Disease Markers

Special Issue on
Altered Fetal Programming: The Role of Molecular, Cellular, and Clinical Markers as Possible Therapeutic Targets

Hindawi

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Advances in the comprehension of the etiopathogenesis of maternal and fetal diseases associated with impaired placental function have drawn the attention to the role of several biomarkers as possible predictors of perinatal compromise.

Abnormal intrauterine growth is associated with increased perinatal mortality and morbidity and has also been shown to have a huge impact on the short- and long-term cardiovascular and neuropsychological performance of the newborn. Nowadays, the concept of fetal programming (i.e., Barker's Hypothesis) has completely revolutionized the common belief in the events that take place in the uterus. Several molecules and mechanisms associated with placental development and function have been suggested to be reliable predictors of placental-related diseases, such as intrauterine growth restriction and preeclampsia. Detection and discrimination of these molecules, on which management strategies are based, are now a realistic options. Currently, intensive work is taking place on the discovery and development of innovative and more effective biomarkers. These "new" biomarkers have become the basis for preventive medicine, whose main aim is to precociously identify disease-related risk factors in order to early predict or prevent the onset of such diseases. These biomarkers are also the key to personalized medicine, which aims to apply a tailored diagnostic and therapeutic approach to patients with specific diseases. These biomarkers are commonly related to changes in metabolic processes. Many genomic and proteomics techniques are available for biomarker discovery, including transcriptomics, epigenomics, metabolomics, lipidomics, glycomics, and secretomics.

Finally, advances in prenatal diagnostic techniques have led to the development of new imaging tools which can be integrated with molecular and genetic biomarkers in order to develop multiparametric predictive models able to more accurately identify placental-related diseases.

The aim of this Special Issue is to share new mechanisms that underpin pathologies that determine a deviation of the fetal growth curve, both in prenatal and postnatal period.

Potential topics include but are not limited to the following:

- Signaling pathways that characterize the fetal growth curve
- New approaches in fetal growth velocity characterization
- Clinical markers predictive of abnormal fetal curve
- The association between the intrauterine life and fetal programming
- New molecular markers in environmental pathologies
- Disease markers in prediction of maternal and fetal pathologies
- Molecular markers in treatment prognosis of patients with obstetrical disease
- Genetic influence on fetal growth curve
- New technologies in preventative medicine
- Ultrasound imaging and volumetric evaluation of fetal growth
- Placental invasion and vascularization
- New biosystems to model abnormal fetal growth

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