



A prospective analysis on relationship between serum IgE levels and severity of chronic urticaria

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ABSTRACT

Background: Urticaria is a distressing dermatosis characterized by transient wheals. About 40% of urticaria patients show autoantibodies to immunoglobulin E (IgE) and high-affinity IgE receptors (FcεRI) on mast cells. The aim of this study is to determine the relationship between serum IgE levels and severity of chronic urticaria.

Method: A total of 50 patients with chronic urticaria and 50 normal controls were enrolled and urticarial total severity score was assessed. Serum total IgE levels were measured.

Result: 33/50 chronic urticaria (CU) patients and 3/50 controls had elevated serum IgE levels above 100 U/ml. Serum IgE levels were significantly ($P < 0.001$) higher in moderate to severe grades of chronic urticaria (mean 287.4 IU/ml) than mild urticaria (mean 182.2 IU/ml) and controls (mean 54.3 IU/ml). A significant association between elevated serum IgE and chronic urticaria severity was found.

Conclusion: Severe urticaria patients showed a higher serum IgE expression than those with mild urticaria.

KEYWORDS : IgE in chronic urticaria, severity of urticaria, serum IgE.

Introduction

Urticaria affects 15% to 20% of the population at some point in their life, characterized by the appearance of wheals which usually last for less than 24 hours¹. Acute urticaria is defined as wheals presenting for less than 6 weeks, whereas chronic urticaria (CU) refers to episodes lasting beyond 6 weeks. In chronic urticaria, in spite of extensive investigations, the etiology remains unknown². 35 to 40% and 5 to 10% of patients demonstrate autoantibodies to a chain of FcεRI and IgE respectively (chronic autoimmune urticaria). These autoantibodies facilitate the cross-linking of the receptor and complement activation³. To investigate the relationship of IgE with the disease severity of urticaria, urticarial total severity scoring was used.

Method

Patients

50 consecutive patients with urticaria for ≥ 6 weeks duration and 50 normal controls of either sex, aged between 18 to 60 years and consented for blood tests were selected. Exclusion criteria were pregnancy, physical urticarias, immunosuppressive drug use in the past 6 weeks. Demographic variables were recorded and detailed history was taken.

Severity assessment

Six separate parameters of disease severity including wheal frequency, number, size, duration, pruritus and antihistamine use were recorded on a 0-3 scale for CU patients. Based on these, a 0-18 total severity score (TSS) was generated and overall disease severity

classified as clear (TSS-0), mild (TSS 1-6), moderate (TSS 7-12) or severe (TSS 13-18)⁴.

Serum IgE measurement

3ml of venous blood is collected from each patient for total serum IgE measurement using radio allergo sorbent test.

Statistical analysis

Data comparisons were done by two-tailed 't' test and anova and $P < 0.05$ was fixed as the limit for significance of differences.

Results

The mean age of CU patients was 37.5 and range of duration of disease was 6 weeks to 3 years. The mean TSS for mild cases was 5.87 and that of moderate-severe cases was 12.04. Serum IgE levels ranged from 38 to 2400 IU/ml. The mean serum IgE of mild cases was 112.2 and that of moderate-severe cases was 287.4 with p value 0.0003. Normal controls had a mean serum IgE of 54.3 and only 3 had IgE > 100 IU/ml with p value 0.0001. (table 1 below)

Table:1 comparison of mean se IgE of mild CU & moderate-severe CU

	MILD CU TSS (1-6)	MOD-SEVERE CU TSS (7-18)	P value < 0.05
Mean TSS	5.87	12.04	
Mean serum IgE (IU/ml)	112.2	387.4	

Discussion

Among many studies on serum IgE levels and chronic urticaria conflicting results have been reported. The mean age of CU in our study was similar to that of Godse study which reported 30.2 years⁵. Toubi study reported a range of 3 months to 3 years.

There were no intergroup differences in the scores of all six severity parameters of total severity score (TSS) i.e. wheal size, number, frequency, duration, itch and antihistamine use. But there was a clear distinction when patients were classified into mild, moderate and severe categories based on the TSS. A larger number of patients in the study group belonged to moderate-severe (61%) CU than mild CU (39%), which was lower when compared to Kessel's study where 23.2% were classified as mild, 76.8% were classified as having moderate-severe CU.

Kessel's study reported elevated total serum IgE levels in patients with chronic urticaria and its association with disease severity⁶. Normal serum IgE levels are less than 100 IU/ml in adults. In our study, serum IgE levels were elevated above 100 IU/ml in 54% of patients with severe CU, compared with 12.4% of mild CU cases and 6% of normal controls. This was slightly higher than Kessel's study which showed raised serum IgE levels in 44% of patients with severe CU, compared with 8.6% of normal control. In our study, the p value for comparison of mean of serum IgE levels in mild (112.2) and moderate-severe (387.4) CU patients and controls (54.3) ($p < 0.05$).

Conclusion

Serum IgE levels are elevated in urticaria and higher levels of serum IgE is associated with severe urticaria. Severe CU patients express pronounced symptomatology which may be recalcitrant to routine urticaria management. The ability to predict CU severity with IgE levels may facilitate early initiation of immunosuppressants to reduce disease severity and patient's distress.

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