

Diagnostic Accuracy of β hCG in Predicting Pre-eclampsia Between 14-20 weeks Gestation

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INTRODUCTION

Pre-eclampsia (PE) is an important cause of perinatal morbidity and mortality and complicates 2%–8% of pregnancies. Some studies indicated that β -human chorionic gonadotropin (β -hCG) is involved in PE, and β -hCG has been recommended as a serum maker for screening PE at 8-14 weeks of gestation. The study was conducted to determine the diagnostic accuracy of β hCG for predicting pre-eclampsia, taking pre-eclampsia occurrence as gold standard

OBJECTIVES

To determine the diagnostic accuracy of β hCG for predicting pre-eclampsia among normal females between 14 to 20 weeks of gestation, taking pre-eclampsia occurrence as gold standard

MATERIAL AND METHODS

This validation cross sectional study was conducted at KRL hospital Islamabad Pakistan from 20th October 2022 to 19th April 2023. A total of 160 women with singleton pregnancy (assessed on ultrasonography) of gestational age 14-20 weeks of age between 18 to 45 years were included. Patients with multiple pregnancies, history of smoking, diabetes mellitus, chronic hypertension, cardiac and liver or lung disease were excluded. β hCG levels were assessed quantitatively using blood sample. Presence or absence of pre-eclampsia was noted as per operational definition. All women were followed up by the researcher and occurrence of pre-eclampsia (yes/no) till delivery was noted.

RESULTS

Age range in this study was from 18-45 years with mean age of 27.41 ± 4.41 years. Majority of the patients (75.63%) were between 18-30 years of age. Mean gestational age was 16.63 ± 1.87 weeks Mean β HCG levels were 21344.33 ± 134.72 IU/l. In this study, 86 were True Positive and 05 were False Positive. Among 69, β HCG < 2 MOM patients, 06 (False Negative) had pre-eclampsia on follow up whereas 63 (True Negative) had no pre-eclampsia (**p=0.0001**).

B HCG LEVELS	PRE ECLAMPSIA ON FOLLOW UP	NO PRE ECLAMPSIA ON FOLLOW UP
B-HCG> 2MOM	86 (TRUE POSITIVE)	05 (FALSE POSITIVE)
B-HCG <2MOM	06 (FALSE NEGATIVE)	63 (TRUE NEGATIVE)

Overall **sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy** of β hCG for predicting pre-eclampsia among normal females between 14 to 20 weeks of gestation, taking pre-eclampsia occurrence as gold standard was **93.48%, 92.65%, 94.51%, 91.30% and 93.33% respectively**.

DISCUSSION

In a local study, prevalence of pregnancy induced hypertension was found in 54.0% and sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of high β HCG (>2 MOM) levels in predicting pregnancy induced hypertension among normal females as 92.31%, 92.77%, 94.74%, 89.43% and 92.50% respectively. A study by Pankaj Desai et al, 62 cases out of 90 (68.9%) with values of Beta-HCG >2MOM developed pregnancy induced hypertension against 21 cases out of 130 (16.15%), having a Beta-HCG value <2 MOM. The difference was statistically significant (p value <.001). Our study verified the findings of the above mentioned studies and estbalishes the diagnostic accuracy of β -hCG in early diagnosis of pre-eclampsia.

CONCLUSION

This study concluded that diagnostic accuracy of high β HCG levels in predicting pre-eclampsia is quite high. So, we recommend that β HCG levels should be done in every women in predicting pre-eclampsia in order to take proper management strategies in high risk women for reducing the morbidity and mortality of the mother.

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