnancy also Determine the Maternal and Fetal Outcomes

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ABSTRACT

Objective: The goal of this study was to look into the clinical profile, incidence, and potential reasons of liver function test abnormalities among pregnant women.
Study Design: Prospective/Observational study
Place and Duration: Department of Medicine, OMC Hospital, Jail Road Lahore from February, 2020 to June, 2021.
Methods: There were one hundred and five pregnant women had liver dysfunction were included. Age of the patients was between 19-45 years. All patients provided written consent before having their demographic data collected, including their age, BMI, gender, and trimester of pregnancy. Association of symptoms among presented patients was also recorded. Females were underwent for liver test to diagnose abnormalities. Prevalence of liver disease abnormalities and maternal outcomes were assessed in this study. We used SPSS 22.0 version to analyze complete data.
Results: Mean age of the pregnant females was 26.47±7.49 years and had mean BMI 24.11±3.34 kg/m^2. Majority of the patients 60 (57.1%) had parity I. Mean gestational age of the patients was 33.13±5.33 weeks. We found that majority of the patients were in 65 (61.9%) third trimester. Oedema, headache and fever were the most common symptoms presented. Prevalence of abnormal liver function test was among 85 (80.9%) cases. Most common cause was hyperemesis gravidarum found in 57 (54.3%) cases followed by hepatitis in 48 (45.7%) cases. Most common syndrome was HELLP 35 (33.3%) and AFLP in 18 (17.1%) females. Frequency of pre-eclampsia was in 29 (27.6%) cases. C-section was carried out in 36 (34.3%) cases. No maternal mortality found in our study but rate of mortality in fetals were 24 (28.2%).
Conclusion: During the third trimester of pregnancy, pregnancy-related illnesses are the most common reason for abnormal liver function tests. Usually, pre-eclampsia is the root of this problem.
Keywords: Pregnancy, Liver Dysfunction, LFT, Outcomes

INTRODUCTION

In order to avoid mistakes in the diagnosis of abnormal liver function tests (LFTs) in pregnancy, it is necessary to interpret them correctly. Due to the potential for serious consequences for both mother and foetus, it is critical to begin a diagnostic workup as soon as possible after the diagnosis is made. An asymptomatic pregnant woman may have abnormal liver function tests performed, whereas a fulminant form of the disease may present with life-threatening consequences[1,2].

Pregnant women may experience numbness, vomiting, and stomach pain, all of which can confuse a healthcare practitioner. Additionally, laboratory test results show a drop in the levels of antithrombin III and protein S, serum albumin, and total proteins, as well as a threefold to fourfold increase in alkaline phosphatase levels, as a result of the physiological changes of pregnancy[2] Prothombin time had not altered much, nor had the liver transaminase enzyme level nor the serum bilirubin level.

Predicting poor maternal outcomes using liver function tests has yielded a range of results in past research. However, whereas some studies have found a strong correlation between high levels of AST, ALT, LDH, and bilirubin with worse outcomes, other studies have found little or no associations at all between these blood tests at all. No consensus has been reached on reproducible predictors[3,4] Some authors feel that analytes such as LDH, bilirubin, and possibly AST will prove to be more predictive because they suggest various organ dysfunctions[5,6] Hepatic dysfunction and hemolysis are both indicated by elevated levels of LDH, bilirubin, and AST, while tissue injury and hepatic dysfunction are both indicated by elevated levels of AST and bilirubin. Predicting adverse pregnancy outcomes in women with preeclampsia has not been proven to be possible using changes in liver function tests over time.

A spike in liver enzymes such as AST, ALT, serum glutamic pyruvic transaminase, is indicative of presumptive preeclampsia. Blood pressure and proteinuria are the second and third most

important indicators of maternal and foetal complications, respectively, in preeclampsia, according to a Delphi poll of international experts[7] Several studies have established a link between elevated levels of maternal blood liver enzymes and poor pregnancy outcomes for both the mother and the foetus[8,9] A big enough sample size for precise estimations of accuracy has not often been used for these investigations. Preeclampsia is defined differently in each study, as are the consequences. Methods such as systematic literature reviews can be used to clarify current doubts and find evidence holes[10] There are currently no systematic reviews of the accuracy of liver enzymes in predicting difficulties with preeclampsia and its long-term outcomes.

Among the goals of this study were to examine the clinical profile of the women who participated, as well as the occurrence and possible causes of abnormal liver function tests, as well as the fate of the foetus and mother during pregnancy.

MATERIAL AND METHODS

This Prospective/Observational study was conducted at Department of Medicine, OMC Hospital, Jail Road Lahore from February, 2020 to June, 2021 and consists of 105 pregnant women who had liver dysfunction were included. All patients provided written consent before having their demographic data collected, including their age, BMI, gender, and trimester of pregnancy. Women had kidney failure, Cardiac disease, <18 years of age and those did not provide any written consent were not included in this study.

Age of the patients was between 19-45 years. of epilepsy medication and antitubercular medications, oral contraceptives, and a history of sickling were all documented. A history of blood transfusions, tattoos, alcohol usage, and hyperlipidaemia were all noticed in the context of poor liver function in the patient. Pregnant ladies were all subjected to a thorough physical examination, Patients with severe preeclampsia, hypertension, evidence of ICP, infective hepatitis or other disorders were asked to submit to all

available liver function tests, including LDH. Platelet count viral serology for hepatitis, peripheral smear, and haemoglobin electrophoresis were conducted whenever necessary to identify the underlying cause. These ladies and their newborns were tracked for up to seven days after the delivery.

Low platelet count (100,000/L) is a symptom of the HELLP syndrome, which involves elevated levels of bilirubin, low and platelet count (suggestive peripheral smear with red cell fragmentocytes along with increased reticulocytes). For now, we know only that the patient has a high level of AST and low platelet count, and that haemolysis is present or absent. At least two incidences of hypertension greater than or equal to 140/90 mmHg (at least six hours apart) and proteinuria (1+) after 20 weeks of pregnancy are indications of preeclampsia-induced liver injury, both of which should be reported to your doctor. (AFLP) There are at least six of the following: Abdominal pain, polydipsia or polyuria, encephalopathy, leukocytosis, increased bilirubin, elevated transaminoses, severe hypoglycemia, renal impairment, coagulopathy, ascites, or a bright liver on ultrasonography are some of the signs that may suggest a medical emergency. We used SPSS 22.0 version to analyze complete data.

RESULTS

Mean age of the pregnant females was 26.47±7.49 years and had mean BMI 24.11±3.34 kg/m^2. Majority of the patients 60 (57.1%) had parity I. Mean gestational age of the patients was 33.13±5.33 weeks. We found that majority of the patients were in 65 (61.9%) third trimester.(table 1)

Table 1: Characteristics detailed demographics of enrolled cases

Variables	Frequency	Percentage
Mean Age (years)	26.47±7.49	
Mean BMI (kg/m^2)	24.11±3.34	
Parity		
I	60	67.1
II	45	32.9
Mean gestational age (weeks)	33.13±5.33	
Trimester		
First	15	14.3
Second	25	23.81
Third	65	61.9

Table 2: Association of symptoms among enrolled cases

Variables	Frequency	Percentage
Symptoms		
Oedema	45	42.9
Headache	38	36.2
Fever	22	20.95

Oedema found in 45 (42.9%), headache 38 (36.2%) and fever 22 (20.95%) were the most common symptoms presented among pregnant women.(table 2)

Table 3: Association of LFT among cases

Variables	Frequency	Percentage
LFT		
Yes	85	80.9
No	20	19.1
Causes		
gravidarum	49	57.6
hepatitis	36	42.4
Total	85	100

Table 4: Association of syndrome among 85 LFT

Variables	Frequency	Percentage
Syndrome		
HELLP	35	33.3
AFLP	18	17.1
No Syndrome	32	37.6

100% Patients who were included must have abnormal LFT cases. Most common cause was hyperemesis gravidarum found in

49 (57.6%) cases followed by hepatitis in 36 (42.4%) cases.(table 3)

Most common syndrome was HELLP 35 (33.3%) and AFLP in 18 (17.1%) females.(table 4)

Frequency of pre-eclampsia was in 29 (27.6%) cases, gestational diabetes in 21 (24.7%) and post- partum haemorrhage in 32 (37.6%) patients.(table 5)

Table 5: Association of GB, pre-eclampsia and pph

Variables	Frequency	Percentage
post- partum haemorrhage	32	37.6
pre-eclampsia	29	27.6
gestational diabetes	21	24.7

C-section was found in 36 (34.3%) cases, instrumental delivery in 12 (14.1%), induction of labor in 17 (20%) and prolong labor in 6 (7.1%). No mortality found in mothers.(table 6)

Table 6: Outcomes of mothers

Variables	Frequency	Percentage
C-section	36	34.3
instrumental delivery	12	14.1
induction of labor	17	20
prolong labor	6	7.1
Mortality	0	0

Rate of mortality in fetus were 24 (28.2%), low birth weight was found in 31 (36.5%), Low apgar score in 9 (10.6%) and 14 (16.5%) were admitted to NICU.(table 7)

Table 7: Post-operatively fetus outcomes

Variables	Frequency	Percentage
low birth weight	24	34.3
Low apgar score	9	10.6
NICU	14	16.5
mortality	24	28.2

DISCUSSION

Pregnancy-related LFT abnormalities are more common in the younger age group, according to research. The third trimester was the most prevalent gestational time for abnormal liver function tests, and pregnancy-related reasons, particularly pre-eclampsia-related disorders, were the most common causes of abnormal liver function tests. Although it is no longer used in the diagnosis of pre-eclampsia, oedema remains a significant clinical aspect of the condition, which explains why it is the most common presenting symptom in the majority of cases.

Most common syndrome was HELLP 35 (33.3%) and AFLP in 18 (17.1%) females[11] Frequency of pre-eclampsia was in 29 (27.6%) cases, gestational diabetes in 21 (24.7%) and post-partum haemorrhage in 32 (37.6%) patients. Rate of mortality in fetals were 24 (28.2%), low birth weight was found in 31 (36.5%), Low apgar score in 9 (10.6%) and 14 (16.5%) were admitted to NICU.[12] Additionally, pre-eclampsia-related obstetric problems were associated with an even worse prognosis for the foetus, with a reported perinatal mortality rate of 24.6 to 62%. This is due to a lack of facilities, a lack of knowledge about pregnancy-specific conditions that can worsen pregnancy outcomes such as liver dysfunction, malnutrition, anaemia, and a delay in seeking medical advice and referral to a tertiary care hospital. It appears that these are the main reasons for increased maternal and foetal mortality. When they are taken to the referral hospital, many of these women are already dead and do not react to therapy.

As the third trimester progresses, abnormal liver function tests in pregnancy are more likely to be a result of pregnancy-related disorders. More than half of all maternal health problems are linked to preeclampsia. If jaundice isn't the first thing you notice, an abnormal LFT may go overlooked due to a lack of awareness. Systematic approaches often reveal the underlying cause of an issue. The gestational age of the foetus, when paired with other relevant clinical data, is a good starting point. An

accurate diagnosis of pregnancy-related and pregnancy-specific conditions appears to be made when this step is taken.[13,14]

CONCLUSION

During the third trimester of pregnancy, pregnancy-related illnesses are the most common reason for abnormal liver function tests. Usually, pre-eclampsia is the root of this problem.

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