

Biochemical markers of cardiac and placental dysfunction in pregnancies with fetal smallness and preeclampsia

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Objective

The exact mechanism responsible for fetal smallness in the third trimester of pregnancy is still unclear. Recent studies have revealed that except for pathological placentation, dysfunction in the maternal cardiovascular system also plays a role. The aim of this study is to analyse the laboratory markers of cardiac and placental dysfunction in pregnant women with fetal smallness and/or preeclampsia diagnosed in the third trimester.

Methods

Prospective cohort control study in 165 patients with singleton pregnancies with EFW < 10. pct (Intergrowth – 21). The control group represents a cohort of 190 physiologic singleton pregnancies. Markers of placental dysfunction s-Flt and PlGF were measured on the BRAHMS KRYPTOR Compact analyser. As markers of cardiac dysfunction, we evaluated: NT-proBNP, troponin-T and copeptin (also measured on the BRAHMS KRYPTOR Compact analyser).

Results

The average gestational age of symptomatic women was 34. gestational week, in controls it was 36. gestational week. There were no significant differences in age, parity and BMI in both groups. Women with fetal growth restriction (FGR) showed statistically higher blood pressure values (syst. BP: 131mmHg vs. 122 mmHg (p 0,00); diast. BP: 85 mmHg vs. 75 mmHg (p 0,00)). All evaluated markers of placental dysfunction were significantly higher in the group with FGR when compared to controls (p 0,001). Laboratory markers of cardiac dysfunction were significantly higher in the symptomatic group: NT-proBNP (p 0,00), troponin-T (p 0,00) and copeptin (p 0,04). We observed a significant elevation of copeptin in patients with preeclampsia, but not in patients with FGR only.

Conclusion

Patients with FGR showed higher blood pressure than women with healthy pregnancies. According to our data, the laboratory markers of cardiac dysfunction were elevated in comparison with the controls. We can therefore assume that in women with FGR, an alteration of cardiovascular system of the mother is present as well as placental dysfunction.