

Behaviour on the nasal provocation test in patients affected by conjunctivitis and/or asthma of allergic origin

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SUMMARY

*In the Allergo-Immunological Centre of Rome University we selected 120 patients of both sexes, ranging from 5-65 years of age, affected by asthma and/or conjunctivitis without past or present history of nasal impairment (itching, sneezing, hydrorrhea). As a result of the allergometric tests carried out, the authors divided the sample into three groups: 1) positive reaction to *Dermatophagoides Pteronissimus* (66,6%); 2) positive reaction to the Gramineae (28,3%); 3) positive reaction to *Parietaria officinalis* (5,1%). After having undergone the rhinoreomanometric test of nasal provocation, 50% of the patients revealed a positive reaction to the specific allergen, more specifically at 50 PNU/ml 40% of the case were positive, and at 100 PNU/ml 50% were positive. These results are discussed in the light of modern biological knowledge on the mastocytes in normal subjects and in those suffering from allergy.*

It is well known that atopy is based on an antigen-antibody reaction which takes place through specific immunoglobulins, the IgE or reagins, able to link not only with the antigens but also to the receptors of the mastocytes and of the basophiles.

However, the IgE are part of the antibody pool circulating in all individuals and furthermore in numerous atopics it is impossible to reveal the presence of specific antigens in the bloodstream and in the skin (Brostoff, 1975); on the other hand, some subjects even though they possess these cutaneous and circulating specific reagins, fail to present symptoms that would suggest the presence of allergy (Bryant et al., 1973). Numerous surveys have brought to light the fact that the number of subjects in a normal population with positive reactions to the common skin tests used in allergometry, is noticeably greater than those individuals in the same sample group who present significant clinical manifestations (Curran and Goldman, 1961; Whitcomb, 1971; Godfrey and Griffiths, 1976).

The synthesis of the IgE on the part of the plasma cells (Ishizaka and Tada, 1970) comes about at a level with the superficial lymphatic structures, and more precisely with the mucus and the regional lymphatic structures such as tonsils, adenoids and regional lymph nodes. In experiments carried out by Mayrhofer (1977) it was noticed that in the tract infested by *Nyctopostongylus Brasiliensis*, relative to a production of specific and aspecific IgE in the regional lymph nodes there was a corresponding proliferation of mastocytes in the mucus in contact with the ex-

ternal atmosphere onto which the specific IgE attach themselves; therefore the disponibility of the mastocytes depends on atmospheric stimuli and factors, so the presence of the IgE on the mucus and in the secretions should be considered a consequence of the surfacing of the mastocytes on the mucous membranes followed by their disintegration. In other words according to this hypothesis it is a local concentration of IgE and not a local synthesis.

MATERIALS AND METHODS

In order to confirm in man the results already obtained in the rat, that is that local allergic symptomatology in reply to a stimulus able to provoke such a reaction, depends on the raised level of local concentration of the specific IgE, the authors picked out, from the patients attending the Allergo-Immunological Centre of Rome University, 120 subjects of both sexes, ranging from 5-65 years of age, divided into three groups according to the positive skin reactions to pollens of the graminacee group (28.3%), to *Parietaria Officinalis* (5.1%) and to *Dermatophagoides Pteronissimus* (66.6%).

These patients had no history of nasal impairment such as itching, sneezing and hydrorrhea relative to natural exposition to the allergen diagnosed, and showed only asthma and/or conjunctivitis.

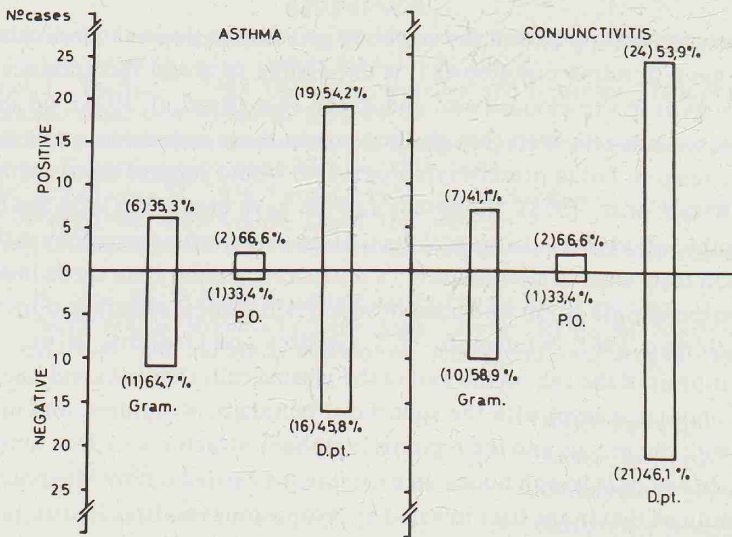


Figure 1. Incidence of positivity or negativity to the RRM test of nasal provocation in 120 patients affected by asthma and/or conjunctivitis.

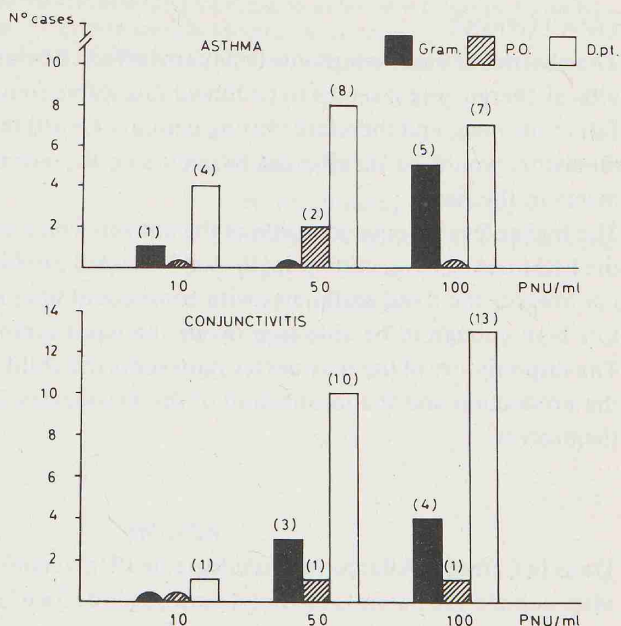


Figure 2.
Positivity of threshold values to the test of nasal provocation in 60 patients with asthma and/or conjunctivitis.

In particular the asthma affected 47% of the subjects who revealed positive skin reactions to graminacee, 50% for P.O. and 43.8% for D.Pt.; the relative frequency of conjunctivitis was respectively 53.5%, 50% and 56.2% for each group. The patients of all three groups then underwent the rhinoreomanometric test (RRM) of nasal provocation according to the method described by Crifò et al. in 1975.

RESULTS

The analysis of the patient's responses to the RRM of nasal provocation brought to light that in 50% of the patients taken into consideration (60 patients) there was a positive result, even though these subjects had never suffered from symptoms of nasal allergy.

More specifically (Figure 1) as far as the asthmatic patients are concerned there was a positive reaction in 35.3% of the cases with allergy to Graminacee, 66.6% of those with positive skin reactions to P.O. and 54.2% for the D.Pt.

Furthermore, obtaining the positive threshold values for the RRM test of nasal provocation enabled us to show that 10% of the patients had a positive reaction at a concentration level of the allergen of 10 PNU/ml, 40% at 50 PNU/ml and 50% at 100 PNU/ml; therefore a positivity of 90% was to be seen for higher concentration levels (50-100 PNU/ml) (Figure 2).

CONCLUSIONS

The absence of nasal symptoms in patients affected by asthma and/or conjunctivitis of allergic origin seems to be linked to a scarce concentration of the specific IgE in the nose, and therefore, during natural exposition, the freeing of chemical mediators would be insufficient to overcome the normal homeostatic mechanisms in the nose.

The higher level of concentration of the antigen which comes about by means of the RRM nasal provocation test (50–100 PNU/ml) can favour a greater disponibility towards the fixed antibodies with consequent liberation of chemical mediators high enough to be able to provoke the nasal symptoms otherwise absent. The disponibility of the mastocytes represents the ability to react for the IgE and the production and the localization of the mastocytes are tightly linked among themselves.

RÉSUMÉ

Dans le Centre d'Allergo-Immunologie de l'Université de Rome les auteurs ont sélectionnée 120 patients des deux sexes, âgés de 5 à 65 ans, qui présentaient une asthme et/ou une conjonctivite allergique avec anamnèse négative pour le symptôme nasals (démangeaison, éternuements, hydorrhée).

Sur la base des tests cutanés les A.A. ont divisé les patients en 3 groups: 1) cuti-positifs au Dermatophagoides Pteronyssinus (66,6%); 2) cuti-positifs aux Graminacées (28,3%); 3) cuti-positifs à la Parietarie Officinalis (5,1%).

Après avoir pratiqué le test de provocation nasal avec une RRM-ant., le 50% des patients présentaient une réaction positive à l'allergène spécifique: le 40% des ces à 50 PNU/ml et le 50% des ces à 100 PNU/ml. Les A.A. commentent les résultats à la lumière des modernes connaissances sur les mastzellens dans des subjects normals et dans des subjects atteints d'allergie.

REFERENCES

1. Brostoff, J., 1975: Local IgE antibodies in allergic rhinitis. *Lancet*, 2, 618.
2. Bryant, D. H., Burns, M. W., Lazarus, I., 1973: New type of allergic asthma due to IgE reaginic antibody. *Brit. Med. J.*, 4, 589.
3. Crifò, S., Filiaci, F., Cittadini, S., De Seta, E., 1975: Rhino-reo-manometric (RRM) nasal provocation. *Rhinol.*, 13, 135.
4. Curran, W., Goldman, G., 1961: The incidence of immediately reacting allergy skin tests in normal adult population. *Ann. Intern. Med.*, 55, 777.
5. Godfrey, R., Griffiths, M., 1976: The prevalence of immediate positive skin tests to Dermatophagoides pteronissimus and grass pollen in schoolchildren. *Clinical Allergy*, 6, 79.
6. Ishizaka, K., Tada, T., 1970: Distribution of E forming cells lymphoid tissues of the human and monkey. *J. Immunol.*, 104, 377.

7. Mayrhofer, G., 1977: Sites of synthesis and localization of IgE in rats infested with *Nippostrongylus brasiliensis*. Elsevier-Excerpta Medica, Amsterdam.
8. Whitcomb, N., 1971: Incidence of positive skin tests among medical students. *Ann. Allergy*, 29, 67.

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