ejpmr, 2025, 12(1), 507-509

SJIF Impact Factor 7.065

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

STUDY THE INTERLEUKIN 2 AND HEMATOLOGY MARKER ASSOCIATED WITH RHEUMATOID ARTHRITIS PATIENTS

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Article Received on 21/11/2024 **Article Revised on 11/12/2024** **Article Published on 01/01/2025**

ABSTRACT

This study aims to determine included 50 patient with Rheumatoid Arthritis(RA) 25 male and 25 famle with 30 control blood sample taken from patients and control to test Interleukin2(IL2) and White blood cells WBC) and Haemoglobin (Hb) and erythrocyte sedimentation rate (ESR)(Test Kit. Blood samples were taken from the patients and control group to test for;, IL2, WBC, Hb and ESR. The study revealed the infection with RA. showed the highest levels of IL2 were (191.36) pg/ml, the hematology analysis also showed the highest levels of each WBC, Hb and ESR were (11.61, 12.56, 42.28) respectively.

INTRODUCTION

Rheumatoid arthritis (R.A) is classified as a systemic poly-articular chronic autoimmune joint disease that primarily affects body joints.[1] R.A is pathologically manifested as immune cell infiltration, hyperplasia of the synovial lining, pannus formation, and destruction of articular cartilage and bone.[2] Although the exact etiology of RA is unclear, it is certain that genetic and environmental factors have influences on RA occurrence. At present, RA affects approximately 0.5% to 1.0% of the population worldwide[3], and in particular, females are at higher risk of the disease (two to three times than males).[4] RA patients typically experience morning stiffness. If left untreated, they could appear small focal necrosis, adhesion of granulation, and fibrous tissue on the articular surface, which lead to progressive joint ankylosis, destruction, deformities, and disability.[5] Previous studies have shown that T cells play an important role in the development of such autoimmune disease. The balance between regulatory T cells and proinflammatory effector T cells has been shown to be of critical importance in the development and persistence of autoimmune diseases.[6] RA is an inflammatory arthritis that results from a systemic autoimmune response stimulated by an as yet unidentified antigen. It is commonly believed that the generation of autoantibodies through interactions of the innate immune system (antigen-presenting cells) with the adaptive immune system ($CD4^+$ T cells and B cells) is central to the pathogenesis.[7] Although the clear mechanisms of RA pathogenesis still remain to be defined, cytokines are considered to play an important role in the disease. The imbalance between pro- and anti-inflammatory cytokines promotes the induction of autoimmunity, inflammation and joint destruction. The synovial membrane in patients with RA is characterized by hyperplasia, proliferation, angiogenesis and an infiltrate of predominantly $CD4^+$ T helper (Th) cells.[8]

IL-2 (OMIM 147680) promotes proliferation and expansion of both antigen-specific clones of CD4+ and CD8+ T cells. The IL-2 receptor (CD25) susceptibility locus has recently been reported to be associated with RA.[9]

Though in many cases RA is a progressive joint disease, its course is variable and individual, and there is a lack of reliable tests to assess its outcome. Of the traditional markers of the disease process used in inflammatory arthritis, radiographs mostly measure irreversible changes, while the erythrocyte sedimentation rate (ESR) reflects inflammatory activity.[10]

AIM OF STUDY

1. Evaluation the serum levels of interleukin-2 in patients with Rheumatoid Arthritis compared with healthy control.
2. Evaluation the serum levels of hematology indicators (WBCs, Hb, ESR) among patients with Rheumatoid Arthritis.

MATERIALS AND METHODS

Study Samples

Rheumatoid arthritis and controls samples total are 80 was from her 50 sample for cases and 30 for healthy. Samples were collected from Baghdad hospitals in Iraq, during 2022.

Statistical analysis

Data of the current study were analyzed by using SPSS

26 for windows. Data are expressed as mean ± standard error (M ± SE). Differences between means of two major groups are analyzed by using a t-test and the significance is tested at a two-tail P-value. Pearson correlation (R) accounted to explain the type and strength of the relationship between variables. A level of significance of α=0.05 and 0.01 was applied to the test.

RESULTS AND DISCUSSION

1-The results according to Gender between patients with Rheumatoid arthritis and control groups

Table (1) showed the mean age between control (healthy people) and patients with RA in the case of the total patients 50, the rate of the male was 25(45%) and women 25 (55%), while in the case of total control 30 non-individuals (controls group).

Table 1: The mean age of study groups.

Age			
Study Group		**Patients with RA N = 50**	**ControlsN = 30**
Gender	Total (%)	50 (100%)	30 (100%)
	Male	25 (45%)	17 (56.7%)
	Female	25(55%)	13 (43.3%)
Age (Mean ± SE)		(42.40 ± 1.93)	(35.20 ± 2.62)
***P*-value (Patients VS Controls) *P* value <0.05**		0.032	

The results presented in table (2) show that the rates for each WBCs, Hb and ESR were (11.61, 12.56, 42.28) mg/dl respectively for patients with RA were greater than for the healthy people (control group) which were (9.99, 13.196, 24.97) mg/dl respectively and the probability value was P value <0.05.

Table 2: Relation of Hematology levels with R.A.

Groups	**No.**	**WBCs (mg/dl) (Mean ± SE)**	**Hb (mg/dl) (Mean ± SE)**	**ESR (u/l) (Mean ± SE)**
Patients with R. A	50	11.61 ± 1.2	12.56 ± 1.3	42.28 ± 1.1

The highest rates (191.36) pg/ml of infected patients showed increased IL-2 levels respectively, while the normal rates(121.62) pg/ml of the non-infected patients (Controls group) showed normal levels of IL-2. The results were highly significant. P-value was larger than 0.05.

Table 3: Relation of IL-2 levels with RA.

Groups	**N**	**IL-2 (pg/ml) (Mean ± SE)**
Patients with R.A	50	191.36 ± 1.3
Controls	30	121.62 ± 1.1
P-Value*	0.001	

DISCUSSION

In this study, a clear pattern of inflammatory, biochemical and immune biomarker abnormalities could be found between patients with or without severe disease and compared with non-infected patients (Controls group). The results are shown in table (1) showed the total number of samples distributed between male and female which indicate the number of female infected with RA is larger than male by 55%: 45% these results very close to a study in china were showed the percentage of females and males**.** discovered that several inflammatory cytokines, such as IL-6 and IL-10, rose in critical RA patients,. T cell growth factor, or IL-2, is primarily produced by activated CD4+ T cells + T cells.[13]

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