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Contribution of growth factors and cytokines in the pathophysiology of human placenta in gestational diabetes mellitus

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Gestational diabetes mellitus (GDM) is one of the most common complications of the pregnancy and affects 15% of pregnant women worldwide. Prevalence of GDM has increased from 10-100% in several race/ethnic groups over the last 20 years, reflecting the underlying increase in type 2 diabetes. Five of the top 10 countries for diabetes prevalence in 2010 were in the Gulf region. There were 303,700 known cases of diabetes in Qatar in 2014 and the number is growing each year. Children of women with GDM have an increased risk of development of cardiovascular and metabolic diseases which include obesity, type 2 diabetes and metabolic syndrome. GDM also increases the risk of development of neurologic dysfunction in offspring born to women with GDM in their childhood or adulthood. Children of women with GDM are more likely to be obese and diabetic in childhood and adulthood. GDM also increases the risk of adverse pregnancy outcomes, including preeclampsia, birth injuries, macrosomia and neonatal hypoglycemia, respiratory distress syndrome, neonatal cardiac dysfunction and stillbirth. The human placenta is located at the interface between mother and fetal blood circulation and has a central role both as a producer as well as a target of several molecules that are involved in placental development and function. We have investigated the role of cytokines and growth factors in the pathophysiology of placenta in the GDM. We have performed a Pubmed search with key words placenta, GDM, placental villi, vascularization, cytokines, growth factors, inflammation, hypoxia, oxidative stress and pathophysiology. We have investigated differences in the development and vascularization of placenta, their underlying causes and impact on fetomaternal health through literature review. We have also identified gaps in the literature and researched questions that need to be answered to completely understand the central role of placenta in the GDM. This study is important in understanding the pathophysiology of placenta due to changes in the location and expression of cytokines and growth factors in the placental cells of women suffering from GDM. It is necessary to understand these mechanisms in order to develop treatments to reverse the effects of cytokines and growth factors on placental malfunctioning, which in turn, will result in improved mother and child health.

Biography

Sadia Munir has completed her PhD in 2008 from York University, Toronto, Canada. She completed her Post-doctoral studies from the Department of Kinesiology at York University. She is working as a Teacher, teaching nursing students at the University of Calgary in Qatar, Doha since 2012. Her research interests is in biomedical sciences focusing on epidemiology of gestational diabetes and preeclampsia. She is taught human anatomy and physiology and statistics for several years. She has mentored undergraduate and graduate students in their research. She is also a member of World Academy of Science, Engineering and Technology. She has presented in several national and international conferences.

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