

COMPARISON BETWEEN SERUM LEVEL OF INTERLEUKIN-6 IN PSORIATIC PATIENTS BEFORE AND AFTER TREATMENT WITH METHOTREXATE AND ADALIMUMAB

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Introduction

Psoriasis is a chronic illness with long coarse duration which can affect all age groups and both sexes are equally affected, as other autoimmune disease it is characterized by over production of many inflammatory cytokines including IL-6. Clinically the disease is characterized by well demarcated erythematous plaques covered with silvery white lamellar scales on affected areas. Several clinical variants of psoriasis are present such as : Flexural, Guttate, Pustular, Erythrodermic, Nail Psoriasis and Psoriasis vulgaris. Psoriasis vulgaris is the most common type of psoriasis which account for 85-95% of all cases. The scalp, extensor surfaces of elbows and knees, lumbosacral area and intergluteal cleft are preferential sites of involvement of the disease. The disease has no permanent cure, but treatment lines were present to relief the symptoms of disease. There are several adopted modes of treatments available including, topical treatment, phototherapy, systemic including oral and injectable treatments according to the disease severities Methotrexate and Adalimumab are two of most common systemic treatments in the management of plaque psoriasis with good clinical response.

Aim of the Work

The aim of this study was to assess serum level of IL-6 before and after methotrexate treatment and compared to its level before and after treatment with adalimumab.

Patients and Methods

This study included a total of 40 patients with plaque psoriasis and 20 normal individuals as a control group. The psoriatic patients were divided into 2 groups. Group 1 was treated with methotrexate at a dose of 0.5mg/kg per week for 12 weeks. Group 2 was treated with adalimumab at a dose 80mg/kg at week 0, then 40mg every other week beginning in week 2 for 12 weeks. Full history taking was done to all patients including name, age, sex, history of the disease. Patients with other autoimmune disease like vitiligo, diabetes type 1, SLE, lichen planus, dermatomyositis and childrens were excluded as well lactating and pregnant women. Full physical examination was done to all patients. Psoriasis Activity and Severity Index (PASI) score was done, where the severity of erythema and scales in all affected body areas including head and Neck, upper limbs, trunk and lower limbs were assessed to all patients. Laboratory investigation; Serum levels of IL-6 was measured using fully automated immunoassay analyzer (cobas e411, Roche, USA). In all patients serum IL-6 were tested in both groups prior to and 12 weeks after methotrexate treatment subcutaneously at a dose of 0.5mg/kg per week and to other group treated with Adalimumab at a dose of 80mg/kg at week 0, then 40mg every other week beginning in week 2. Serum IL-6 was assessed in the control group.

Results

Comparison of Psoriasis Activity and severity Index (PASI) score of the two clinical patients group is shown in a(table 1) before and after treatment.

Table 1: Comparison of PASI score before and after treatment in the patient studied groups

PASI score	Group		Test of significance p-value
	Methotrexate (n=20)	Adalimumab (n=20)	
Before treatment			
- Min-Max	5.40-22.50	5.20-18.90	$t_{(df=38)}=0.489$ p=.627 NS
- Mean±SD	12.26±3.70	11.73±3.19	
- SEM	0.83	0.71	
- 95.0% CI of the mean	10.53-13.99	10.23-13.22	
- 25 th Percentile – 75 th Percentile	10.80-13.50	10.80-13.50	
After treatment			
- Min-Max	1.80-5.40	1.80-3.60	$t_{(df=38)}=1.410$ p=.167 NS
- Mean±SD	2.87±0.92	2.52±0.65	
- SEM	0.21	0.14	
- 95.0% CI of the mean	2.44-3.30	2.21-2.82	
- 25 th Percentile – 75 th Percentile	1.90-3.60	1.80-3.00	
Paired t-test of significance	$t_{(df=19)}=13.029$ p<.001*	$t_{(df=19)}=14.644$ p<.001*	
Percentage change (After vs. before treatment)			
- Min-Max	-87.59 - -62.50	-86.67 - -62.96	$t_{(df=38)}=0.917$ p=.365 NS
- Mean±SD	-75.64±7.16	-77.58±6.24	
- SEM	1.60	1.39	
- 95.0% CI of the mean	-78.99 - -72.29	-80.50 - -74.66	
- 25 th Percentile – 75 th Percentile	-81.80 - -70.71	-82.14 - -73.33	

Before treatment, In the methotrexate group, IL-6 ranged from 8.00 to 80.91 (pg/ml) with a mean±S.D. of 23.39±19.29 (pg/ml). In the adalimumab group, IL-6 ranged from 8.00 to 44.52 (pg/ml) with a mean±S.D. of 19.85±11.17 (pg/ml). In the healthy group, IL-6 ranged from 1.80 to 7.00 (pg/ml) with a mean±S.D. of 4.65±1.90 (pg/ml), In psoriatic patients there were higher statistically significant serum IL-6 compared to Health Control group. (Figure 1). After treatment, in the methotrexate group, IL-6 ranged from 2.30 to 10.45 (pg/ml) with a mean±S.D. of 5.39±2.31 (pg/ml), in the adalimumab group, IL-6 ranged from 2.10 to 7.80 (pg/ml) with a mean±S.D. of 4.94±1.76 (pg/ml). In each group, repeated measures analysis showed a statistically significant decrease in IL-6 between before and after treatment in the methotrexate group and in the adalimumab group (p< .001 and p< .001, respectively).(Figure 2).

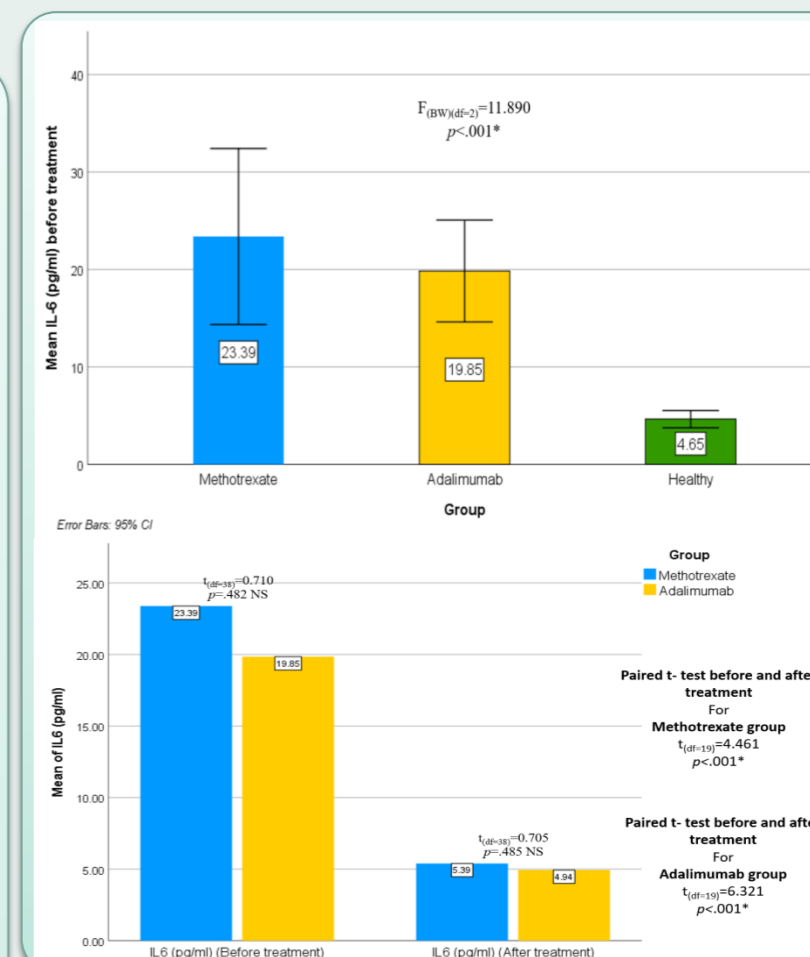


Figure 1: Simple Bar of Mean of IL-6 (pg/ml) in the studied group before treatment

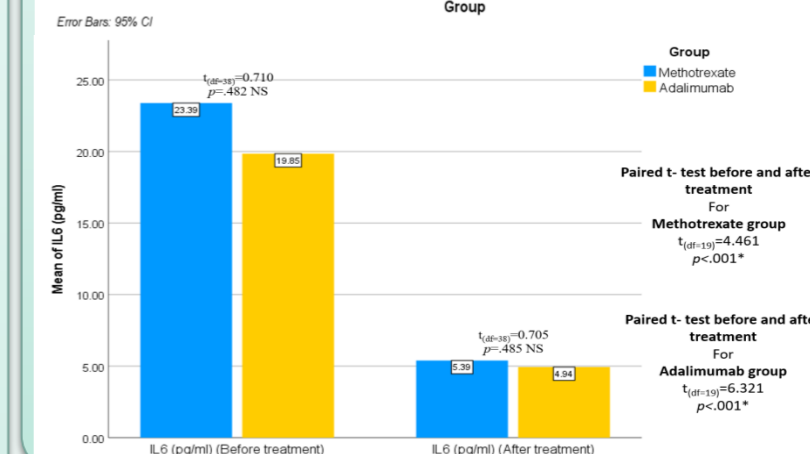


Figure 2: Simple Bar of Mean IL-6 (pg/ml) in the studied groups, before and after treatment.

Conclusion

Serum levels of IL-6 were elevated in all patients compared to control group, this could be related to the inflammatory process involved in the pathogenesis of the disease. The study showed that PASI score has been correlated with the disease activity and response of the treatment, in this study there was reduction 75% in PASI score in most of the patients. Following 12 weeks of treatment of patients with methotrexate and adalimumab there was significant decrease in the levels of serum IL-6 in all patients. Improvement in PASI score and reduction in serum levels of IL-6 in patients receiving adalimumab was earlier than that in methotrexate