

ANGIOPOIETIN LIKE PROTEIN 8 AND HIGH SENSITIVE C REACTIVE PROTEIN AS EARLY PREDICTORS OF GESTATIONAL DIABETES

Mohamed Yousry Khamis, Manal Shafik Swelem, Yasmin Mahmoud Nabil Mohamed*, Mohamed Ramadan Moawad Hamouda

Department of Obstetrics and Gynecology, Department of Medical Biochemistry*, Faculty of Medicine, Alexandria University

INTRODUCTION

Diabetes mellitus is a disorder of carbohydrate metabolism which is characterized by impaired ability of the body to produce insulin or to respond to insulin in order to maintain adequate blood glucose level. Diabetes mellitus in pregnancy is a serious health problem associated with both fetal and maternal complications. Diabetes with pregnancy is either gestational diabetes (GDM) or pregestational diabetes. GDM is diagnosed by 75 gram 2-hour OGTT at 24–28 weeks. GDM is diagnosed if the woman has either: a fasting plasma glucose level of 5.6 mmol/litre or above or a 2-hour plasma glucose level of 7.8 mmol/litre or above.

Angiotensin-like protein 8 (ANGPTL8) is a hormone that acts as a blood lipid regulator by regulating serum triglyceride levels. It is expressed in liver and fat cells. The high sensitivity C reactive protein (hs-CRP) test is a highly sensitive quantification of CRP, which is an acute-phase protein released into the blood by the liver during inflammation.

AIM OF THE WORK

- The aim of the study was to evaluate angiotensin like protein 8 and high sensitivity C reactive protein as early predictors of gestational diabetes in pregnancy.

SUBJECTS AND METHODS

Patients: This study was conducted on 80 pregnant women at higher risk to develop GDM with one or more of the following risk factors: BMI above 30 kg/m², History of delivering previous macrosomic baby weighing 4.5 kg or above, History of previous gestational diabetes, Family history of diabetes (first degree relative with diabetes). They were **followed** from the first antenatal visit to 24th-28th weeks of gestation, and **then** they were **subdivided** into two groups according to the results of OGTT done at 24-28 weeks:

Group (A): Fifty normoglycemic pregnant women as a control group.

Group (B): Thirty pregnant women diagnosed with gestational diabetes.

Methods: All patients were subjected to the following:

1- Complete medical history, including any current comorbidity, full obstetrical history including history of previous diabetes, history of previous macrosomic baby and any previous obstetrical complications and Family history of diabetes.

- 2- Physical examination** including measurement of body mass index.
- 3- Ultrasound examination** for fetal biometry, gestational age, amount of liquor.
- 4- Laboratory investigations** including serum measurements of angiotensin like protein 8 and high sensitivity C reactive protein at 12-16 weeks and 2-hour 75 g oral glucose tolerance test (OGTT) at 24–28 weeks.

RESULTS

Table 1: Comparison between the two studied groups according to ANGPTL8 serum levels

	Group (A) normoglycemic patients (n = 50)	Group (B) GDM patients (n = 30)	U	P
ANGPTL 8 (ng/l)				
Min. – Max.	48.80 – 169.2	139.1 – 918.4	158.0*	<0.001*
Mean ± SD.	123.7 ± 33.23	217.3 ± 138.52		
Median (IQR)	123.3 (99.60 – 153.5)	178.1 (166.0 – 224.6)		

Table 2: Comparison between the two groups according to Hs-CRP serum levels

	Group (A) normoglycemic patients (n = 50)	Group (B) GDM patients (n = 30)	U	P
Hs-CRP (mg/l)				
Min. – Max.	0.70 – 84.0	1.20 – 110.0	731.000	0.850
Mean ± SD.	7.79 ± 11.72	15.92 ± 29.37		
Median (IQR)	5.85 (3.0 – 9.0)	4.65 (2.90 – 13.30)		

Table 3: Validity (AUC, sensitivity, specificity) for ALGPTL 8 and Hs-CRP

	AUC	P	95% C.I	Cut off#	Sensitivity	Specificity	PPV	NPV
Angiotensin like protein 8	0.895*	<0.001*	0.828-0.92	>160	80.0	82.0	72.7	87.2
High sensitivity CRP	0.513	0.850	0.374 – 0.651					

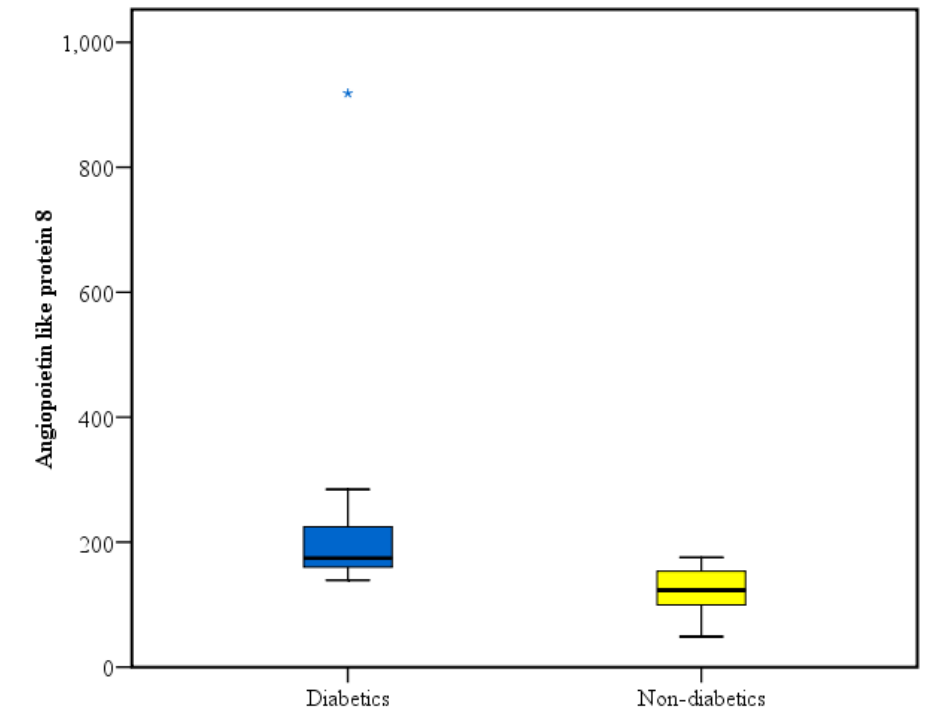


Figure: Box plot showing comparison between the two studied groups according to ANGPTL 8 serum levels

CONCLUSION

In the current study, there was a statistically significant increase in maternal serum ANGPTL8 level in GDM group in comparison to normoglycemic group (P value 0.001). Concerning the mean for maternal serum level of hs-CRP, it was higher in GDM group in comparison to normoglycemic group, but this difference was not statistically significant (P value 0.850). There was positive correlation between maternal serum level of ANGPTL8 and maternal fasting blood glucose level in different study groups. A positive correlation was also observed between maternal serum level of ANGPTL8 and BMI.