



ORIGINAL RESEARCH PAPER

Biochemistry

ANALYSIS OF INTERLEUKIN-6 AS AN INFLAMMATORY MEDIATOR IN TYPE 2 DIABETES MELLITUS IN RELATION TO OBESITY

KEY WORDS: IL-6, Type 2 diabetes, Obesity

Mor Priyanka*	PhD Scholar *Corresponding Author
Dr. Jain Jaya	Associate Professor, Department of Biochemistry, Index medical college, hospital and research centre, Indore
Dr. Jain Ashutosh	Assistant Professor, Department of Physiology, Index medical college, hospital and research centre, Indore

ABSTRACT **Introduction:** Interleukin 6 (IL-6), a multifunctional cytokine, has been implicated in the pathophysiology of type 2 diabetes (T2D). The elevated circulating level of IL-6 is an independent predictor of T2DM and is considered to be involved in the development of inflammation, insulin resistance and β -cell dysfunction. **Material and Method:** The present study was conducted on 100 non obese diabetic and 100 obese diabetic subjects in Department of Biochemistry, Index medical college, hospital and research centre, indore to evaluate the level of IL-6. **Result and discussion:** IL-6 levels were higher in obese diabetic than non obese diabetic. **Conclusion:** The changes observed in serum IL-6 levels as per the group, suggest its potential utility as biomarker for disease progression.

INTRODUCTION

Type 2 diabetes mellitus is a non communicable, heterogenous group of disorder characterized by increase blood glucose, insulin resistance and is strongly associated with obesity. The etiology of insulin resistance and complications of diabetes are further worsen by systemic inflammatory activities. A mild chronic state of inflammation precedes and predicts incident type 2 diabetes^{1,2}. Development of Insulin resistance is mainly associated with low-grade tissue-specific inflammatory responses induced by various pro-inflammatory and/or oxidative stress mediators notably pro-inflammatory cytokines such as interleukin-1 beta (IL-1), interleukin-6 (IL-6). The epidemic rise in obesity and type 2 diabetes has stimulated new avenues of investigation, such as the role of inflammation in the progression from obesity to diabetes.

Interleukin 6 (IL-6), a multifunctional cytokine, has been implicated in the pathophysiology of type 2 diabetes (T2D). The elevated circulating level of IL-6 is an independent predictor of T2DM and is considered to be involved in the development of inflammation, insulin resistance and β -cell dysfunction^{3,4,5,6}.

Despite the many biomarkers, available for diagnosis and management of diabetes still the challenges are faced with the ever rising prevalence of this disease and its often grave outcomes, with India being named as the “global capital of diabetes mellitus”.

Due to a tight association between inflammatory changes and obesity in diabetic patients, analysis of inflammatory biomarkers place a heavy strain on the world's health care system. Thus this study was intended to explore the relationship of IL-6 and obesity in people with T2DM.

MATERIALS AND METHODS

The present study was conducted on 100 patients of each group, non obese diabetic and obese diabetic attending Department of Biochemistry, Index medical college, hospital and research centre, indore (MP).

An informed consent was taken from all the patients or their attendants who participated in the study after apprising them the nature and objective of study.

Blood sample was collected by vein puncture using an aseptic technique. IL-6 was estimated by Enzyme mediated chemiluminescence method using fully autoanalyser. Data were presented in the form of Mean \pm SD and statistical

analysis was done with the help of SPSS(version-20.0).

OBSERVATION TABLE

Table-1: Mean IL-6 levels between the groups studied

S.No.	GROUP STUDIED	IL-6 (MEAN \pm SD) [Range]
1	Non obese diabetes	7.54 \pm 1.12 [5.42-9.0]
2	Obese diabetes	7.96 \pm 0.74 [6.23-9.1]

Table-2: Statistical analysis of IL-6 levels between the groups studied

S.No.	GROUP STUDIED	t-value	p-value
1	Non obese diabetes v/s Obese diabetes	3.1288	0.0020 (S)

*S = Significant

RESULTS AND DISCUSSION :

IL-6 levels were higher in obese diabetic than non obese diabetic. There was a significant (p =0.0020) difference in IL-6 between the Nonobese and Obese diabetes. Obese diabetes having significantly higher IL-6 (t=3.12) compare to the nonobese group.

Popko et al. reported that IL-6 concentrations were significantly higher in obese diabetic women than in women without diabetic symptoms⁷, which is consistent with the findings of the present study.

Sunetra Sarma et al (2018)⁸ found that the obese category had mean serum IL-6 levels of 33.6 \pm 8.1 pg/ml and 10.6 \pm 4.1 pg/ml, respectively, among cases and controls with insignificant differences (P = 0.333).

CONCLUSION:

The changes observed in serum IL-6 levels as per the group, suggest its potential utility as biomarker for disease progression.

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