

STUDY OF INTERLEUKIN 31 LEVEL IN ATOPIC DERMATITIS AND ITS RELATION TO DISEASE SEVERITY

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Introduction

Atopic dermatitis is a chronic relapsing inflammatory skin disease that is highly pruritic. Its treatment is still challenging. This is mainly due to its complex and multifactorial pathogenesis with environmental contribution. Chronic itch being one of the defining feature of AD, is responsible for much of the burden. It affects disease severity and has a profound impact on the patient's and family's quality of life. Much of the therapy is aimed at symptom control so as to at least maintain the quality of life or at most to improve it. The disease severity determines treatment modalities needed for every case. Different scores for disease assessment are used including SCORAD score.

Aim of the Work

The aim of this work was to study the interleukin 31 levels in Atopic Dermatitis and its relation to disease severity.

Patients and Methods

This study included 30 atopic dermatitis patients and 15 controls.

Inclusion criteria:

All patients who were treated for atopic dermatitis at the Alexandria University hospital dermatology clinic.

Exclusion criteria: Patients who had other dermatological conditions.

Demographic and clinical information were obtained from the patients or guardians. The disease severity was determined using the SCORAD (Scoring of Atopic Dermatitis) index. The Atopic Dermatitis Control Tool (ADCT) was used to assess the patients' disease control. Blood was also obtained for analysis. Serum IL-31 levels were measured using ELISA with standard kits from Wuhan Fine Biotech Co., Ltd. China. All the analyses were performed according to the manufacturer's protocol. The data were analyzed using IBM SPSS version 20.0.

Results

The ages of the patient group ranged from 2-20 years with a mean $\pm$ SD of (7.87 $\pm$ 4.48) years, while the ages of the control group ranged from 4-20 years. 17 males (56.7%) and 13 females (43.3%) represented the patient group while 10 males (66.7%) and 5 females (33.3%) represented the control group. Only 7 patients (23.3%) had positive family history of AD. According to SCORAD score, patients were subdivided into mild, moderate and severe disease (40%, 43.3% and 16.7%) respectively. In relation to ADCT score, 6 patients (20%) had well controlled disease and 24 patients (80%) had uncontrolled disease. The serum IL-31 levels were significantly higher in the patient group than in the control group ($p=0.023$). There was no statistically significant correlation between interleukin 31 levels and the SCORAD scores, p -value 0.065. There was no relation between interleukin 31 levels and ADCT score, p -value 0.157. The SCORAD score showed no significant relation with age or sex of patients.

Table 1: Comparison between the two studied groups according to IL-31 level

IL 31 Level (pg/ml)	Patients (n = 30)	Control (n = 15)	U	p
Min. – Max.	24.60 – 1220.4	25.40 – 32.40	130.5*	0.023*
Mean $\pm$ SD.	126.7 $\pm$ 234.3	28.68 $\pm$ 2.35		
Median (IQR)	35.35 (27.80 – 104.6)	29.60 (26.40 – 30.0)		

IQR: Inter quartile range

SD: Standard deviation

U: Mann Whitney test

p: p value for comparing between the two studied groups

*: Statistically significant at $p \leq 0.05$

Conclusion

We concluded that there is elevated serum interleukin 31 levels in patients with atopic dermatitis. This increase correlates positively with the presence of associated atopic conditions such as asthma, rhinitis and conjunctivitis and food allergy. However, there is no statistically significant relation between interleukin 31 levels with severity of AD. Serum IL-31 level is suggested to be used as a marker for Atopic dermatitis.