EVALUATION OF MATERNAL SERUM PENTRAXIN 3 AS A NOVEL DIAGNOSTIC BIOMARKER IN GESTATIONAL DIABETES MELLITUS

Mohamed Yousry Khamis, Manal Shafik Swelam, Marwa Ibrahim Abdelhalim Khedr*, Bassant Saeed Basyouni Ibrahim

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

INTRODUCTION

Gestational diabetes mellitus (GDM) is the type of glucose intolerance that develops in the second and third trimester of pregnancy, resulting in hyperglycemia of variable severity. It is the most common metabolic disorder of pregnancy.

The oral glucose tolerance test (OGTT) is considered the cornerstone of the diagnosis of gestational diabetes mellitus (GDM). Earlier detection of GDM may lead to improved management, possibly preventing pregnancy complications. Thus, the identification of sensitive and specific biomarkers, which may offer potential for risk prediction and intervention strategies, became a major focus in GDM research.

Pentraxins are a superfamily of evolutionarily conserved molecules with multi-functional roles in innate immunity and inflammation. They are essential constituents of the humoral arm of innate immunity and represent a superfamily of highly conserved acute phase proteins. Pentraxin 3 (PTX3) is the prototype of the long pentraxin subfamily.

In recent years, chronic subclinical inflammation is considered to have a potential role in the pathogenesis of hyperglycemia and pentraxin 3 (PTX3) as an inflammatory mediator, is correlated with the process of insulin resistance and its level is also increased in diabetes mellitus and diabetic nephropathy.

The OGTT is beloved by very few, and validation of alternative, less cumbersome strategies for diagnosis and classification of GDM are needed.

AIM OF THE WORK

The aim of this study was to evaluate the role of serum pentraxin 3 level in gestational diabetes mellitus (GDM) and the possibility to be used as a diagnostic biochemical marker.

PATIENTS AND METHODS

The study included eighty eight pregnant women who were classified into two groups: group (A): 44 women with gestational diabetes (GDM group) and group (B): 44 normal pregnant females (controls).

All patients (n=88) underwent complete history taking, clinical examination, ultrasound examination for fetal biometry, mean gestational age and amount of liquor.

Laboratory investigations were carried out including complete blood count, liver function tests, and all pregnant females between 24-28 weeks' gestation were subjected to 100 gm oral glucose tolerance test (OGTT) to confirm diagnosis of GDM and serum pentraxin 3 level was measured.

RESULTS

Table 1: Comparison between the two studied groups according to pentraxin3

Pentraxin 3 (ng/ml)	GDM group (A)	Controls (B)	t	p
Min. – Max.	2.23- 4.82	1.88-3.36	15.931*	<0.001*
Mean ± SD.	3.75± 0.50	2.32±0.33		
Median (IQR)	3.81(3.49-4.09)	2.32(2.10-2.50)		

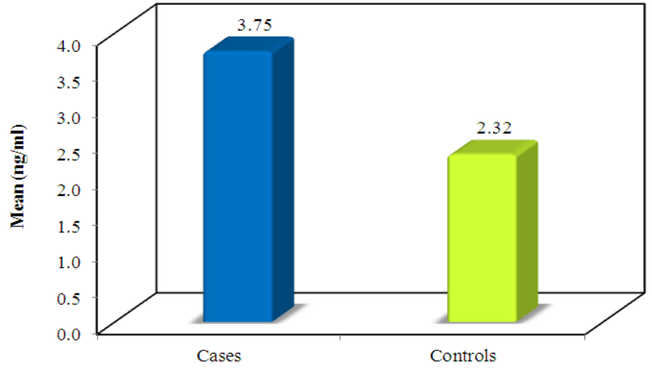

Figure 1: Comparison between the two studied groups according to pentraxin3

Table 2: Validity (AUC, sensitivity, specificity) for Pentraxin 3 to discriminate GDM patients from controls

	AUC	p	95% C.I	Cut off#	Sensitivity	Specificity	PPV	NPV
Pentraxin 3	0.971*	<0.001*	0.934-1.000	>2.67	95.5	95.4	95.5	95.4

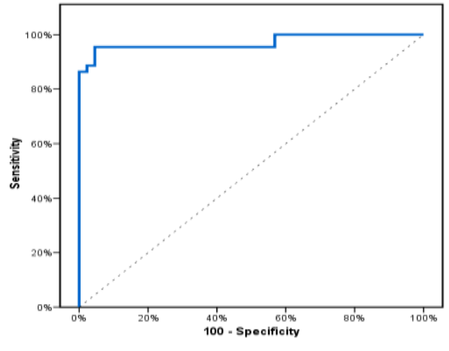

Figure 2: ROC curve for Pentraxin 3 to discriminate GDM patients from controls

CONCLUSION

- Maternal serum level of pentraxin 3 was found to be significantly higher in pregnant women with gestational diabetes than normoglycemic patients when measured at 24-28 weeks of gestation.
- From this study the serum level of pentraxin 3 could be used as a diagnostic biomarker in gestational diabetes mellitus.

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