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Clinically significant genomic alterations are enhanced in placentas from pregnancies with fetal growth restriction (FGR)- Preliminary results

Aliza Amiel
Bar Ilan University, Israel

Introduction: Advances in microarray technology allow high-resolution genome wide evaluation for DNA copy number variations: deletions or duplications. Fetal growth restriction (FGR) secondary to placental insufficiency is associated with substantially increased childhood and adulthood morbidity and mortality. The long term outcome is related to placental aberrations and intra-uterine programming. The aim was to demonstrate the usefulness of microarray testing in FGR placentas.

Methods: Using Affimetrix (California, USA) chip array for chromosomal microarray (CMA), we performed an analysis of 10 placentas from pregnancies with FGR attributed to placental insufficiency. We analyzed 5 placentas from FGR below the 5th percentile and 5 placentas of FGR between 5 and <10th percentile. All the fetuses had a normal anomaly scan and normal karyotypes. The results were compared to 4 placentas from uncomplicated pregnancies with healthy neonates.

Results: Microarray analysis identified more clinically significant genomic small alterations in FGR placentas compared to healthy controls. There was a correlation to the severity of the FGR. The genomic alterations were below the resolution of normal karyotyping. Genes that were altered in the severe FGR placentas are related to adult human height, stress reaction and also to cellular migration, differentiation and adhesion.

Conclusions: Though very preliminary, our data support placental evaluation using CMA for FGR placentas. Larger data sets are needed for further evaluation of our findings and its clinical implications.

Biography

Aliza Amiel completed her PhD at the age of 34 Years from Tel-Aviv University and built the Genetin Institute in Meir Hospital, Kfar Saba, Israel. She is the Director of the Genetic Lab in this hospital and an Associate Professor at faculty of Life Science, Bar Ilan University, Ramat-Gan, Israel. She published more than 120 papers. Her research is dealing with genetic instability parameters in stress and malignant condition.

alizaamiel@gmail.com