ORIGINAL RESEARCH

Serum Levels Of TNF-A And IL-17 In Plaque Psoriasis Patients: A Case Control Study

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Abstract
Background: The study was conducted to assess the Serum Levels of TNF-αand IL-17 in Plaque Psoriasis.
Material and methods: This study comprised of 50 subjects. The subjects had been divided into two groups of 25 each on the basis of presence or absence of psoriasis. Group 1 consisted of 25 subjects with psoriasis while the 2nd group was the control group. The subjects had been informed about the procedure and were asked to give consent. The subjects who were willing to give consent and participate in the study had been included whereas those who were not willing to give consent and participate in the study had been excluded from the study. The serum levels of TNF-α, and IL-17 had been measured and findings had been noted. Statistical analysis had been conducted using SPSS software.
Results: In this study, there were 25 subjects in both the groups. There were total 27 males ad 23 females in this study. Group 1 had 13 males and 12 females while the control group had 14 males and 11 females. The mean serum levels of TNF-α, and IL-17 in psoriatic patients and controls were 8.63 pg/mL, and 4.12 pg/mL as well as 6.39 pg/mL, and 1.06 pg/mL.
Conclusion: Mean serum levels of TNF-α, and IL-17 were higher in psoriatic patients as compared to controls.
Keywords: TNF-α, IL-17, Psoriasis

Introduction

Psoriasis is a chronic disease that is estimated to affect approximately 1.7% of the Canadian population.[1] Psoriasis is a multisystem inflammatory disease with predominantly skin and joint involvement. It has a bimodal age of onset (16 to 22 and 57 to 60 years)[2] and affects both sexes equally.[3] Pathogenesis is multifactorial, involving dysregulated inflammation and genetic associations.[4] Beyond the physical dimensions of disease, psoriasis has an extensive emotional and psychosocial effect on patients; it can result in stigmatization, poor self-esteem, and increased stress, affecting social functioning and interpersonal relationships.[1]Despite its considerable effect on quality of life, psoriasis is underdiagnosed and undertreated.[5],[6] This calls for a better understanding of the disease and the available treatment options to provide optimal management of psoriasis. Because many patients seek initial evaluation and treatment at the primary care level, family physicians are well positioned to provide diagnosis and initiate treatment of psoriasis.

Psoriasis is a common immune-mediated inflammatory disease that affects the skin, joints, and nails. Its pathogenesis is a complex interaction among genetic, immunological, and environmental components.[7] While pathogenesis of psoriasis has become better understood, tumor necrosis factor-α (TNF-α), IL-12, IL-23, and IL-17 seem to be critical checkpoints of psoriatic inflammation.[8]This study was conducted to assess the Serum Levels of TNF-α, and IL-17 in Plaque Psoriasis and Their Correlation with Disease Severity.

Material and methods

This study comprised of 50 subjects. The subjects had been divided into two groups of 25 each on the basis of presence or absence of psoriasis. Group 1 consisted of 25 subjects with psoriasis while the 2nd group was the control group. The subjects had been informed about the procedure and were asked to give consent. The subjects who were willing to give consent and participate in the study had been included whereas those who were not willing to give consent and participate in the study had been excluded from the study. The serum levels of TNF-α, and IL-17 had been measured and findings had been noted. Statistical analysis had been conducted using SPSS software.

Results

Table 1: Group-wise distribution of subjects

Groups	Number of subjects	Percentage
Group 1(Psoriasis)	25	50%
Group 2(Control)	25	50%
Total	50	100%

In both the groups there were 25 subjects each.

Table 2: Gender-wise distribution of subjects.

Groups	Number of males	Number of females
Group 1(Psoriasis)	13	12
Group 2(Control)	14	11
Total	27	23

There were total 27 males ad 23 females in this study. Group 1 had 13 males and 12 females while the control group had 14 males and 11 females.

Table 3: Mean serum levels of TNF-α, IL-12/23p40, and IL-17 in psoriatic patients and controls.

Cytokines	Psoriatic patients	Controls	p-value
TNF-α (pg/mL)	8.63	6.39	0.00(Sig)
IL-17 (pg/mL)	4.12	1.06	0.01(Sig)

The mean serum levels of TNF-α, and IL-17 in psoriatic patients and controls were 8.63 pg/mL, and 4.12 pg/mL as well as 6.39 pg/mL, and 1.06 pg/mL.

Discussion

Psoriasis, a common and enigmatic recurrent cutaneous disease, has for long been considered a hyperproliferation with extremely increased rate of epidermal turnover, and an activated mononuclear infiltrate in the underlyingdermis. Recent progress in the understanding of psoriasis has attributed its pathogenesis to the important role of T cells. New anti-T lymphocytes immunotherapies, and some traditional antipsoriatic medications such as methotrexate, steroids, and cyclosporin A, have confirmed an important role of the immune system in psoriasis.[9] At present, research into psoriasis is dominated by thehypothesis that it is an immunological disorder described by abnormal keratinocyte proliferation mediated through T lymphocytes.[10-12] Autoimmune disorders and inflammatory reactions are currently segregated into cell-mediated Th1 or Th2 categories. Psoriasis is associated with an overexpression of proinflammatory cytokines produced by Th1 cells and relative underexpression of Th2 cytokines.[13] Today, the roles of cytokines in the pathogenesis of psoriasis are investigated. However, in extrapolating the biologic these activities of cytokines demonstrated in the in vitro models to the in vivo situation in psoriasis, it is clear that there may be much more complex interactions among individual cytokines in vivo than expected from the in vitro models. This study was conducted to assess the Serum Levels of TNF-α, IL-12/23p40, and IL-17 in Plaque Psoriasis and Their Correlation with Disease Severity. In this study, there were 25 subjects in both the groups. There were total 27 males ad 23 females in this study. Group 1 had 13 males and 12 females while the control group had 14 males and 11 females. The mean serum levels of TNF-α, and IL-17 in psoriatic patients and controls were 8.63 pg/mL, and 4.12 pg/mL as well as 6.39 pg/mL and 1.06 pg/mL. Arican O et al (2005)[14] evaluated the association of serum levels of some proinflammatory cytokines in vivo and their correlation with severity of psoriasis. The serum levels of cytokines levels were determined with the use of the ELISA method. All mean values except IL-17 levels of patients were significantly higher than those of controls. There was a significant correlation between serum levels of IFN-γ, IL-12, IL-17, and IL-18, and severity of the disease. Psoriasis can be described as a T-cell-mediated disease, with a complex role for a variety of cytokines, which has led to the development of new immunomodulatory therapies. In this study, serum TNF-α, IFN-γ, IL-6, IL-8, IL-12, and IL-18 levels were significantly higher in active psoriatic patients than in controls. Furthermore, high levels of IFN-γ, IL-12, and IL-18 correlated with the clinical severity and activity of psoriasis, and those measurements of serum levels of these cytokines may be objective parameters for the disease severity.A case-control study was performed by Kyriakou A et al (2014)[15] to assess the serum levels of TNF-α, IL-12/23p40, and IL-17 in patients with plaque psoriasis, compare them with healthy controls, and correlate them with disease severity, as represented by Psoriasis Area Severity Index (PASI). 32 consecutively selected, untreated patients with active, chronic plaque psoriasis were recruited and compared to 32 age- and sex-matched healthy controls. Serum cytokine levels were determined by solid phase sandwich enzyme linked immunosorbent assay (R&D Systems Europe, Ltd.). The mean serum levels of TNF-α were significantly higher in psoriatic patients compared to those of controls (Mann-Whitney U test; P = 0.000). However, the median serum levels of neither IL-12/23p40 nor IL-17 differ significantly between the 2 groups (Mann-Whitney U test; P = 0.968 and P = 0.311, resp.). No significant correlations were found between PASI and any of the

cytokine serum levels (Spearman's rank test; P > 0.05). Despite the well-evidenced therapeutic efficacy of biologic agents targeting TNF-α, IL-12/23p40, and IL-17, serum levels of TNF-α, IL-12/23p40, and IL-17 do not seem to correlate with the severity of psoriatic skin disease in untreated patients, as represented by PASI. Further investigation may add more data on the pathogenetic cascade of psoriasis.

Conclusion

Mean serum levels of TNF-α, and IL-17 were higher in psoriatic patients as compared to controls.

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