

First-Trimester Screening of Preeclampsia in a Routine Care

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Abstract : Introduction: Preeclampsia is a complication of the second trimester of pregnancy, which is characterized by high morbidity and multiorgan damage. Many complex pathogenic mechanisms are now implicated to be responsible for this disease (1). Preeclampsia is one of the leading causes of maternal mortality worldwide. Statistics are enough to convince you of the seriousness of this pathology: about 100,000 women die of preeclampsia every year. It occurs in 3-14% (varies significantly depending on racial origin or ethnicity and geographical region) of pregnant women, in 75% of cases - in a mild form, and in 25% - in a severe form. During severe pre-eclampsia-eclampsia, perinatal mortality increases by 5 times and stillbirth by 9.6 times. Considering that the only way to treat the disease is to end the pregnancy, the main thing is timely diagnosis and prevention of the disease. Identification of high-risk pregnant women for PE and giving prophylaxis would reduce the incidence of preterm PE. First-trimester screening model developed by the Fetal Medicine Foundation (FMF), which uses the Bayes-theorem to combine maternal characteristics and medical history together with measurements of mean arterial pressure, uterine artery pulsatility index, and serum placental growth factor, has been proven to be effective and have superior screening performance to that of traditional risk factor-based approach for the prediction of PE (2) Methods: Retrospective single center screening study. The study population consisted of women from the Tbilisi maternity hospital "Pineo medical ecosystem" who met the following criteria: they spoke Georgian, English, or Russian and agreed to participate in the study after discussing informed consent and answering questions. Prior to the study, the informed consent forms approved by the Institutional Review Board were obtained from the study subjects. Early assessment of preeclampsia was performed between 11-13 weeks of pregnancy. The following were evaluated: anamnesis, dopplerography of the uterine artery, mean arterial blood pressure, and biochemical parameter: Pregnancy-associated plasma protein A (PAPP-A). Individual risk assessment was performed with performed by Fast Screen 3.0 software ThermoFisher scientific. Results: A total of 513 women were recruited and through the study, 51 women were diagnosed with preeclampsia (34.5% in the pregnant women with high risk, 6.5% in the pregnant women with low risk; $P < 0.0001$). Conclusions: First-trimester screening combining maternal factors with uterine artery Doppler, blood pressure, and pregnancy-associated plasma protein-A is useful to predict PE in a routine care setting. More patient studies are needed for final conclusions. The research is still ongoing.

Keywords : first-trimester, preeclampsia, screening, pregnancy-associated plasma protein

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