

CORRELATION BETWEEN DIAGNOSTIC MARKERS OF METABOLIC SYNDROME & MATERNAL VISCERAL FAT THICKNESS AND RISK OF GESTATIONAL DIABETES

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Introduction

Gestational diabetes mellitus (GDM) is the most common metabolic disorder in pregnant women. Gestational diabetes mellitus (GDM) is defined as any degree of abnormal glucose tolerance that occurs for the first-time during pregnancy and usually disappears after giving birth. It is associated with an increased risk of perinatal mortality and morbidity. Metabolic syndrome (MetS) is a clustering of clinical and laboratory abnormalities that include central obesity, insulin resistance, hypertension, hyperglycemia, and dyslipidemia (elevated triglycerides and reduced HDL-cholesterol levels). It has been postulated that women with MetS are already in a state of pro inflammation and insulin resistance; therefore, it is possible that when they become pregnant, they are more susceptible to developing GDM.

Aim of the work

The aim of this work was to assess the role of metabolic syndrome diagnostic markers and maternal visceral fat thickness in the prediction of gestational diabetes mellitus.

Patients and Methods

Patients: This prospective cohort study was conducted on 150 singleton pregnant women between 24th and 28th weeks of gestation attending the antenatal clinic at El-Shatby maternity university hospital and undergoing their screening for GDM. They were classified based on the results of the 2hr OGTT into three groups: **Group A** (50 cases) with gestational diabetes (GDM). **Group B** (50 cases) non-diabetics with a high risk to develop gestational diabetes and **Group C** (50 cases) non-diabetics with no risk to develop GDM. **Methods:** All cases were subjected to the following:

1. Complete history taking (gynecological, obstetric, family, medical, and surgical history).
2. Complete general examination.
3. Body mass index (BMI) calculation.

4. Laboratory investigations including:

A. The one-step approach for GDM screening at 24th -28th weeks using 75 g oral glucose tolerance test was performed after an overnight fast.

B. Serum triglycerides and HDL-Cholesterol

5. Ultrasonographic examination:

A. Fetal assessment, fetal biometry and expected fetal weight (percentile).

B. Assessment of maternal abdominal fat thickness.

Furthermore, the laboratory investigations and ultrasonographic examination were repeated for all cases at the follow up visit at 32 weeks.

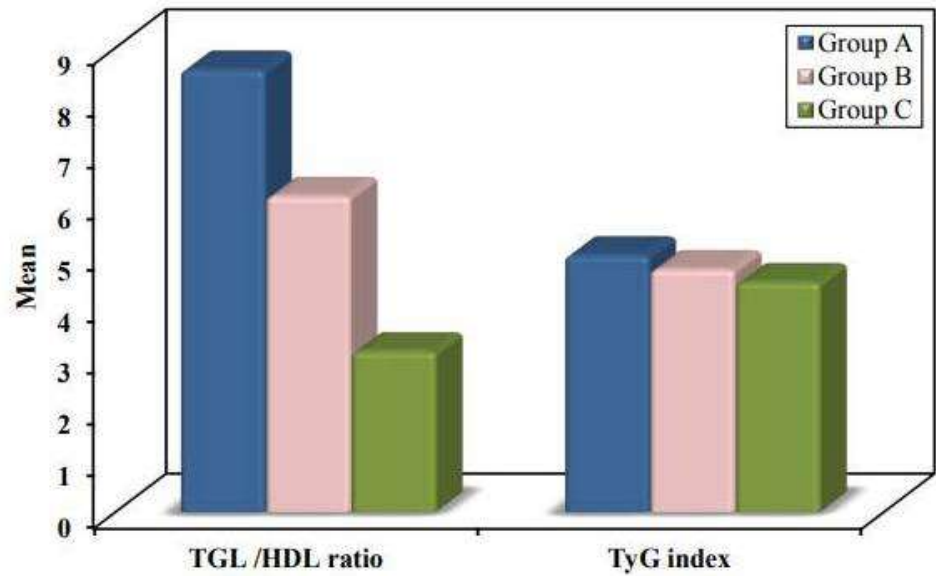
6. Early neonatal assessment.

7. An additional visit was done 6 weeks postnatally for those who developed GDM for performing a fasting plasma glucose level to diagnose those who developed glucose intolerance or type 2 DM.

Results

As regard to lipid profile (TGL, HDL cholesterol and TG/HDL ratio) and TyG index measured between 24-28 weeks, they were significantly higher in group A compared to group C and in group A compared to group B, and in group B compared to group C.

	Group A (n = 50)		Group B (n = 50)		Group C (n = 50)		Test of Sig.	p
	No.	%	No.	%	No.	%		
TGL (mg/dl)								
Normal (75 – 380)	25	50.0	40	80.0	50	100.0	$\chi^2=$ 35.404*	<0.001*
High	25	50.0	10	20.0	0	0.0		
HDL-Cholesterol (mg/dl)								
Normal (52 – 87)	3	6.0	25	50.0	41	82.0	$\chi^2=$ 58.615*	<0.001*
Low	47	94.0	25	50.0	9	18.0		
TyG Index							F= 236.536	<0.001*
Mean ± SD.	4.98 ± 0.11		4.71 ± 0.13		4.46 ± 0.12			



Conclusion

- Women with GDM have an increased risk of developing MetS during pregnancy and women with a history of GDM and offspring exposed to GDM in utero have higher risks of developing MetS compared to those with no history of GDM.
- Measuring maternal lipid profile & visceral fat thickness during pregnancy using ultrasound are of great importance in prediction occurrence of GDM and perinatal complications.
- Neonates of women with high TG, TG/HDL ratio, TyG index and lower HDL cholesterol had higher incidence of complications associated with GDM such as macrosomia, low Apgar score, respiratory distress, neonatal sepsis and NICU admission.