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Placental growth factor in first trimester aneuploid pregnancies

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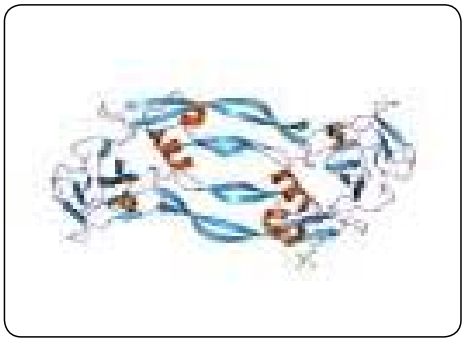
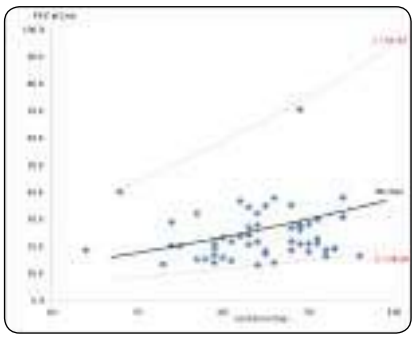
Placental growth factor (PlGF) is a member of the VEGF (vascular endothelial growth factor) sub-family-a key molecule in angiogenesis and vasculogenesis. The main source of PlGF during pregnancy is the placental trophoblast. PlGF was retrospectively quantified (DELFIA® DXpress; PerkinElmer) in women with known pregnancy outcome. Study group consisted of: i) normal (n=300), ii) abnormal: trisomy 21=56, trisomy 18=23, trisomy 13=6, triploid=15, monosomy X=7. PlGF MoM values were calculated by LifeCycle v4 (Perkin Elmer), using lot specific derived polynomial regression curve. Median PlGF MoM values were depressed in pregnancies carrying a foetus affected with: trisomy 21=0.81 (95%CI=0.72–0.90), trisomy 13=0.87 (95%CI=0.79–0.95), trisomy 18=0.89 (95%CI=0.78–1.00), triploidy=0.68 (95%CI=0.59–0.77) or with non-viable aneuploidies. However, in viable sex chromosome aneuploidy (Monosomy X), PlGF proved less discriminatory with median MoM=0.91 (95%CI=0.76–1.06). The above findings support the inclusion of PlGF into first trimester biochemical panel for screening for fetal aneuploidy. Inclusion of PlGF, in a contingent screening model, could detect up to 98.3% of Down's syndrome cases. In addition, PlGF has a role in first trimester for assessment of maternal wellbeing, such as, detection of early onset pre-eclampsia.





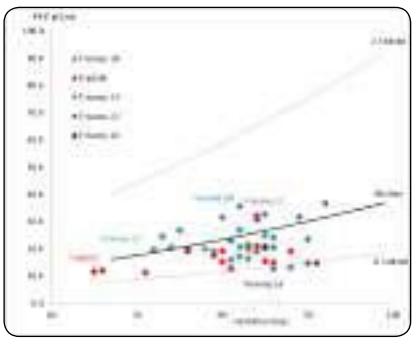


Figure 1A: Regressed median (with 0.5 and 2.5 MoM limits) PlGF levels in normal first trimester pregnancies.

Figure 1B: PlGF MoM values in pregnancies carrying Trisomy 21 foetus.

Figure 1C : PlGF MoM values in first trimester pregnancies carrying a confirmed aneuploid foetus, including, Trisomy 13, Trisomy 18, Trisomy 21 and Triploid (see Methods above).

Biography

Michael J Sinosich has completed his PhD on Trophoblast Physiology and PAPP-A. His research interests include non-invasive assessment of fetomaternal wellbeing. He is the Director of Prenatal Testing (DHM Pathology) and serves as Consultant at Pictor Ltd, a developer and manufacturer of multiplexed microELISA assay platform. He has published and presented numerous papers in reputed journals and holds several patents.

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