LIPOPOLYSACCHARIDE BINDING PROTEIN AND ITS RELATION TO INSULIN RESISTANCE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS: A CROSS-SECTIONAL STUDY AMONG ADULT EGYPTIAN

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Introduction

- Egypt ranks ninth among the top ten countries in terms of the number of adults with diabetes, with current figures of 8.9 million expected to rise to 11.9 million by 2030, and 16.9 million by 2045.
- Obesity is now well acknowledged to promote a state of chronic low-grade inflammation, which is shown by increased adipose tissue production of cytokines and proinflammatory adipokines.
- B-cell failure and insulin resistance in T2D include ER stress, oxidative stress, and. The majority of these mechanisms have been linked to inflammation, either because they cause a (local) inflammatory response or because they are a result of inflammation. Inflammation has a negative impact on b-cell function.
- The metabolic syndrome (MetS) is a group of clinical conditions that include s central/abdominal obesity, systemic hypertension, insulin resistance (or type 2 diabetes mellitus), and atherogenic dyslipidemia. WC used as a paremeter for obesity in MetS critaria . WC>102 cm for men and >88cm for women
- There is established link between the metabolic syndrome and inflammation. Evidence shows that monocyte derived macrophages concentrate in adipose tissue and may be a source proinflammatory mediators.
- T2DM and obesity appears to contribute to metabolic endotoxemia by many mechanisms.
- LPS-binding protein (LBP) has been utilised as a metabolic endotoxemia marker.

Aim of the work

The aim of the present work was to study the relationship of lipopolysaccharide binding protein with insulin resistance and beta cell function in patients withT2DM.

Subjects and Methods

- This cross-sectional study was carried out on 90 Egyptian subjects 45 T2DM, 45 healthy subjects.
- All participants were subjected to full history and physical examination.
- BW, WC and BMI were measured according.
- to standard protocol and blood samples of FBG, FI, total cholesterol, TG, HBA1c, HDL-C, LDL and serum LBP were taken.
- HOMA2 was calculated according to the updated computer based HOMA 2 model.

Results

Table 1: Serum LBP in diabetics and non diabetics

Serum Lipopolysaccharide binding protein	Group A (n = 45)	Group B (n = 45)	U	P
Min. – Max.	40.0 – 212.9	44.10 – 84.80	685.0*	0.008*
Mean ± SD.	81.95 ± 32.98	65.73 ± 9.52		
Median (IQR)	70.10(64.50 – 94.70)	66.50(58.30 – 70.90)		

Table 2: Correlation between LBP and studied parameters

Serum Lipopolysaccharie binding protein	Diabetics		Non diabetics	
	r_s	P	r_s	P
Body weight	0.426	0.004*	0.649	<0.001*
Height (cm)	0.046	0.765	-0.080	0.601
BMI (kg/m^2)	0.356	0.017*	0.603	<0.001*
Waist circumference	0.330	0.027*	0.540	<0.001*
FBS	0.106	0.489	0.159	0.296
Hb1AC	0.320	0.032*	0.160	0.294
FI	0.405	0.006*	0.057	0.712
HOMA2	0.336	0.024*	-0.089	0.562
Serum cholesterol level	0.110	0.472	0.116	0.446
Serum triglyceride level	0.361	0.015*	-0.230	0.129
LDL	0.241	0.111	0.054	0.726
HDL	-0.181	0.233	-0.018	0.905

Conclusion

- High serum LBP (a marker of metabolic endotoxemia) levels were identified in T2DM
- Serum LBP level was significantly correlated with HOMA2 level as an estimator of insulin resistance and B-cell function
- There is positive correlation between serum LBP levels and markers of obesity (BMI, WC) in diabetics and non-diabetics.