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THE RISING TIDE OF GESTATIONAL DIABETES MELLITUS

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ABSTRACT

Gestational diabetes mellitus refers to any degree of glucose intolerance with onset or first recognition during pregnancy .Gestational diabetes mellitus most of which progress to type 2 diabetes mellitus is increasing worldwide. It predisposes mother and offspring to increased risk of complication during pregnancy. In addition to the clinical reasons for attention to hyperglycemia during pregnancy, the future of the reproductive aged woman with GDM as well as the future of her offspring is two important public health issues that are receiving increasing recognition. GDM may complicate during pregnancy, intrapartum or postpartum. Early recognition of GDM is very essential to prevent maternal morbidity and mortality. In developing country like India early detection and prevention will be more cost effective.

INTRODUCTION

Once a disease of older people, type 2 diabetes is increasingly affecting women during their fertile years (Shaw and Chisholm, 2003). Many population studies indicated that the increasing incidence of GDM parallels that of its type 2 group (Dyck *et al.,* 2002). O'Sullivan and Mahan (1964) defined GDM, if a pregnant woman undergoing a 3-h 100-g oral glucose tolerance test had glucose values exceeding 2 SDs above the mean on two of the four values (O'Sullivan and Mahan, 1964). GDM can be considered a transient unmasking of an underlying predisposition to diabetes, induced by the metabolic changes of pregnancy (Coustan, 1993). According to WHO (2005) gestational diabetes mellitus is carbohydrate intolerance resulting in hyperglycemia of variable severity with onset or first recognition during pregnancy. The definition applies irrespective of whether or not insulin is used for treatment or the condition persists after pregnancy (WHO, 2005). Off springs of women with GDM are at increased risk of obesity, glucose intolerance, and diabetes in late adolescence and young adulthood. Macrosomia, intrauterine growth retriction, neonatal cardiomymiopathia, hypoglycaemia, jaundice, polycythemia, neonatal respiratory distress syndrome (NRDS) and hypocalcaemia may also affect newborns of GDM mothers.

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Women who develop GDM have a significantly increased risk of developing type 2 diabetes later inlife (Bellamy, 2009) they also are at an increased risk of developing GDM in future pregnancies (Bottalico, 2007). Thus, it is important to recognize and treat this disease.

Prevalence

The magnitude of GDM varies according to the country and their ethnical groups. The lifestyles, educational status, history of diabetes in family and many factors play an important role (Moses *et al*., 1998) Higher rates have been reported in certain ethnic groups (American Diabetes Association, 2007). Asian, Hispanic, and Native American women, as compared with non-Hispanic white women, have an increased risk of GDM (Savitz *et al*., 1995) American women have been reported to have an increased risk of GDM, as compared with non-Hispanic whites. (Dooley *et al*., 1991). The proportion of pregnancies complicated by GDM in Asian countries has been reported to be lower than the proportion observed in Asian women living in other continents (Yang *et al., 2002*). In India, GDM has been found to be more common in women living in urban areas than in women living in rural areas (Zargar *et al*., 2004). In a random survey performed in various cities in India in 2002-2003, an overall GDM prevalence of 16.55 per cent A community based study showed that prevalence of GDM has increased from 16.55 percent to 17.8 percent (Seshiah *et al*., 2004). The findings of the studies show a rapid increase in the prevalence of GDM which parallels with the prevalence of type 2 diabetes.

Screening and Diagnosis

Since GDM has no signs or symptoms, it can only be recognized by screening. All pregnant women should be assessed for clinical characteristics to determine the risk of GDM and a 50-g oral glucose-challenge test (GCT), unless they have a low-risk clinical profile, usually between 24and 28 weeks of gestation, followed by an oral glucose tolerance test (OGTT) if the serum glucose concentration at screening is high (Kjos and Buchanan, 2007). The final diagnosis of GDM is based on the results of the OGTT. In 1979-1980, U.S. National Diabetes Data Group (NDDG,1799) (National Diabetes Data Group, 1979), and the World Health Organization (WHO, 1980), established that the 2 h 75 g oral glucose tolerance test (OGTT) should be the main diagnostic test for glucose intolerance in pregnancy. More recently, the International Association of the Diabetes in Pregnancy Study Group (IADPSG), after extensive analyses of the Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study [Metzger BE,2008], recommended new diagnostic criteria for GDM (Metzger *et al*., 2010) based on the 2 h 75 g OGTT: a fasting glucose ≥ 5.1 mmol/L (92 mg/dl), or a one hour result of ≥ 10.0 mmol/L (180 mg/dl), or a two hour result of ≥ 8.5 mmol/L (153 mg/dl). The following table (table 1) summarizes the 2006 WHO recommendations for the diagnostic criteria for diabetes and intermediate hyperglycemia (WHO, 2006).

Table 1. WHO recommendations for the diagnostic criteria for diabetes and intermediate hyperglycemia

Diabetes	
Fasting plasma glucose	≥7.0mmol/l (126mg/dl), or
2–h plasma glucose *	≥11.1mmol/l (200mg/dl)
Impaired Glucose Tolerance (IGT)	
Fasting plasma glucose	<7.0mmol/l (126mg/dl)
2–h plasma glucose*	≥7.8 and <11.1mmol/l (140mg/dl and 00mg/dl)
Impaired Fasting Glucose (IFG)	
Fasting plasma glucose	6.1 to 6.9 mmol/L (110mg/dl to 125 mg/dl)
2-h Plasma glucose*	< 7.8 mmol/dl (140mg/dl)
* Venous plasma 2-h after ingestion of 75gm oral glucose load (OGTT)	

Complications of GDM

Women with GDM have increased risk for potential morbidity and for impaired glucose tolerance, and it identifies a population of women who are at high risk of developing type 2 diabetes in the years following the pregnancy (Ferrara, 2007). Although most of the women with GDM return to normal glucose tolerance after delivery, they have an increased risk of developing diabetes, mainly type 2 diabetes mellitus[21] An increased rate of caesarean section and infant macrosomia was observed in the group with a glucose tolerance of 140-162 mg/dl (7.8-9 mmol/l) and in the GDM group (Ben Haroush Ben Haroush, 2004)). Macrosomia, the most commonly reported effect of maternal diabetes in newborns is usually defined in humans as birth weight above either 4 kg or birth weight above the 95th percentile of the gestational age[23]. LGA infants are at increased risk of birth injury, including perinatal asphyxia, and shoulder dystocia, bone fractures or nerve palsies (Mitanchez, 2015). The risk of congenital malformations is slightly increased in infants of mothers with GDM compared to the general population. Fetal outcomes examined were miscarriage <24 weeks, stillbirths, neonatal deaths up to 28 days of life, prenatal mortality, congenital malformations and size for gestational age (Dunne, 2000).

Conclusions

GDM may complicate during pregnancy, intrapartum or postpartum. Early recognition of GDM is very essential to prevent maternal morbidity and mortality. In developing country like India early detection and prevention will be more cost effective. Identification of high risk population by identifying the risk factors and pregnancy outcomes of GDM can aid in the implementation of preventive strategies of type 2 DM.

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