

SERUM IMMUNOGLOBULINS AND COMPLEMENT LEVELS IN PATIENTS WITH ATOPIC DERMATITIS

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In this study, to research the pathological role of immunological changes in atopic dermatitis, we investigated the serum immunoglobulins and complement levels and the correlations between severity scoring of atopic dermatitis (scorad index) and these parameters. There was no statistically significant difference in the serum IgA, IgM, IgE, and C₄ levels between the patients with atopic dermatitis and controls. But, the serum C₃ and IgG levels was significantly lower in the patients than in controls. There was no correlation between scorad index and the serum IgG, IgM, and IgE levels, but the negative correlation between scorad index and the serum IgA and C₃ levels and positive correlation between scorad index and the serum C₄ levels. This findings suggest that immunoglobulins and complement system participates in inflammatory process in atopic dermatitis.

Key words: severity scoring of atopic dermatitis, immunoglobulins, complements.

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Atopik dermatitli hastalarda serum immunoglobulin ve komplement düzeyleri

Bu çalışmada, atopik dermatitde immünolojik faktörlerin patolojik rolünün araştırmak için, serum immünoglobulin ve kompleman seviyeleri ve bu parametrelerin atopik dermatitin şiddet skoru (scorad indeksi) arasındaki korelasyonlar araştırıldı. Atopik dermatitli hastalar ile kontroller arasında serum IgA, IgM, IgE ve C₄ seviyeleri açısından fark bulunmadı. Fakat C₃ ve IgG seviyeleri hastalarda düşük idi. Scorad indeksi ile serum IgG, IgM, IgE seviyeleri arasında korelasyon yoktu, fakat scorad indeksi ile IgA ve C₃ seviyeleri arasında negatif korelasyonlar ve scorad indeksi ile serum C₄ seviyesi arasında pozitif korelasyon bulundu. Bu bulgular gösterirki immünoglobulinler ve kompleman sistemi atopik dermatitdeki inflamatuvar prosteşe yer almaktadır.

Anahtar kelimeler: Atopik dermatitin ciddiyet skorlaması, immunoglobulinler, komplement

The first association of atopy with immunological deficiency was reported in 1937¹. There are high incidence of atopy in many immunological syndroms such as Bruton disease, Wiskott-Aldrich syndrome and IgA deficiency. These syndroms have similar clinical findings like atopic dermatitis^{2,3,4}. Additionally, there is increased tendency for bacterial, viral and fungal infections^{5,6} and incidence of immunodeficiency in patients with atopic dermatitis. than in normal population¹.

Considerable attention has been directed recently toward host defence mechanisms in atopic dermatitis⁶. The resulting studies have caused some confusion in regard to the scope and degree of altered immunity in atopic dermatitis and its possible etiological importance. A review of atopic dermatitis and cellular immune mechanisms establishes the interrelationship and indicates why immunological evaluation may be important in the assessment of the pathogenesis of this disease⁶.

In this study, to research pathological role of immunological changes in atopic dermatitis, we investigate the serum immunoglobulins and complements levels and relationships between scorad index and these parameters.

MATERIAL AND METHODS

Fifty patients (aged 0.6 to 45 years) who were admitted to Dermatology clinics of Atatürk University Research Hospital (Erzurum, Turkey) within two years (1996 and 1997) were included the study. Thirty five healthy volunteers taken as the control group had no severe infections, chronic disorders or malignancy which affect serum immunoglobulins and complements. The diagnosis were made according to Hanifin-Rajka criterias. Subjects have not used any topical and systemic drug for the last three months. Severity and intensity of skin lesions in the patients were evaluated according to scorad index⁷.

The blood samples were taken at 08.00 to 09.00 a.m. after starvation of 12 hours from the patients and controls. Venous blood samples were centrifugated at 3000 rpm for ten minutes. After centrifugation the seperated serum was stored in plastic tubes at -20 °C until analysis.

stored in plastic tubes at -20 °C until analysis. The serum IgG, IgA and IgM levels measured by using commercially available kits (Incstar company) in Mitsubishi SZ 818 autoanalyzer. The serum IgE level was detected by EIA method. The serum C₃ and C₄ levels were measured by immunoturbidimetric method.

For the statistical analysis, Statgraphics computer program was used. The Student's t test and correlation analyses were applied.

RESULTS

Fifty patients (29(58.0%) men and 21 (42.0%) women; aged 0.6 to 45 years, mean±SD 11.3±11.8) and controls (26 (74.3%) men and 9 (25.7%) women; aged 5 to 25 years, mean±SD 14.6±7.3) entered the study.

The serum IgG, IgA, IgM, IgE, C₃ and C₄ levels (mean±SD) in the patients and controls was shown in Table 1. There was no significant difference in the serum IgA, IgM, IgE and C₄ levels between the patients and controls. But, the serum IgG and C₃ IgG levels was significantly lower in the patients than in controls (respectively, t=2.09, p<0.01; t=4.46, p<0.001).

parameters	patients (n=50)	controls (n=35)	t	p
IgG (mg/dL)	1586.36±445.37	1846.69±344.59	2.09	<0.01
IgA (mg/dL)	185.56±218.12	270.54±186.74	1.87	>0.05
IgM (mg/dL)	92.92±79.87	130.57±125.02	1.69	>0.05
IgE (U/ml)	199.88±260.37	119.28±195.34	1.55	>0.05
C ₃ (mg/dL)	146.58±86.59	217.23±33.1	4.46	<0.001
C ₄ (mg/dL)	32.22±24.2	25.23±12.4	1.57	>0.05

Table 1. The serum IgG, IgA, IgM, IgE, C₃ and C₄ levels (mean±SD) in the patients and controls.

There was no correlation between the scorad index and the serum IgG, IgM and IgE levels, but negative correlations between the scorad index and the IgA and C₃ levels (respectively, r=0.40, p<0.001; r=0.47, p<0.001) and a positive correlation between the scorad index and the serum C₄ level (r=0.30, p<0.05).

DISCUSSION

The first association of atopy with immunological deficiency was reported in 1937¹. In this study, it was found that immunoglobulins except IgE

Serum immunoglobulins and complement levels in patients with atopic dermatitis

IgE were lower in the patients than controls. This finding supports the hypothesis that there is immunological deficiency in the patients with atopic dermatitis¹. Also, in this study, serum C₃ level was lower in patients than controls. However, some authors measured C₃ level and found as within normal limits or even increased^{8, 9, 10, 11}. Immunofluorescence studies of skin biopsy specimens from the patients with atopic dermatitis have shown deposition of C₃ and sometimes immunoglobulins (but not IgE at the dermoepidermal junction and around superficial blood vessels^{12,13,14} or reduced serum complement levels may be due to complement consumption, probably caused by in vivo formation of antigen-antibody complexes, or decreases synthesis or increased catabolism of complement¹¹.

In this study, there were negative correlations between scorad index and IgA and C₃ levels, a positive correlation between the scorad index and the serum C₄ level. A study of 641 atopic patients recorded an increased frequency of IgA deficiency^{1,14} and the authors suggested that a defective intestinal mucosal IgA barrier allowed increased absorption of allergens, predisposing to later development of atopy^{14,15}. This correlations between scorad index and complements suggest that the complement system participates in the inflammatory process in atopic dermatitis. The negative correlation between C₃ level and the scorad index may be

due to complement consumption, probably caused by in vivo formation of antigen-antibody complexes¹¹. But, the positive correlation between C₄ level and the scorad index is not clear and need further studies.

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