

Specific conjunctival challenge in polysensitized subjects

THE diagnosis of allergy is commonly based on the correlation between history and specific IgE positivity, but this approach may be inadequate in polysensitized patients. Since the allergen-specific conjunctival challenge (ASCC) is a safe, reproducible, and precise tool in the management of allergic diseases (1, 2), a positive response allows one to define the real sensitization (3, 4). The evaluation of the grade of conjunctival reactivity has been considered a predictive marker of successful specific immunotherapy (5).

The present study aimed to evaluate the employment of the ASCC in polysensitized patients, defining the individual grade of sensitization and the possible relationship between skin and conjunctival positivities.

A total of 111 polysensitized subjects (65 women, and 46 men aged 18–48 years) with previously

Allergen provocation in the conjunctiva is still an attractive option in the diagnosis of multisensitized patients.

documented diagnosis of allergic rhinoconjunctivitis were enrolled. All subjects were sensitized only to two or three allergens (i.e., *Parietaria judaica*, grass, *Dermatophagoides pteronyssinus*). All subjects were free of

ocular or nasal non-allergic diseases, and they did not wear contact lenses. The study was performed outside the pollen season, and all subjects had been symptom-free since at least 1 month before the study. No topical

or systemic drugs had been allowed from 1 month before and during the study period.

All subjects gave their informed consent, and the trial was approved by our department's ethics committee.

The skin prick test was performed according to methods and criteria previously described (2–4).

The ASCC was performed as previously described (2–4). Briefly, 10 µl of diluted allergen was instilled into the lower conjunctival sac every 20 min in the same eye; increasing doses of allergen (10, 50, 100, 150, 300, 600, 1200, and 2000 AUR/ml) were used until a clinical reaction was elicited (a total symptom score below 7 was considered positive, as previously described) (2–4). In this way, the allergen threshold dose (ATD) may be defined, and it may define the individual grade of specific sensitization (2–4). Conjunctival hyperemia, lacrimation, itching-burning, and swelling of eyelids were scored according to an arbitrary four-point rating scale, from 0 to 3 (0 = absent, 1 = mild, 2 = moderate, 3 = severe). Signs were evaluated in blinded fashion by two clinicians, symptoms were spontaneously reported by the subjects, and a total symptom score was calculated as the sum of individual symptom scores (2–4). A high grade of conjunctival response was arbitrarily considered an ATD below or equal to 300 AUR/ml; a low grade of conjunctival response was recorded when the ATD was less than 300 AUR/ml. Patients underwent ocular challenge every week.

Statistical analysis of the results was performed by chi-square test. A probability of 0.05 or less was considered statistically significant.

Conjunctival positivity was present in 85% of the subjects with cutaneous *Parietaria* positivity, in 58% of those with mite positivity, and in 38% of those with grass positivity ($P < 0.01$) (Fig. 1).

When the positivity for cutaneous and conjunctival tests was evaluated in a semiquantitative manner, this

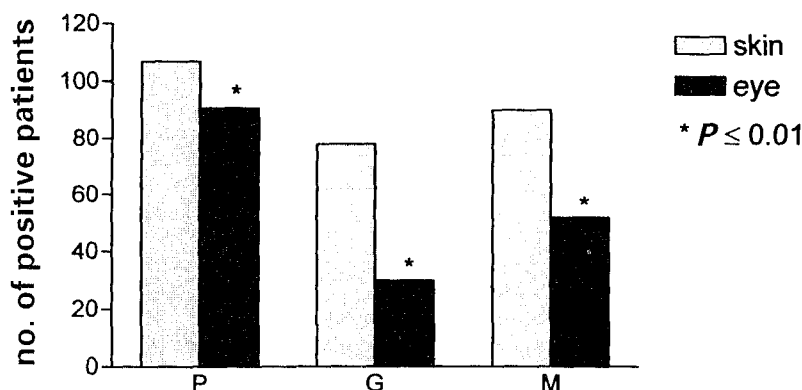


FIGURE 1 Number of patients with cutaneous (skin) and conjunctival (eye) positivity to three allergens studied. Differences in proportions of patients with conjunctival positivity were highly significant ($P \leq 0.01$).

relationship was maintained in the subgroup with high conjunctival positivity. In fact, high conjunctival positivity was present in 70% of the *Parietaria*-sensitive subjects, in 50% of mite-sensitive ones, and in 25% of grass-sensitive ones. The differences among the three allergens were significant ($P < 0.01$).

The ASSC is a useful tool to confirm the diagnosis of sensitization to a specific allergen, to evaluate its degree, and to evaluate the effectiveness of specific immunotherapy (by monitoring ATD, and clinical and inflammatory parameters) (5). Moreover, the ASSC can be employed also in patients with suggestive history of allergy, when negative or doubtful skin prick test and/or specific IgE occur. Finally, the ASSC is a unique tool to establish the more important causal allergen in polysensitized subjects, a crucial step when specific immunotherapy has to be prescribed.

The present study confirms that cutaneous positivity to an allergen sometimes does not correspond to a true sensitization in polysensitized patients, mainly depending on the particular allergen. In fact, cutaneous *Parietaria* positivity frequently accounts for real sensitization. On the other hand, cutaneous grass positivity less frequently corresponds to real allergy.

In conclusion, the ASSC has to be considered a useful tool in the management of allergic polysensitized patients, mainly when history cannot define an exact relationship between seasonal symptoms and allergen exposure. In fact, the periods of

different pollen seasons frequently overlap, and mite allergy rarely induces a continuous appearance of symptoms.

Key words: challenge tests; conjunctiva.

G. CIPRANDI, A. CATRULLO, A. BALLESTRERO*, P. CERQUETI, M. TOSCA, G. W. CANONICA

*Allergy and Clinical Immunology Service

Department of Internal Medicine

V.le Benedetto XV, 6

16132 Genoa

Italy

Tel. 39/10/3538931

Fax: 39/10/352324

Accepted for publication 29 April 1997

Copyright © Munksgaard 1997

ALLERGY 1997;52:960-961

1. Friedlander MH. Ocular allergy. In: Middleton E, Reed CE, Ellis EF, Adkinson NF, Yunginger JW, Busse WW, editors. Allergy: principles and practice. St Louis, Mosby, MO: 1993:1649.
2. Ciprandi G, Buscaglia S, Cerqueti PM, Canonica GW. Drug treatment of allergic conjunctivitis: a review of the evidence. *Drugs* 1992;43(2):154-76.
3. Ciprandi G, Buscaglia S, Pesce GP, Villaggio B, Bagnasco M, Canonica GW. Allergic subjects express intercellular adhesion molecule-1 (ICAM-1 or CD54) on epithelial cells of conjunctiva after allergen challenge. *J Allergy Clin Immunol* 1993;91:783-91.
4. Ciprandi G, Tosca MA, Fasce L, Canonica GW. Allergen-specific conjunctival challenge in children with allergic asthma: a clinical tool. *Allergy* 1994;49:489-91.
5. Giovane AL, Bardare M, Passalacqua G, et al. A three-year double-blind placebo-controlled study with specific oral immunotherapy to *Dermatophagoides*: evidence of safety and efficacy in paediatric patients. *Clin Exp Allergy* 1994;24:53-9.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.