

Research Article

The Value of Liver Function Tests During the First 20 Weeks Gestation in Predicting Preeclampsia

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Abstract

Introduction: Preeclampsia is a multisystem disorder of unknown cause and pathogenesis.

Aim of the study: The aim of this study is to evaluate the value of liver function tests ALT and AST in predicting the subsequent development of preeclampsia in high risk women.

Patients and Methods: This study was conducted in the department of Obstetrics and Gynecology, El-Minia University Hospital during the period from March 2015 to April 2016. The study was approved by hospital ethics committee. Informed consent was obtained from patients before participation in the study. **Results:** ALT was significantly higher in mild PE group (32.2+19.7) compared with control group (23.0+6.1) for each (p<0.001). **Discussion:** Hypertensive disorder during pregnancy complicates 7-10% of total pregnancies out of which 70% are preeclampsia. **Conclusion:** Liver function tests particularly AST, ALT levels can be used as a potential biomarker for predicting preeclampsia and severity of preeclampsia. **Recommendation:** There is no clinical cut-off value that can be practically used for the prediction of preeclampsia. Further studies are needed to establish the role of plasma AST and ALT level as predictors of preeclampsia.

Keywords: Preeclampsia, pathogenesis, Liver function

Introduction

Preeclampsia is a multisystem disorder of unknown cause and pathogenesis. (Sibai BM., 2003).

It is one of the most serious complications of pregnancy and a major cause of maternal and fetal morbidity and mortality. (Bryson CL et al., 2003).

The incidence of Preeclampsia ranges from 5-10% depending on the population demographic and country examined. (Wolf M et al., 2002)

There are different hypotheses that attempt to explain the origin of Preeclampsia. (Ganzevoort W et al., 2006, and Huppertz B., 2008)

Preeclampsia is can induce damage to cardiovascular system, kidney, brain and liver. (Venkatesha S et al., 2006, and Levine RJ, Lam C et al., 2006)

Liver function abnormalities occur in 3% of pregnancies and Preeclampsia is the most

frequent cause. (Barton JR et al., 2008, and Wolak T et al., 2012).

Liver enzymes like aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are often increased in Preeclampsia. The Delphi survey of international experts considered liver function tests to be the third most important prediction of maternal and fetal complication in Preeclampsia. (Wolak T et al., 2010, and Orlando R et al., 2004)

Other studies have repeated a positive association between elevated maternal serum liver enzymes level and adverse maternal and fetal outcomes. In this study we will evaluate the value of liver function test (AST and ALT) in predicting Preeclampsia in high risk women. (Delic R et al., 2010, and ACOG practice bulletin 2002)

Aim of the study

The aim of this study is to evaluate the value of liver function tests ALT and AST

in predicting the subsequent development of preeclampsia in high risk women

Patients and Methods

This study was conducted in the department of Obstetrics and Gynecology, El-Minia University Hospital during the period from March 2015 to April 2016. The study was approved by hospital ethics committee. Informed consent was obtained from patients before participation in the study.

The study included 6490 pregnant women in their last trimesters. They were randomly selected from among women attending the

obstetric unit of El-Minia university hospital during the period from March 2015 to April 2016. From them 5971 pregnant women continued in the follow up while 519 pregnant women lost during the follow up. Blood samples from all women were obtained to determine the level of aspartate aminotransferase (AST) and alanine aminotransferase (ALT). From among all selected women 5571 women were normotensive (control group) and 400 women developed preeclampsia.

The preeclampsia group included 130 women with mild preeclampsia where as 270 women developed severe preeclampsia.

Results

Table (1): Incidence of and severity of PE in the study population

	Number
All obstetric cases	5971
No PE	5571 (93.0%)
PE	400 (7.0%)
Mild PE	130 (2.3%)
Severe PE	270 (4.7%)

Percentages are calculated from total number of obstetric cases.

Discussion

Hypertensive disorder during pregnancy complicates 7-10% of total pregnancies out of which 70% are preeclampsia. (Aparna A. Sagare et al., 2012)

Preeclampsia is a condition that develops in previously normotensive pregnant women after 20 weeks of gestation, and is characterized by onset of hypertension and proteinuria. If left untreated, preeclampsia can progress to a convulsive state known as Eclampsia. (ACOG 2002, National High Blood Pressure Education Program 2000)

Since preeclampsia is a common complication associated with maternal and fetal aggravated risk. There is a constant search for a safe, simple, and reliable screening tool for its early prediction.

This prospective study was conducted in the department of Obstetrics and Gynecology, El-Minia University Hospital and El-Minia University laboratory on 5971 pregnant women attending antenatal care unit and labor room.

The aim of this study to evaluate role of liver enzymes ALT and AST as a markers in prediction of preeclampsia.

The major finding in our study is that increase AST and ALT levels during the first 20 weeks of pregnancy are associated with higher risk for development of preeclampsia in second half of pregnancy.

Orlando et al., 2004. Found that normal pregnancy is generally associated with a mild increase in serum alkaline phosphatase, but with normal aspartate aminotransferase AST and ALT concentration

Conclusion

Liver function tests particularly AST, ALT levels can be used as a potential biomarker for predicting preeclampsia and severity of preeclampsia.

Increased liver enzymes AST and ALT in preeclamptic groups.

The abnormal increase in the levels of liver enzymes in high risk group compared with normal pregnant women suggests that liver dysfunction along with hypertension in early stages of pregnancy can lead to preeclampsia.

The higher levels of the liver enzymes AST and ALT during the first 20 weeks of pregnancy were significantly associated with increased risk for the development of severe preeclampsia during the second half of the pregnancy.

Recommendation

There is no clinical cut-off value that can be practically used for the prediction of preeclampsia. Further studies are needed to establish the role of plasma AST and ALT level as predictors of preeclampsia.

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