

Insights on Pregnancy Overweight Mediated by Gestational Diabetes Mellitus and High Triglyceride Levels

Ana Maria*

Department of Pathology, Johns Hopkins Hospital, Baltimore, Maryland, USA

Description

Obesity and overweight among pregnant women is a major clinical and public health issue in pregnancy care, with data indicating a rising prevalence of BMI above 25 kg/m² in Chinese women of childbearing age. Increasing maternal BMI is a well-established risk factor for a variety of adverse pregnancy outcomes, including maternal gestational diabetes mellitus (GDM) and excessively elevated triglyceride levels, as well as their infant being born large for gestational age (LGA) and foetal macrosomia. It has been established that foetal overgrowth (macrosomia) is associated with an increased risk of lifelong consequences such as type 2 diabetes, obesity, high blood pressure, and cardiovascular problems, resulting in a surge of interest in researching the factors influencing foetal overgrowth. During pregnancy, maternal nutrition [1-3] and metabolism influence nutrients that cross the placenta and contribute to foetal growth. Maternal glucose is widely regarded as the most important contributor in continuously influencing birth weight.

Maternal lipids, particularly triglycerides, are important predictors of macrosomia and adiposity at birth, in addition to glucose. A recent meta-analysis summarised the relationships between fasting, postprandial, and random maternal triglyceride (mTG) levels and foetal macrosomia in pregnancies of various races/ethnicities, which were consistent with the findings of most previous studies. Multiple maternal nutrients, such as glucose, lipids, and amino acids, according to Freinkel, interact to influence foetal growth and obesity, as well as diabetes later in life. GDM and elevated mTG levels are both documented consequences of obesity and risk factors for foetal overgrowth, implying that they may play a role in mediating this causal pathway. GDM and high mTG levels have both been shown to play a role in mediating the relationship between pre-pregnancy BMI and macrosomia. The majority of pregnant women with GDM have an excess of elevated triglyceride levels. As a result, it is reasonable to consider the combined mediating effects of GDM and high mTG levels [4,5] in the relationship between maternal pre-pregnancy overweight/obesity and macrosomia risk. Thus, from an epidemiological standpoint, this study constructs a chain mediation model to understand how both GDM and high mTG levels act as mediators in the pre-pregnancy overweight/obesity on macrosomia causal pathway.

Based on this theoretical model, this study tests the following proposed assumptions: the impact of pre-pregnancy overweight/obesity on GDM, high mTG levels, and macrosomia; (ii) the mediating effect of GDM and high mTG levels in the impact of pre-pregnancy overweight/obesity on macrosomia; and (iii) GDM and high mTG levels have a chain mediating effect on the association of pre-pregnancy The goal of this prospective study was to determine the extent to which the association of pre-pregnancy overweight/obesity with the risk of macrosomia in singleton term pregnancies is mediated by both GDM and high

mTG levels, with the goal of proposing countermeasures and suggestions for improving perinatal outcomes.

It is well established that maternal overweight/obesity, as the most significant risk factor, increases the risk of immediate consequences such as GDM and an excess of elevated mTG levels, which carries a higher risk of foetal macrosomia. Women with GDM have exaggerated physiological changes in insulin and lipids, particularly triglycerides, and studies on circulating lipid patterns in GDM versus normal pregnancy found higher triglyceride levels in women with GDM across all trimesters of pregnancy. GDM and high mTG levels frequently coexist and share some metabolic characteristics. Although GDM and high mTG levels interact dynamically as pregnancy progresses, previous research has only focused on their independent mediating effects in mediating the association between pre-pregnancy overweight/obesity and macrosomia.

Furthermore, high mTG levels and GDM were found to have a chain-mediating effect in the causal pathway between maternal pre-pregnancy overweight/obesity and the risk of foetal macrosomia. Normal gestational metabolism was accompanied by a physiological increase in glucose, insulin resistance, and insulin levels, as well as serum lipids such as triglycerides and free fatty acids, resembling a "metabolic syndrome" as defined beyond pregnancy.

Conflict of Interest

None.

References

1. Cole, Joanne B and Jose C. Florez. "Genetics of diabetes mellitus and diabetes complications." *Nat Rev Nephrol* 16 (2020): 377-390.
2. Ingelsson, Erik and Mark I. McCarthy. "Human genetics of obesity and type 2 diabetes mellitus: Past, present, and future." *Circ Genom Precis Med* 11 (2018): e002090.
3. Nyaga, Denis M., Mark H. Vickers and Craig Jefferies. "The genetic architecture of type 1 diabetes mellitus." *Mol Cell Endocrinol* 477 (2018): 70-80.
4. Saberzadeh-Ardestani, Bahar, Razieh Karamzadeh and Mohsen Basiri. "Type 1 diabetes mellitus: Cellular and molecular pathophysiology at a glance." *Cell J (Yakhteh)* 20 (2018): 294.
5. Glovaci, Diana, Wenjun Fan and Nathan D. Wong. "Epidemiology of diabetes mellitus and cardiovascular disease." *Curr Cardiol Rep* 21 (2019): 1-8.

*Address for Correspondence: Ana Maria, Department of Pathology, Johns Hopkins Hospital, Baltimore, Maryland, USA, E-mail: AnaMaria4@gmail.com.

Copyright: © 2022 Maria A. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Date of Submission: 07-June-2022, Manuscript No. jms-22-72647; **Editor assigned:** 09-June-2022, Pre QC No. P-72647; **Reviewed:** 23-June-2022, QC No. 72647; **Revised:** 28-June-2022, Manuscript No. R-72647; **Published:** 05-July-2022, DOI:10.37421/2167-0943.2022.11.283.

How to cite this article: Maria, Ana. "Insights on Pregnancy Overweight Mediated by Gestational Diabetes Mellitus and High Triglyceride Levels." *J Metabolic Syndr* 11 (2022): 283.