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Short Note on Potential Metabolic Insights and Biomarkers for the Prevention of Gestational Diabetes

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Introduction

Diabetes mellitus during pregnancy (GDM) has a significant impact on the health of the mother and her unborn children. Weight loss prior to pregnancy may be a promising GDM prevention strategy, according to observational studies. However, the biochemical pathways that link women who are overweight or obese at the time of pregnancy to the onset of GDM remain a mystery. Many of the changes in metabolite levels that are associated with GDM, according to our hypothesis, will shift in one direction in studies focusing on GDM, but they will shift in the opposite direction in studies focusing on lifestyle interventions for weight loss [1].

The evidence from 21 studies comparing women with GDM to healthy women and 12 intervention studies examining metabolite changes during weight loss with caloric restriction and behavioral interventions is summarized in this review [2]. Amino acids, lipids, amines, carbohydrates, and carbohydrate derivatives are among the 15 metabolites we discuss. Because of their mechanistic connections to insulin resistance and weight change, the altered levels of branched-chain amino acids like alanine, palmitoleic acid, lysophosphatidylcholine 18:1, and hypoxanthine are particularly noteworthy. Insulin resistance pathways are among the proposed mechanisms that may explain how these metabolite modifications contribute to the development of GDM in overweight or obese individuals [4].

Description

Any degree of glucose intolerance that is diagnosed during pregnancy but is not clearly overt diabetes is considered to have gestational diabetes mellitus (GDM). Global prevalence of GDM ranges from 1% to more than 30% of pregnant women. It has been demonstrated that the prevalence of GDM in the United States is less than 6%, which results in an annual $1.6 billion increase in medical expenses. Although all pregnant women experience some form of insulin resistance (IR), women with gestational diabetes (GDM) experience hyperglycemia as a result of insufficient insulin production, which is frequently caused by -cell dysfunction. Although excessive total body fat is thought to be a major contributor to GDM pathophysiology, the exact cause of this dysfunction is currently unknown and requires additional research [5].

Conclusion

The United States Preventive Task Force recommends screening asymptomatic women for GDM between 24 and 28 weeks of pregnancy, despite the fact that there is no clear consensus regarding the best method for diagnosing GDM. One- or two-step oral glucose tolerance tests are used to diagnose GDM. The blood glucose thresholds from the American Diabetes Association, the International Association of Diabetes in Pregnancy Study Groups (IADPSG), and the World Health Organization (WHO) are the most commonly used. GDM is known to significantly raise the risk of preeclampsia, eclampsia, cesarean sections, and preterm birth for the mother. Women who have GDM during pregnancy are seven times more likely to develop type 2 diabetes mellitus (T2DM) and to develop renal, metabolic, and cardiovascular diseases (CVDs). Macrosomia, neonatal hypoglycemia, and increased mortality are just a few of the health risks associated with gestational diabetes mellitus (GDM). In later life, higher rates of obesity, type 2 diabetes and metabolic syndrome (MetS) have been linked to intrauterine exposure to diabetes during pregnancy. Because recurrent GDM significantly increases the risks to the health of both the mother and the fetus, the recurrent GDM rate ranges from 41% to 69%, which is a particularly alarming figure.

Acknowledgement

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Conflict of Interest

None

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