

# The diagnostic value of intranasal tests in allergic rhinopathy

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## SUMMARY

*The method of the intranasal test, used by us, is described. It consists in a direct application of the allergen, which is presumed after a pilot-skin-test. The resulting reaction is documented by rhinomanometry. The special technical aspects of the test and the sources of error are emphasized.*

NASAL allergy is certainly one of the most frequent diseases an otorhinolaryngologist is confronted with in his daily practice. Prerequisite to the diagnosis of an allergy is the identification of the respective allergen. If this allergen is identified, in many cases a successful treatment by specific desensitization is possible (Naumann, 1961; Kober, 1972 and Enzmann, 1974).

The most frequently used diagnostic methods are skin-tests like epicutaneous, intracutaneous- or Prick-Test. These tests can be used even in cases of inhalative allergy. It is well known, that their results, especially in nasal allergy, are often poor. This is not surprising, regarding the fact that in allergic rhinopathy not the skin, but the nasal mucosa is the reacting organ. For this reason, there have been quite a few attempts to overcome these difficulties by testing the nasal mucosa itself. On the other hand, the direct testing of the mucosa causes special problems and as a consequence this technique is not yet widely spread. For example, the intranasal-test can be performed with just one substance at a time. Intranasal-testing would so become a very time consuming and expensive method. We avoid this difficulty by performing first one of the skin-tests as a pilot-test. Usually we take the intracutaneous or the Prick-test. Immediately afterwards follows the direct application of the so suspected allergen. If the nasal mucosa shows a reaction corresponding to that of the skin-test, we know that the responsible allergen is found.

Another problem is the method of applying the suspected substance. Earlier investigations have been done for example with allergen-spray. One source of error lies here in the possibility that the substance does not reach the nasal mucosa in the necessary concentration. Another difficulty is, that the allergen does not only enter the nasal cavity, but even the deeper part of the respiratory tract, causing strong allergic reactions and leading to severe general symptoms (Naumann et al., 1969).

If the substance is applied directly to the nasal mucosa, an unspecific irritation

of the tissue can be caused, which leads to a false-positive interpretation of the test. Furthermore, in earlier investigation a documentation and objectification of the mucosal reaction was hardly possible. A real progress was made by the development of an efficient rhinomanometry-equipment (v. Arensschild, 1966; Fischer, 1967 and Masing, 1967).

The following conditions have to be observed, when intranasal testing is expected to give exact results:

The suspected allergen has to be brought to the nasal mucosa in an adequate concentration and without mechanical irritation of the mucosa. The resulting reaction of the mucosa should be well documented by means of rhinomanometry. Our personal technique in a suspected allergy of the nose is the following: first of all an extensive and careful record of the history of the disease is taken. After that, the patient is checked clinically and an anterior rhinomanometry of both sides of the nose follows. A Prick-test with the allergens in question is the next step. If there is a positive reaction with one of the test-substances, intranasal-testing takes place: The minimal concentration of the allergen solution, which led to a positive reaction in the skin-test, is used. 2 drops of this allergen-solution are brought with a glass-stick to the head of the lower turbinate of one side. A direct touching of the mucosa with the glass-stick has to be avoided. In the same way, physiological NaCl-solution is brought to the turbinate of the contralateral side as a control.

Signs of a positive reaction, which usually occurs within 5—10 minutes, are: Sneezing and hypersecretion; swelling and discoloring of the turbinate-mucosa, sometimes together with increased conjunctival injection and strong secretion of tears. In some cases with strong reactions even an edema of the homolateral nasopharynx can be seen.

This reaction is documented by a second rhinomanometry after 15 minutes. The allergic reaction itself disappears within 60 minutes. For this reason, we usually perform a third rhinomanometry after 45 minutes to be sure, that the reaction decreases. We never saw accidents like an anaphylactic shock. As this indeed could happen, the necessary medicaments have to be prepared. Besides, one has to be sure, that the patient did not take any anti-allergic drug at the time of the testing. Especially he so-called depot-corticosteroids suppress the allergic reaction of the intranasal test still after days. Patients, who had taken depot-corticosteroids, had a negative test reaction, while at a second performance after 5 weeks the test showed a positive result and an allergic disease could be proved.

Finally, we have to point out, that in cases with weak reactions the swelling of the mucosa during the normal nasal cyclus should not be mistaken for a positive reaction. In order to differentiate between the two, one has to observe the results of rhinomanometry carefully: In allergic reactions, the total resistance of the nose is always greater than before starting the test. In cases, when the nasal cyclus is responsible for the rhinomanometric result, the resistance of the not tested nasal cavity is lower than in the beginning, so that the total resistance is not higher than before starting the test.

According to our experiences, all patients with pollinosis, which showed a positive skin — reaction, had a positive mucosal reaction as well. In some rare cases however, it is possible, that this relation does not exist, for instance when there is a delayed type allergy in pollinosis as described in the literature (Wüthrich et al., 1974).

About 10% of the patients with a non-specific nasal allergy, which had a positive skin-reaction, showed a negative intranasal-test-reaction. On the other hand, we had some cases of house-dust-allergy, in which skin-testing was without result, while intranasal-testing gave a positive answer. Huggins and Brostoff (1975) report this possibility as well. This underlines the above mentioned limitations of the value of skin-testing in nasal-allergy as well as the necessity of a thorough exploration of the patient, concerning his allergic symptoms.

The expenditure of a sufficient allergy-diagnosis is very high and takes a lot of time for the patient as well as for the doctor. But before a more expensive desensitisation is started, an intranasaltest should always be performed to make sure of the actuality of a presumed allergen.

#### ZUSAMMENFASSUNG

Die Methodik des von uns benutzten Intranasaltestes wird beschrieben. Sie beruht auf einer direkten Auftragung eines nach vorausgegangenem Hauttest vermuteten Allergens auf die Schleimhaut der Nasenmuschel einer Seite. Die eintretende Reaktion wird rhinomanometrisch dokumentiert. Die besonderen technischen Aspekte und die Fehlerquellen des Testes werden dargestellt.

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