

Soluble CD23 is increased in allergy

THE DIAGNOSTIC value for allergies of the low-affinity IgE receptor (CD23) and its soluble circulating fragment (sCD23) remains unclear (1). In particular, little is known about seasonal influences on serum sCD23 levels in subjects with pollen allergy. Therefore, the aim of this study was to evaluate the relationship between serum levels of sCD23 and pollen season in 20 allergic rhinitis

Serum levels of sCD23 correlate with allergic, seasonal symptoms.

patients (11 males and nine females, aged 11–59 years, mean 25 years) with monosensitization to grass pollen (in order to exclude influences of the exposure to other aeroallergens). The patients presented rhinitis during the grass pollen season, and positive skin prick tests, serum specific IgE, and nasal provocation test with grass allergen extracts. Venous blood samples were obtained at the beginning (April), during (May), and outside the pollen season (November) in relation to airborne pollen monitoring: the dispersal of grass pollen in Ferrara (Italy) starts in April, reaches its peak in May, and ends in September. All these patients were symptomatic in May. The control group consisted of 40 age-matched nonatopic subjects with perennial non-allergic noninfective rhinitis. They were defined by the following factors: no history of allergy, absence of nasal eosinophilia, normal blood eosinophilia (less than 0.30/nl), low total IgE levels (<100 kU/l), negative skin prick tests, and negative serum specific IgE for aeroallergens common to our geographic area.

Serum total and specific IgE levels were detected with the CAP System RAST® FEIA (Pharmacia AB, Uppsala, Sweden). Serum levels of sCD23 were measured with a commercial sandwich enzyme immunoassay (T Cell Diagnostics, Cambridge, MA, USA). Groups were compared using Student's *t*-test, and Wilcoxon's rank sum test.

The mean value and standard error of the means for total IgE levels in nonatopics was 43 ± 37 U/ml compared with 524 ± 540 in allergic patients ($P < 0.001$). This group showed a significant increase in sCD23 serum levels (268 ± 212 U/ml; $P < 0.05$), as compared with nonatopic controls (128 ± 110 U/ml). No significant age-dependent influence on the serum sCD23 concentrations was observed in patient population and in controls. In

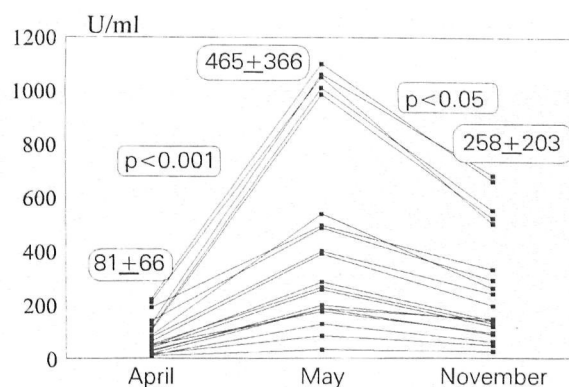


FIGURE 1 Seasonal variation of serum levels of sCD23 in grass-pollen-monosensitized patients.

several studies, the serum sCD23 levels have been reported to be elevated in atopic subjects, as compared with nonatopic subjects (2–4). Our results confirm these previous observations. Other studies, however, have not found a significant increase of sCD23 in atopic patients (5, 6). In agreement with Wilhelm et al. (1), we suggest that these discrepant results may depend both on different study designs and on the large individual variability in serum levels of sCD23. In our study, the control subjects expressed total IgE levels below 100 kU/l. In our opinion, this selection criterion justifies the significantly increased sCD23 serum levels in allergic subjects, considering the important role of sCD23 in the regulation of the IgE synthesis (7).

The serum levels of sCD23 at the beginning, during, and outside the grass pollen season are shown in Fig. 1. During the natural exposure to pollen and during the symptomatic period (May), there was an increase of sCD23 ($P < 0.001$), which then decreased in November ($P < 0.05$). Therefore, in this study, the serum levels of sCD23 appear to correlate with allergic symptoms and seasonal exposure to grass pollens in patients with allergic rhinitis. These results are consistent with a role for the pollen exposure in causing elevation of circulating sCD23 in allergic subjects. Recently published studies have shown that inhalation of allergens both during natural exposure (8, 9) and during specific provocation tests (10) may result in the accumulation and activation of allergen-specific Th-2-type T cells, which have a central role in the production of interleukin-4. This cytokine, essential in promoting IgE production, is also predominant in upregulating the expression of CD23 on the surface of monocytes and B cells after exposure to a specific allergen. Soluble CD23 is then released by autocatalytic mechanisms. It would appear to be a suitable additional marker for the diagnosis and the follow-up of allergic disease. Total IgE serum concentrations, in fact, are influenced by environmental

factors such as race, sex, age, country, and smoking habits, and by nonatopic diseases as well as parasitic and viral infections, immunodeficiencies, and neoplasms.

Key words: allergy; pollen; rhinitis; sCD23; season.

A. BOCCAFOGLI, L. VICENTINI, D. LAMBERTINI, R. SCOLOZZI*

*Dipartimento di Medicina Clinica e Sperimentale

Università di Ferrara

44100 Ferrara

Italy

Tel. +39 532 295821

Fax: +39 532 295816

Accepted for publication 9 January 1997

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ALLERGY 1997;52:357-358

ACKNOWLEDGMENT

This study was partly supported by the Italian Ministry of University and Scientific and Technologic Research (Funds 60%), Rome, Italy.

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Erratum

Vol. 51, no. 2 (February 1996), pp. 137-8, *AllergyNet*, "Can inhalation of garlic dust cause asthma?"

We regret that the name of a coauthor, Dr J. M. Vega, was inadvertently omitted in the publication of this paper.

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