

## Insulin resistance/hyperinsulinemia, a risk factor for Gestational Diabetes Mellitus

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We have overlooked an important factor in Gestational diabetes and diabetes pathogenesis. Insulin resistance (IR) and the associated hyperinsulinemia represent the earliest risk factors and risk factors responsible for a pandemic of diabetes and Cardiovascular diseases [1]. As a result, they are not screened early and are not treated for preventive purposes [2,3]. The prevalence of IR is around 51% of the total population in around the globe ranging differently as per ethnicity/race/area. IR start many years before the the diagnosis of prediabetes or type 2 diabetes by range of 10-15 years. IR are main driver for endothelial dysfunction (ED), Higher cholesterol, hypertrophy and concentric changes of the left ventricle, and hypertension due to inflammatory factors and reduced NO production, the activation of the sympathetic overdrive. In addition, high levels of circulating insulin hyperinsulinemia act as a growth factor, binding not only to insulin receptors but also to insulin growth factor-1, with future consequences for the growth of tumours [4,5]."

Insulin resistance (IR) and hyperinsulinemia (elevated levels of insulin) exist in 30-70% of patients with heart failure (HF) and may play a crucial role in the pathogenesis of heart failure (HF) and reduced ejection fraction. This condition is characterized by the thickening of the left ventricle wall with lower relaxation and increased filling pressure, leading to congestion in the lungs and throughout the body. IR/hyperinsulinemia is also important in the development of cardiomyopathy of diabetes [6,7].

It has been shown that cellular apoptosis is associated with aging and various chronic conditions, and its levels are increased in adult obesity, DM T2 diabetes, non-alcoholic fatty liver disease (NAFLD) irrespective of aging. IR/hyperinsulinemia promotes the development of apoptosis/aging in human cells, metabolic tissues, adipose tissue, around major organs, and liver [8]. As a result, IR/hyperinsulinemia contributes to the progression of type 2 diabetes, tumours, cardiovascular changes, and cellular senescence, leading to a decreased quality of life, increased hospitalizations, substantial healthcare expenditures, and a significant rise in mortality.

The euglycemic-hyperinsulinemia clamp is the standard for diagnosing IR, but it is not practical for mass screening. However, surrogate markers as the Homeostatic Model Evaluation Index (HOMA-IR) and the triglyceride glucose index (TyG) have been found to as good as clamp results and could be used for this purpose. Triglyceride glucose index Various medications and natural substances are available for treating IR/hyperinsulinemia, as well as ways to improve lifestyle habits to address these conditions. The TyG index is computed as (fasting triglycerides mg/dl x fasting plasma glucose mg/dl/2).

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