

Editorial

Gestational Diabetes Mellitus: Future Directions

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Editorial

The increased prevalence of diabetes globally [1], and its adverse outcomes in pregnancy [1-4], has opened a new research era on the causes, mechanisms, and relationship between hyperglycemia during the course of pregnancy and maternal and fetal complications.

Gestational Diabetes Mellitus (GDM) is defined as glucose intolerance leading to hyperglycemia of variable degree with onset or first recognized during the present pregnancy [5]. The condition results from an increased insulin resistance observed during pregnancy, as well as defects in the compensatory increase in insulin secretion [6]. Pregnancy, in essence, serves as a diabetogenic status and a metabolic stress, hormones during development of placenta, and in the third trimester serves as antagonist to insulin action [7-9].

The documented prevalence varies in different regions worldwide; this is due to the heterogeneous screening approaches and diagnostic criteria [10]. The variation in prevalence was reported even in different seasons during the year [11]. However, generally it has been estimated to reach 10 – 20% of pregnancies in populations with high risk [12]. Recently, an increase to approximately 18% GDM cases of all pregnancies was estimated according to the recent diagnostic criteria based on the HAPO study [13]. Primary treatment is glycemic control to prevent fetal and maternal complications, more than 80% of cases can be managed by lifestyle therapy [14], and insulin therapy may be needed also [15]. Safety of oral hypoglycemic agents is still not well evidenced for this type of diabetes [16,17]. Although incidents in the medical literature was reported as early as 1823 where diabetical-like conditions observed during pregnancy and disappear afterwards, GDM as a clinical entity was born officially in 1979 when the National Diabetes Data Group (NDDG) issued an updated classification of diabetes types, including one that was present only during pregnancy [18,19].

Controversy surrounds the ideal approach for diagnosis of GDM, and the approaches recommended for screening are mainly based on expert opinions. Glucose levels in cases of GDM show progressive increment throughout the course of pregnancy, most notably in late weeks and the third trimester of pregnancy, and blood glucose estimation at that time seems to be the best detector which can differentiate pregnant women into normal and GDM cases, the exact cut off value and exact time were not yet established.

Many risk factors are known to be associated with GDM,

including family history, advanced maternal age, obesity, glycosuria and others [20]. There is no causal relationship between GDM and the different risk factors. Different risk factors have variable strengths in association with development of GDM, and the high percent of GDM cases that did not have the definite risk factor indicate its poor sensitivity. On the other hand the high percent of normal cases that have this risk factor indicate its poor specificity, and according to this, risk factors can be categorized into high, moderate and low risk factors. This will help health care providers to give more attention to definite groups of pregnant women in evaluation of glucose tolerance.

More restricted cutoff values in GTT during pregnancy seems to be justified and should be encouraged so that more less cases of GDM will be lost, and more attention should be given to pregnant women with risk factors.

Also the target and recommended glucose levels during pregnancy should be defined; this can be achieved if the degree of hyperglycemia during pregnancy associated with fetal and maternal complications is well defined. Women who follow breastfeeding were reported to have a lower incidence of developing Type 2 diabetes and breast feeding also appears to decrease the risk of developing infant obesity and impaired glucose tolerance [21]. The benefits of breastfeeding on the reduction of fetal and maternal complications of GDM need to be validated.

An entire medical industry regarding GDM has grown up around diagnosing and treating gestational diabetes in the aims and believes that doing so prevents perinatal deaths, macrosomia in babies, increased cesarean rates and other complications. However, the current approaches of diagnosis and treatment interventions of gestational diabetes don't fulfill most of the mentioned goals.

the greatest challenges to face is the growing number of women developing gestational diabetes as the obesity epidemic increases, the development of Type 2 DM in mothers with GDM, and prospected glucose intolerance in the offspring.

Considerable work is needed to discover the different mechanisms underlying GDM and its evolution to type-2 diabetes after pregnancy.

Genetic studies may be of great value and help to identify women whose beta cells will poorly tolerate insulin resistance, as well as women who develop poor insulin secretion during pregnancy for reasons unrelated to insulin resistance. Studies involving gene-environment interactions will be of considerable importance as well and additional studies involving insulin action in the muscle and fat during pregnancy may help to identify causes of insulin resistance, this will be important as they relate to obesity and weight gain.

GDM is an especially attractive target for researchers and for such studies because the condition is detected during the course of pregnancy, a routine clinical care, and it provides a good opportunity to focus on the early stages of dysregulation in glucose metabolism, this may be fundamental for better understanding of the long-term pathophysiology of diabetes mellitus.

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