

Levels of some interleukins as a critical biomarker for psoriatic Iraqi patients

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Key point

Current study highlighted the importance assessment levels of interleukins (IL-17 and IL-22) and their correlation with psoriasis.

Abstract

Introduction: Psoriasis is an immune-mediated illness with an unknown etiology, defined by inflammation induced by immune system malfunction, which leads to inflammation in the body.

Objectives: The aim was to the assessment levels for (IL-17 and IL-22) and their correlation with psoriasis.

Patients and Methods: About 25 psoriatic patients and 25 healthy people had their blood samples (3 ml) taken. For at least one month prior to the Interleukin evaluation and sample collection during the period from January to May 2022, all patients included in this study had no systemic treatment, and patients and healthy volunteers gave their informed consent. Follow the manufacturer's instructions to determine serum IL-17 and IL-22 levels using sandwich ELISA kits.

Results: Results of current study showed male 56% (No =14) were more than female 44% (No = No ==11) female. Also, the age was (41 ≤ years) more infected at 44% (No =11), Followed by the age group (21-40) years at 36% (No.=9) compare to the control. as well as the mean concentration of IL-17 in psoriatic patients was (4.49 ± 3.70) pg/ml, while concentration of IL-17 was (3.00 ± 1.21) pg/ml in controls. In comparison to

the levels of IL-22 in the Control (healthy person) (23.01 ± 0.45), psoriatic patients' sera showed a higher level (45.29 ± 0.12).

Conclusion: Male were infected with psoriasis more than Females, with age ($41 \leq$ years) and (21-40) years, so psoriatic patients' sera showed higher levels of both interleukins (IL-17 & IL-22), and found a relationship between psoriasis and both interleukins (IL-17 & IL-22).

Keywords: Interleukins; biomarker; psoriatic Iraqi patients.

Introduction

Psoriasis is a genetically mediated immune-related chronic inflammatory illness that affects (2 to 3) % of the global population (1), It is a chronic inflammatory condition that affects between 2 and 3 percent of people worldwide. People of all ages and from all areas of life are impacted by psoriasis. The disease appears as well-defined, red, scaly plaques that form in a chronic-recurrent pattern on the knees, elbows, and scalp. Psoriasis patients are more likely to acquire other chronic and significant illnesses, such as depression, metabolic syndrome, cardiovascular disease, and psoriatic arthritis (2).

This autoimmune disease develops as a result of a complicated interplay between hereditary and environmental variables. Epidermal keratinocytes and mononuclear leukocytes have a role in the immunologically mediated process that results in the psoriatic lesion (3,4), Patients with psoriasis who are elderly or on biologic medications and/or traditional immunosuppressive regimens are more likely to get infectious illnesses (5).

A member of the proinflammatory cytokine family, IL-17 has an equally significant role in the development of obesity as do IL-1, IL-6, Interferon(IFN), and Tumor necrosis factor alpha(TNF-alpha) (6&7). IL-17 can be proposed as the measure of illness severity because IL-22, an IL-10 family cytokine, is just recently known to be released by T helper 17 (Th17) cells. Other investigators discovered associations between IL-17A and the severity of psoriasis. (8;9;10), This study aimed to was the assessment of levels for both (IL-17 and IL-22) and their correlation with psoriasis.

Objectives

This study aimed to was the assessment of levels for both (IL-17 and IL-22) and their correlation with psoriasis.

Patients and Methods Type of study? Write exactly

Study design

In Experimental Study , about 25 psoriatic patients and 25 healthy people had their blood samples (3 ml) taken. For at least 1 month prior to the Interleukin evaluation and sample collection during the period from January to May 2022, all patients included in this study had no systemic treatment, patients and healthy volunteers gave their informed consent. Follow the manufacturer's instructions to determine serum IL-17 and IL-22 levels using sandwich - enzyme-linked immunosorbent assay (sandwich-ELISA) kits.

Statistical analysis

The Statistical Analysis System, 2012, was used to show the effect of different groups on study parameters. ANOVA was used in this study. The information was presented in the form of a mean and standard deviation (SE). P-values less than 0.05 were considered significant, and P-values less than 0.01 were regarded as highly significant in this study.

Results

Results in Table 1 showed male (No=14 as 56%) were more than female (No=11 as 44%).

Table (1): Distribution the psoriasis patients according to gender

Gender	Patients	Control (healthy)	Total
No. (%)			
Male	14(56)	12(48)	26(52)
Female	11(44)	13(52)	24(48)
Total	25(100)	25(100)	50(100)

As to results in the current study, the age was ($41 \leq$ years) more infected as 44%(No=11), Followed by the age group (21-40) years as 36% (No=9) compare to the control.

Table (2): Distribution the psoriasis patients according to age groups

Group study	No. (%)	Age groups (years)		
		≥ 20	21-40	$41\leq$
Patients	25 (50)	5(20)	9(36)	11(44)
Control	25(50)	5(20)	11(44)	9(36)
Total	50(100)	10(20)	20(40)	20(40)

The mean concentration of IL-17 in psoriatic patients was (4.49 ± 3.70) pg/ml, while it was (3.00 ± 1.21) pg/ml in controls. psoriatic patients' sera showed a higher level of IL-22 (45.29 ± 0.12) compare to the Control (healthy person) (23.01 ± 0.45) (Table 3).

Table (3): Levels of both interleukins (IL-17 and IL-22) in sera of psoriasis patients (study group) and healthy person (control group).

Interleukins level	Patients	Control (healthy)
IL- 17	4.49 ± 3.70	3.00 ± 1.21
IL- 22	45.29 ± 0.12	23.01 ± 0.45

Discussion

Results in the current study showed males more than females, But Griffiths and Barker, 2007 showed Equal amounts of both genders are impacted, and, for the majority of patients (75%)⁽¹¹⁾.

As to results in the current study, the age was ($41\leq$ years) more infected as 44%(NO=11), Followed by the age group (21-40) as 36% (No=9) compare to the control. Although psoriasis can strike at any age, the average age of onset is 33, and the two peaks of the disease's development are between the ages of (16 to 22 and 57–60) years respectively ⁽¹²⁾, But Griffiths and Barker, 2007 showed The majority of persons with psoriasis experience symptoms between the ages of 55 and 60; the disease often first manifests between the ages of 15 and 25⁽¹²⁾. According to reports, 3.2% of adults in the USA under the age of (20) have PsO⁽¹¹⁾.

According to reports, 3.2% of adults in the USA under the age of (20) have PsO. ⁽⁴⁾, According to the results of the current study, respondents who were 41 years old reported having more infections than those who were between the ages of 20 and 30. Lin et al. (2011) observed a similar

finding. Young adults under 30 are thought to have key life goals like job and marriage and to be more aware of their appearance. ⁽¹³⁾.

Patients (4.49 ± 3.70 and 45.29 ± 0.12) respectively had greater levels of IL-17 and IL-22 than controls (3.00 ± 1.21 , 23.01 ± 0.45) respectively, as a result, Michalak-Stoma et al. and Arican *et al.* discovered a relationship between psoriasis severity and the level of IL-17 in the blood ^(14 & 15).

Psoriasis is hypothesized to develop as a result of Th17 cells producing interleukin-17 (IL-17). The cytokine IL-17, which acts as a 'driver' in psoriasis, has been found and is a prospective therapeutic target ⁽¹⁶⁾, Th lymphocytes and dendritic cells, as well as the cytokines they create, have been shown to contribute to the pathophysiology of psoriasis in the past: Th1 produces IFN- and IL-4 and IL-10, Th17 produces interleukins IL(17 and 22), and Th22 produces IL-22 and cytotoxic epithelial lymphocytes T CD8+ ⁽¹⁷⁾.

The new findings⁽¹⁸⁾ corroborate the findings of numerous other research that indicated a substantial rise in IL-22 levels in patients compared to healthy individuals. IL-17A is an essential cytokine for psoriatic plaque inflammation maintenance. It influences inflammatory cell recruitment, encourages keratinocyte proliferation, and prevents keratinocyte differentiation ⁽¹⁹⁾.

IL-17A is not detectable in healthy skin, however, it has been discovered in skin lesions linked to psoriasis Vulgaris and allergic contact dermatitis. ^(20,21,22).

Conclusion

- Male infected with psoriasis more than Females, also, the age was ($41 \leq$ years) more at 44% (No.=11), Followed by the age group (21-40) at 36% (No.=9) compare to the control.
- psoriatic patients' sera showed higher levels of both interleukins (IL-17 & IL-22), and found a relationship between psoriasis and both interleukins (IL-17 & IL-22).

Limitations of the study

This study is exploratory and has several limitations, it should be emphasised. The small sample size of the current study was limitation.

Authors contribution

Conceptualization: NKH,HA.

Methodology: NKH,HA.

Validation: NKH,HA.

Formal Analysis: NKH,HA.

Investigation: NKH,HA.

Resources: NKH,HA.

Data Curation: NKH,HA.

Writing—Original Draft Preparation: NKH,AA

Writing—Review and Editing: NKH,HA.

Visualization: AA, HK

Supervision: NKH, HA

Project Administration: AA, HA

Funding Acquisition: NKH, HA.

Ethical issues

The research followed the tents of the Declaration of Helsinki. The Ethics Committee of Middle Technical University of Medical Sciences approved this study. The institutional ethical committee at Middle Technical University approved all study protocols(number = 12900). Accordingly, written informed consent taken from all participants before any intervention. This study was original paper

Additionally, ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors

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