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ORIGINAL RESEARCH

Evaluation of serum interleukin-30 level in patients with psoriasis

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Abstract
Background: The present study was conducted for evaluating serum interleukin-30 level in patients with psoriasis.
Materials & methods: A total of 20 psoriasis patients were enrolled in the present study. Another set of age- and gender-matched 20 heathy controls were also enrolled. A Performa was made and detailed past medical history of all the patients was also recorded. All the patients were recalled in the morning and blood samples were obtained. ELISA technique was further employed for evaluation of IL-30 levels.
Results: Mean IL-30 levels among the patients of the Psoriasis group and control group was 99.36 pg/mL and 29.42 pg/mL respectively. Significant results were obtained while comparing the mean IL-30 levels among the two-study group.
Conclusion: It can be concluded that possibly IL-30 is involved in the proliferation of epidermal cells during occurrence of psoriasis.
Key words: Psoriasis, Interleukin

Introduction

Psoriasis is a chronic proliferative and inflammatory condition of the skin. It is characterized by erythematous plaques covered with silvery scales, particularly over the extensor surfaces, scalp, and lumbosacral region.The disorder can also affect the joints and eyes. Psoriasis has no cure and the disease waxes and wanes with flareups. Many patients with psoriasis develop depression as the quality of life is poor. There are several subtypes of psoriasis but the plaque type is the most common and presents on the trunk, extremities, and scalp. Close examination of the plaques usually reveals white silvery scales.[1- 3]

Psoriasis has a multifactorial etiology. Apart from genetic predisposition, risk factors that trigger psoriasis include trauma, infection, drugs, metabolic factors, stress, alcohol, smoking, and sunlight. Drugs that can exacerbate psoriasis include antimalarials, beta-blockers, bupropion, calcium channel blockers, captopril, fluoxetine, glyburide, granulocyte colony-stimulating factor, interferon, interleukins, lipid-lowering drugs, lithium, penicillin, and terbinafine. Genetic factors do play a role in plaque psoriasis; there is a much higher risk of

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developing plaque psoriasis if one individual already has the disorder. Patients with susceptible loci (PSOR1) on chromosome 6 are more likely to develop the disorder.[4-6]Cytokines are small secreted proteins produced by cells of the immune system, usually upon immune cell activation. Cytokines regulate immune and inflammatory responses, and many of them play critical roles in the development of the immune system.By the onset of the 21st century, the number of interleukins has reached IL-30 and kept on increasing. These interleukins are postulated to have a definitive role in pathogenesis of various immune mediated disorders.[7]Hence; under the light of above obtained data, the present study was conducted for evaluating serum interleukin-30 level in patients with psoriasis.

Materials & methods

The present study was conducted for evaluating serum interleukin-30 level in patients with psoriasis. A total of 40 psoriasis patients were enrolled in the present study. Another set of age- and gender-matched 40 heathy controls were also enrolled. Complete demographic and clinical details of all the patients was obtained. A Performa was made and detailed past medical history of all the patients was also recorded. All the patients were recalled in the morning and blood samples were obtained. Centrifugation of all the samples was done followed by overnight storage. ELISA technique was further employed for evaluation of IL-30 levels. Evaluation of all the results was done by using SPSS software.

Results

Mean age of the patients of the psoriasis group and control group was 41.3 years and 43.9 years respectively. Majority proportion of patients of both the study groups were males. 50 percent of the patients of the Psoriasis group and 60 percent of the patients of the control group were of rural residence. Mean IL-30 levels among the patients of the Psoriasis group and control group was 99.36 pg/mL and 29.42 pg/mL respectively. Significant results were obtained while comparing the mean IL-30 levels among the two-study group.

Table 1: Demographic details

Variable		Psoriasis group		Control group	
		Number	Percentage	Number	Percentage
Gender	Males	12	60	11	55
	Females	8	40	9	45
Mean age (years)		41.3		43.9	
Residence	Rural	10	50	12	60
	Urban	10	50	8	40

Table 2: Comparison of IL-30 levels

IL-30 levels (pg/mL)	Psoriasis group	Control group
Mean	99.36	29.42
SD	23.6	5.7
p- value	0.001 (Significant)	

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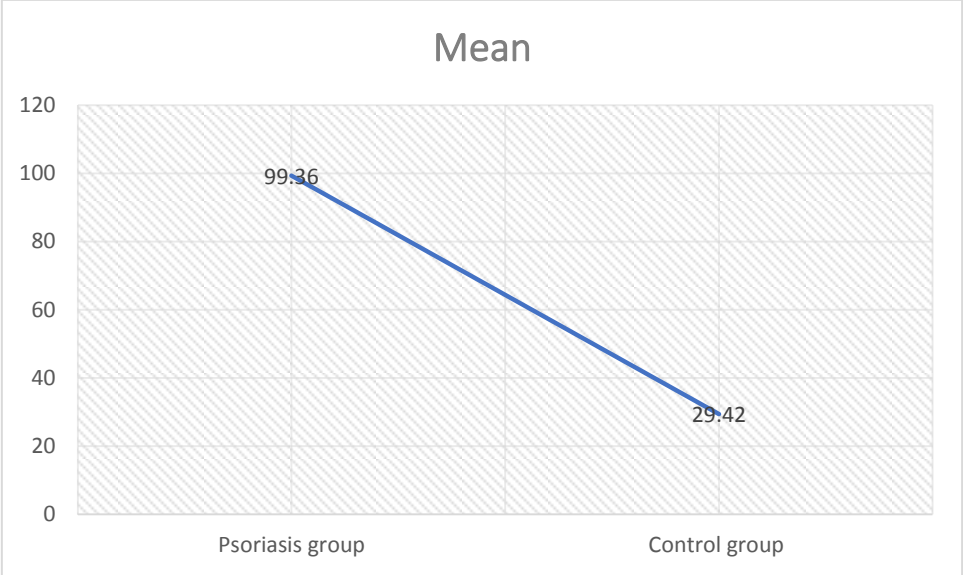
Graph 2: Comparison of IL-30 levels



Discussion

Psoriasis is a chronic inflammatory skin disease with a strong genetic predisposition and autoimmune pathogenic traits. The worldwide prevalence is about 2%, but varies according to regions. It shows a lower prevalence in Asian and some African populations, and up to 11% in Caucasian and Scandinavian populations.In the MAPP survey, there was a 2-year median delay from symptom onset to time of diagnosis. In terms of disease severity, approximately 30% of psoriasis patients and 50% of those with both psoriasis and psoriatic arthritis rated their disease as severe. Despite this, nearly half of psoriasis patients had not seen a physician in the past year, and many were on either no treatment or topical therapy alone. One of the reasons for this under treatment was lack of tolerability or efficacy of available oral or biologic agents.[8- 10]Recent insights into this inflammatory milieu, specifically in breast (BC) and prostate (PC) cancers, have unveiled a role for the novel immunoregulatory mediator Interleukin(IL)-30/IL-27p28 in the TME and in the intricate relationship between cancer and myeloid cells, which orchestrates tumor-promoting events with evident clinical implications. However; their role in various immune mediated dermal disorders is under research.[11- 13] Hence; under the light of above obtained data, the present study was conducted for evaluating serum interleukin-30 level in patients with psoriasis.

Mean age of the patients of the psoriasis group and control group was 41.3 years and 43.9 years respectively. Mean IL-30 levels among the patients of the Psoriasis group and control group was 99.36 pg/mL and 29.42 pg/mL respectively. Significant results were obtained while comparing the mean IL-30 levels among the two-study group.Our results were in concordance with the results obtained by previous authors who also reported similar findings. Omar NS et al, in a similar study, examine the serum levels of interleukin (IL)-30 in patients with psoriasis and evaluate the correlations with the Psoriasis Area and Severity Index (PASI).Serum was collected from 26 patients with psoriasis and 26 healthy controls in a case–control setting, and the level of IL-30 was determined using an enzyme-linked immunosorbent assay. Statistical analysis of the IL-30 levels among groups and further correlation analyses of IL-30 levels with PASI scores were performed.A significant increase in the level of IL-30 in patients with psoriasis compared with healthy controls was observed. In addition, a positive correlation between the IL-30 concentration and PASI scores was found in patients with psoriasis.[14]

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Role of various interleukins in psoriasis patients have also been previously studied. Mitsui Aet al studied serum IL-33 levels in patients with psoriasis, a Th1/Th17-mediated skin disease, before and after anti-tumour necrosis factor (TNF)-α therapy.Serum IL-33 levels were measured in patients with psoriasis vulgaris (PV), psoriatic arthritis (PsA) or pustular psoriasis (PP), and compared with those of healthy controls. Serum IL-33 levels in patients with PV, PsA and PP were significantly higher than those in healthy controls.[15] In a similar study conducted by He et al, authors detected serum IL-21 levels in patients with psoriasis and investigate the correlation between these and the Psoriasis Area and Severity Index (PASI) scores. Blood samples were collected from patients with plaque psoriasis and from healthy control subjects. Serum IL-21 levels were measured by enzyme-linked immunosorbent assay in 37 patients with psoriasis and 37 healthy controls. The PASI scores of patients with psoriasis and their correlation with serum IL-21 levels were evaluated.Serum IL-21 levels were higher in patients with psoriasis than in healthy controls ($P < 0{\cdot}01$). Serum IL-21 levels were positively correlated with PASI scores in the patients with psoriasis ($r = 0{\cdot}471$, $P < 0{\cdot}01$).[16]

Conclusion

It can be concluded that possibly IL-30 is involved in the proliferation of epidermal cells during occurrence of psoriasis. However; further studies are recommended for better exploration of results.

References

1. Elman SA, Weinblatt M, Merola JF. Targeted therapies for psoriatic arthritis: an update for the dermatologist. Semin Cutan Med Surg. 2018 Sep;37(3):173-181.
2. Yiu ZZ, Warren RB. Ustekinumab for the treatment of psoriasis: an evidence update. Semin Cutan Med Surg. 2018 Sep;37(3):143-147.
3. Yang EJ, Beck KM, Sanchez IM, Koo J, Liao W. The impact of genital psoriasis on quality of life: a systematic review. Psoriasis (Auckl). 2018;8:41-47.
4. Berekmeri A, Mahmood F, Wittmann M, Helliwell P. Tofacitinib for the treatment of psoriasis and psoriatic arthritis. Expert Rev Clin Immunol. 2018 Sep;14(9):719-730.
5. Staubach P, Zimmer S. [Plaque psoriasis – more than a skin disorder]. Med Monatsschr Pharm. 2017 Jun;40(6):231-3.
6. Schadler ED, Ortel B, Mehlis SL. Biologics for the primary care physician: Review and treatment of psoriasis. Dis Mon. 2019 Mar;65(3):51-90.
7. Catalan-Dibene J, McIntyre LL, Zlotnik A. Interleukin 30 to Interleukin 40. J Interferon Cytokine Res. 2018 Oct;38(10):423-439.
8. Aydin O, Engin B, Oğuz O, İlvan Ş, Demirkesen C. Non-pustular palmoplantar psoriasis: is histologic differentiation from eczematous dermatitis possible? J Cutan Pathol. 2008;35(2):169–173
9. Raychaudhuri SK, Maverakis E, Raychaudhuri SP. Diagnosis and classification of psoriasis. Autoimmun Rev. 2014;13(4–5):490–495.
10. Lebwohl MG, Bachelez H, Barker J, Girolomoni G, Kavanaugh A, Langley RG, Paul CF, Puig L, Reich K, van de Kerkhof PC. Patient perspectives in the management of psoriasis: results from the population-based Multinational Assessment of Psoriasis and Psoriatic Arthritis Survey. J Am Acad Dermatol. 2014;70(5):871–881.e871–830.
11. Pflanz S., Timans J.C., Cheung J., Rosales R., Kanzler H., Gilbert J., Hibbert L., Churakova T., Travis M., Vaisberg E., et al. IL-27, a heterodimeric cytokine composed of EBI3 and p28 protein, induces proliferation of naive CD4+ T cells. Immunity. 2002;16:779–790.

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12. Di Meo S., Airoldi I., Sorrentino C., Zorzoli A., Esposito S., Di Carlo E. Interleukin-30 expression in prostate cancer and its draining lymph nodes correlates with advanced grade and stage. Clin. Cancer Res. 2014;20:585–594.
13. Airoldi I., Cocco C., Sorrentino C., Angelucci D., Di Meo S., Manzoli L., Esposito S., Ribatti D., Bertolotto M., Iezzi L., et al. Interleukin-30 Promotes Breast Cancer Growth and Progression. Cancer Res. 2016;76:6218–6229.
14. Omar NS, Long X, Xian J, Afewerky HK, Hussain SG, Peng X. Serum interleukin-30 level in patients with psoriasis and its correlation with psoriasis severity: a case-control study. J Int Med Res. 2021 Apr;49(4):3000605211004039.
15. Mitsui A, Tada Y, Takahashi T, Shibata S, Kamata M, Miyagaki T, Fujita H, Sugaya M, Kadono T, Sato S, Asano Y. Serum IL-33 levels are increased in patients with psoriasis. Clin Exp Dermatol. 2016 Mar;41(2):183-9.
16. He Z, Jin L, Liu ZF, Hu L, Dang EL, Feng ZZ, Li QJ, Wang G. Elevated serum levels of interleukin 21 are associated with disease severity in patients with psoriasis. Br J Dermatol. 2012 Jul;167(1):191-3.