Serum levels of IL-18 and IL-22 are Associated with Glycemic Control Status in Patients with Insulin-Independent Diabetes Mellitus

Ghassaq T. Alubaidi, PhD* Dalyia A. Hamoodi, MD** Gelal Abid Ali ALtaai***, Amjad Q.Redha**** Haider F.Ghazi, PhD*****

ABSTRACT

Type 2 diabetes (T2D) is a complex, chronic metabolic disease. Novel studies point to the involvement of immunological mechanisms in T2D pathogenesis. Glycated hemoglobin (HbA1C) is a reliable biomarker for verifying glycemic control status. We investigated the pathological role of inflammatory cytokines, IL-18 and IL-22, in T2D development and their correlation with glycemic control status. This is a case–control study. Conducted through January to July/ 2023. The study included patients with T2D who were divided into two groups according to their serum HbA1C levels, the controlled, HbA1C≤ 6.5%, and uncontrolled hyperglycemic groups ≥ 6.5%. Sex- and age-matched non-diabetic volunteers were included as a control group. Serum IL-18 and IL-22 were measured using the enzyme-linked immunosorbent assay technique. Fasting blood sugar and HbA1C values were analyzed as part of the routine testing of patients in the study hospital. Our results showed that serum IL-18 and IL-22 concentrations were significantly higher in patients with T2D compared to healthy controls (P ≤ 0.001). Furthermore, both cytokines exhibited a significant correlation with glycemic status (P ≤ 0.05 in both cases). Only IL-22 showed a significant correlation with disease duration (P ≤ 0.05). IL-18 and IL-22 are critical modulating factors in glycemic control in T2D development. Exploring the role of such inflammatory mediators could aid in the discovery of novel anti-inflammatory cytokine-based therapies for treating or preventing T2D.

Keywords: T2D; IL-18; IL-22; HbA1C; hyperglycemia; proinflammatory cytokines

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* Assistant Professor, Medical Research Unit
College of Medicine, AL-Nahrain University
Baghdad 10011, Iraq.
E mail: Ghasaqtariq119@gmail.com

** Lecturer, Natural Resources Department
Kurdistan University, Erbil 44001, Iraq.

*** Lecturer, Department of Medicine
College of Medicine, AL-Nahrain University
Baghdad 10011, Iraq.

**** Al-Emamin Alkadhimain Medical City
Chief of Blood Bank.

***** Professor, Microbiology Department
College of Medicine, AL-Nahrain University
Bahdad 10011, Iraq.