

Circulating Serum Caveolin-1 and Interleukin-37 as Predictive Biomarkers in Rheumatoid Arthritis Patients

Ibrahim Majer Mohammed¹, Idries Muhson Abeed Al. Mashkor², Sadoun Abbas Alsalmi^{3*}, Adnan Jassim Mohammed Al-Fartosy⁴

¹Ministry of Education, General Directorate of Education in Meisan, Meisan Province, Iraq.
Email: majermo1974@gmail.com

²Department of Biochemistry, College of Medicine, University of Thi-Qar, Thi-Qar, Iraq.
Email: idris-m@utq.edu.iq

³Department of Basic Sciences, College of Nursing, University of Basrah, Basrah, Iraq.
Email: sadoun.alsalmi@uobasrah.edu.iq

⁴Department of Chemistry, College of Science, University of Basrah, Basrah, Iraq.
Email: adnan.jassim@uobasrah.edu.iq

Abstract

Background: The immune system mistakenly attacks healthy tissues in rheumatoid arthritis (RA), causing a cascade of symptoms such as joint pain, swelling, stiffness, and even functional damage. In this study, we aimed to predict RA by investigating the circulating serum levels of Caveolin-1 (CAV1) and Interleukin-37 (IL-37). **Methods:** The current case-control study was conducted on 46 volunteers (13 men and 33 women) who experiencing RA and divided into two groups: 26 patients in Active RA State (7 men and 19 women) and 20 patients in Remission (Stable) RA State (6 men and 14 women) and corresponded with 30 apparently healthy group (12 men and 18 women) aged 25 to 70 years. Demographics, glucose, insulin, homeostatic model assessment for insulin resistance (HOMA-IR), urea, creatinine, rheumatoid factor (RF), c-reactive protein (CRP), CAV1, and IL-37 levels were compared between groups. **Results:** In comparison to the healthy group, RA patients (both in active and remission states) had significantly higher levels of serum RF, CRP, and IL-37, also a significant low level of CAV1 ($p < 0.01$). The only metrics with which CAV1 and IL-37 showed a positive association were RF and CRP; however, no significant correlations were found with the other parameters ($p > 0.05$). Predicting biomarkers for RA patients may be easier using RF, CRP, CAV1, and IL-37, according to the results of area under curve (AUC) of the receiver operating characteristic (ROC). **Conclusion:** The correlation between Cav-1 and IL-37 was significantly inverse. These results provide credence to the idea that CAV1 and IL-37 could be a part in early diagnosis of RA.

Keywords: Caveolin-1, Interleukin-37, Rheumatoid Arthritis, Autoimmune, Inflammation.

INTRODUCTION

The healthy cells were mistakenly attacked by immune system in autoimmune diseases because it cannot tell the difference between its own cells and foreign ones.

[1] The more than eighty distinct types of autoimmune diseases impact a wide range of body systems. Symptoms of autoimmune diseases can range from mild to severe, depending on the individual. Genetics and environmental factors could be potential contributors to the symptoms.[2]

Rheumatoid arthritis (RA) is a chronic autoimmune disorder characterized by persistent inflammation that deteriorates peripheral joints and leading to permanent deformity.

[3] Genetic susceptibility, self-tolerance dysregulation, immunological dysregulation brought on by external triggers, and subsequent synovial cell change are some of the hypothesized etiologies of RA.[4] Although the detection

of several convincing causal elements, RA etiology is immensely complicated, and has not been fully understood yet.[5] When someone has RA, the cells that make-up the synovium's intimal lining layer multiply out of control, creating lesion tissue.[6] In synovial hyperplasia, there are primarily two distinct kinds of cells involved. Type A synoviocytes are terminally featured cells that are dispersed unevenly throughout the synovial membrane and have a finite ability to replicate.[7]

Type B synoviocytes, also known as fibroblast-like synoviocytes (FLSs), are stimulated to produce chemokines,

Address for Correspondence: Department of Basic Sciences, College of Nursing, University of Basrah, Basrah, Iraq
Email: sadoun.alsalmi@uobasrah.edu.iq

Submitted: 11th June, 2024

Received: 17th July, 2024

Accepted: 09th August, 2024

Published: 24th September, 2024

Access this article online	
Quick Response Code: 	Website: www.jnsbm.org
	DOI: https://doi.org/10.4103/jnsbm.JNSBM_15_3_6

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Mohammed I M, Al. Mashkor I M A, Alsalmi S A, Al-Fartosy A J M. Circulating Serum Caveolin-1 and Interleukin-37 as Predictive Biomarkers in Rheumatoid Arthritis Patients. J Nat Sc Biol Med 2024;15:446-453