



The risk of adverse pregnancy outcome in the setting of very low first trimester maternal PAPP-A levels

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Objective

The evaluation of the association of low first trimester PAPP-A with adverse pregnancy outcome.

Methods

A retrospective analysis of 961 pregnancies with PAPP-A < 0.3 MoM and 961 age-matched controls with PAPP-A level 0.9-1.1 MoM. The study period was a four years (2009-2012). The FTS was performed according to the guidelines of Finnish Ministry of Social Affairs and Health. The gestational age was estimated by the fetal crown-rump length and the NT measurement was performed according to the Fetal Medicine Foundation protocol. Serum samples were collected during the same appointment after the assessment of gestational age and the NT. Patients were considered screen positive with a NT ≥ 3 mm or a FTS risk $\geq 1/250$ and genetic counselling with chromosomal analysis were offered in these pregnancies. The prevalence of adverse pregnancy outcome were determined. This included aneuploidies and fetal structural abnormalities, hypertensive disorders of pregnancy, spontaneous miscarriage, preterm delivery (PTD), stillbirth (SB) and small-for gestational age (SGA) newborns.

Results

The risk of aneuploidies (OR 116.1) and spontaneous abortion (OR 7.7) were significantly increased in the group with PAPP < 0.3 MoM ($p < 0.001$). The incidence of pregnancies proceeding to delivery with a live newborn was significantly lower (OR 0.058, $p < 0.001$) and the incidences of preterm delivery (OR 2.5), preeclampsia (OR 10.9) and small for gestational age newborn (OR 4.9) significantly higher ($p < 0.001$) in the study group. There were also nine (0.9%) study group cases of stillbirth and no such cases in the control group. There were no difference in the incidence of structural abnormalities ($p = 0.738$).

Conclusion

PAPP-A < 0.3 MoM is significantly associated with adverse pregnancy outcome, especially with chromosomal abnormality. The risk of adverse pregnancy outcome has to be considered in planning the pregnancy follow-up.