Objective
The diagnosis of fetal growth restriction (FGR) is based just on ultrasound parameters. In most cases, FGR is due to placental insufficiency. As far as evidence suggests, both phenotypes (early and late FGRs) are caused by placental insufficiency, so it can be supposed that there is an association between maternal serum levels of angiogenic factors (PlGF - placental growth factor, sFlt-1 - soluble fms-like tyrosine kinase 1) and FGR. The aim of the study was to assess maternal serum levels of PlGF, sFlt-1 and the sFlt-1/PlGF ratio in a low-risk population of pregnant women in the third trimester and evaluate the cut-off value in predicting FGR.

Methods
In a prospective cohort study, in a group of 443 pregnant women with singleton pregnancies, maternal serum PlGF and sFlt-1 were assessed using the Thermo Fisher assays on a Kryptor Compact platform. PlGF and sFlt-1 were assessed two times (at 30–33 and 36–37 gestational weeks) and the sFlt-1/PlGF ratio was calculated. FGR was diagnosed according to the Consensus definition of fetal growth restriction: a Delphi procedure. A receiver operating characteristic (ROC) analysis was used to determine the threshold of the PlGF and sFlt-1 levels and sFlt-1/PlGF ratio in predicting FGR.

Results
FGR was diagnosed in 5.6% of pregnant women (25/443), early-FGR (<32 weeks) in 0.9% (4/443) and late-FGR (≥32 weeks) in 4.7% (21/443). ROC analysis showed that none of the parameters were able to predict FGR, the area under the curve (AUC) was poor for all parameters regardless of gestational age and did not exceed a level of 0.70. Only in the group Early-FGR, ROC analysis showed fair accuracy for PlGF in the 3rd trimester, at 30-33 weeks (AUC = 0.77), and at 36-37 weeks (AUC = 0.78), but with low statistical significance (p >0.058), because the group was too small, and the optimal PlGF cut-off could not be evaluated.

Conclusion
Maternal serum PlGF in the 3rd trimester could predict the Early-FGR, but neither sFlt-1 nor sFlt-1/PlGF ratio improve prediction.