

## **Relationship between maternal serum $\beta$ -HCG with IUGR and preeclampsia in pregnant mothers**

### **Abstract**

**Background and objective:** Preeclampsia and intrauterine growth restriction are important factors in perinatal morbidity and mortality so that prediction and prevention of them is a significant challenge in the field of obstetrics and gynaecology.

**Methods:** Thirty six women with IUGR and 36 with preeclampsia were included in the study from pregnant women with pregnancy complication who referred to the delivery department of Alavi hospital in Ardabil in 2019. Also, 40 healthy pregnant women without any pregnancy complication or any known underlying disease were included in the study as the control group. Maternal serum  $\beta$ -HCG is measured in the first trimester between 11-13 weeks. Serum  $\beta$ -HCG is reported as Multiple of Median (MoM) in order to standardization.

**Results:** Mean  $\beta$ -HCG MoM was  $1.74 \pm 0.64$  in control group,  $1.48 \pm 0.39$  in IUGR group, and  $2.39 \pm 1.01$  in preeclampsia group. There is no relationship between maternal  $\beta$ -HCG MoM with IUGR ( $P=0.374$ ) but there was a significant relationship between maternal  $\beta$ -HCG MoM with preeclampsia ( $P=0.023$ ) that this relationship exists with mild ( $P=0.033$ ) and severe preeclampsia ( $P=0.001$ ). Results of logistic regression showed that high values of  $\beta$ -HCG MoM had a significant relationship with increased risk of preeclampsia (OR=2.678 , 95%CI: 1.420-5.051, Sig.=0.002) but there was no relationship with IUGR (OR=0.415 , 95%CI: 0.167-1.030, Sig.=0.058). The best cut-off point for  $\beta$ -HCG MoM to predict preeclampsia was 2.28 (sensitivity 58.3% and specificity 72.5%) so that having  $\beta$ -HCG MoM  $\geq 2.28$  in the first trimester, increased the risk of preeclampsia 3.18-times in the considered population (OR=3.18, 95%CI: 1.16-8.69,  $P=0.024$ ).

**Conclusion:** The findings of this study showed that the higher values of  $\beta$ -HCG MoM in the first trimester of pregnancy has a significant relationship with the increased risk of preeclampsia. So it seems that this factor probably has a relationship with preeclampsia and can be used as a measurement for prediction and screening of preeclampsia. However, further research with higher sample size is needed to proof these findings and the possibility of its clinical use.

**Key Words:** Human chorionic gonadotropin, Intrauterine growth restriction, preeclampsia.