Relationship between serum IgE and autoantibody levels in SLE patients

Sirs,

There have been various studies on the prevalence of atopic disorders (1-5). Recently we published a report on the incidence of atopic diseases (atopic dermatitis, asthma, allergic rhinitis, and conjunctivitis) in SLE patients (5). In addition, here we studied serum IgE concentrations in SLE patients and the relationship between IgE and autoantibody levels in them.

Fifty-one patients with SLE (45 women and 6 men; average age 34 years) were included in this study. Immunoglobulins and several autoantibodies were assayed by routine laboratory methods at our hospital (see legend to Table I). Statistical analyses (Peason's correlation coefficient analysis and Student's t-test) were performed using commercially available statistical software (SPSS, Chicago, IL, USA) and $P < 0.05$ was considered to indicate significance. Several previous studies found no clear evidence of higher IgE concentrations in SLE patients compared with controls, perhaps because of the wide range of IgE levels seen in the patients (2, 3, 6, 7). In the present study using a larger number of samples (especially controls) compared with previous studies, the IgE levels of our SLE patients were significantly higher than those seen in controls despite the wide range of serum IgE in the patients (Table I, A). Furthermore, there was a significant positive correlation between the IgE level and ANA ($p = 0.005$, $r = 0.386$), anti-SSA antibody ($p = 0.003$, $r = 0.406$), or IgG ($p = 0.003$, $r = 0.411$) (Table I,B). The close relationship between IgE and IgG levels in our study could suggest that an elevation of IgE sometimes result from polyclonal B cell activation in SLE patients. It has been reported that the IgE level in SLE patients with nephritis is higher than in those without nephropathy (3) and that the existence of an IgE class of anti-DNA antibodies may contribute to a pathogenesis of lupus nephropathy (8). Similarly, the significant correlation between IgE and anti-SSA antibody levels suggests the existence of an IgE class of anti-SSA antibody and this could play a pathogenic role in SLE. Supporting this, recent results by our group have indicated that IgE levels are significantly higher in anti-SSA antibody positive women, including SLE patients, with fetal loss than in those without it, and that a strong positive correlation between IgE and anti-SSA antibody levels are observed in the former, but not the latter group (submitted).

In this study, there was no significant relationship between IgE levels and SLE disease activity, based on the SLE disease activity index (SLEDAI) score, in the patients (statistical relationship between IgE and SLEDAI among the 51 patients in this study; $p = 0.937$) although previous studies reported a significant increase of IgE in the active stage of SLE when compared to the level during remission (3, 7). This discrepancy may be due to differences of methodology, such as cross-sectional versus longitudinal studies.

The prevalence of atopic disorders in our SLE patients with high IgE levels (IgE ≥ 250 IU/ml) was not higher than in the other SLE patients (IgE < 250 IU/ml) (statistical difference of frequency of atopy in high and low IgE groups; $p = 0.32$). Thus,IgE in SLE patients does not appear to be related to the development of atopic disease as suggested by previous studies (2, 6). The prevalence of atopic diseases in SLE patients is still controversial among the studies (1-5). In this context, we have recently reported that the incidence of atopy is significantly lower in SLE patients when compared to normal controls (5). This may be partly explained by the existence of immunological antagonism between atopy and SLE (9) although hyper-responsiveness to antigens occurs in both SLE and atopy as an immunological similarity.

The serum lgE concentration in SLE patients may be related to a pathogenic role in this disease rather than being related to atopy. Further clinical and laboratory investigations, including the relationship between lgE and cytokine (especially TH-2) levels (10), are required to better clarify the role of lgE in SLE patients.

Table I. lgE levels (**A**) and the relationship between IgE and autoantibody levels in SLE patients (**B**).

(A)	Controls (n = 391)	SLE (n = 51)	P value
IgE(IU/m1)[a]	72.7 ± 87	450.5 ± 1136	0.007

(B)	ANA	anti-DNA	anti-RNP	anti-Sm	anti-SSA	anti-SSB	IgG	IgA	IgM
IgE[b]	0.005	0.554	0.124	0.711	0.003	0.875	0.003	0.05	0.466

The serum lgE level was measured by a chemiluminescent enzyme immunoassay (CLEIA; Fuji Levio Co., Inc. Tokyo, Japan). The other immunoglobulins were determined by a latex agglutination test (A & T Co., Inc., Kanagawa, Japan). Autoantibodies (anti-DNA, RNP, Sm, and SSA/B antibodies) and antinuclear antibody (ANA) were measured by enzyme-linked immunosorbent assays and the fluorescent antibody method (SRL Co.,Inc. Tokyo, Japan), respectively.

[a] The normal range of IgE is < 250 IU/ml; [b]numbers indicate the p value for the relationship between serum IgE and each serum parameter.

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