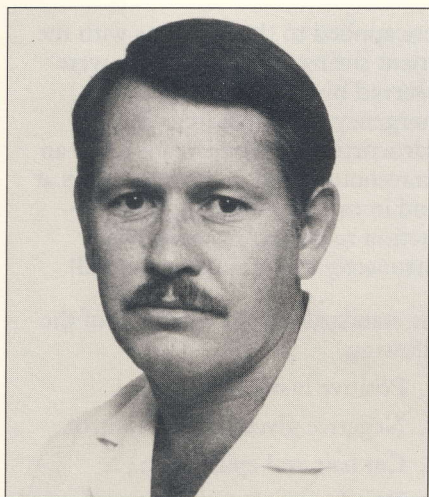


Skin Testing with Inhaled Allergens: A Family Physician's Experience – Dr RJE Erasmus



Dr RJE Erasmus

MBChB MPraxMed (Pret)
Dept of Family Medicine
Medunsa
Philadelphia Hospital
PO Box 1
Dennilton
1030

Curriculum vitae

Dr Bobby Erasmus het in 1974 die MBChB graad aan die Universiteit van Pretoria behaal. Vanaf 1976 - 81 was hy in huisartspraktijk in Springs, daarna werksaam in Durnacol en vanaf 1983-9 is hy in huisartspraktijk in Randburg. Behaal die MPrax Med kwalifikasie aan UP in 1980 en is tans besig met 'n doktorsale proefskrif in Huisartskunde aan UP getitel: Rolverwagting en rolvervulling in Huisartspraktijk in Suid-Afrika. Hy is lid van die Akademie vir Huisartspraktijk/Primêresorg en ondervoorsitter van die uitvoerende komitee van die Nasionale Algemene Praktisynsgroep van die Mediese Vereniging van Suid-Afrika. Sy belangstelling lê in akademiese huisartskunde, die rol van die privaat huisarts en die verbetering van die beeld van die huisarts. Hy is tans senior huisarts in die departement huisartskunde, Medunsa en woon in Groblersdal.

Summary

In an all-white family practice in the north-western suburbs of Johannesburg, a skin testing survey with inhaled allergens was done during 1988. The testing procedure, standard kit, advantages of skin testing and the findings are given and discussed. The results of this experience show a high proportion of patients presenting with recurrent upper respiratory tract infections had a positive reaction to skin tests. Age and sex factors made a difference and it also showed that skin testing with common inhaled allergens is a safe and cost effective procedure.

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KEYWORDS:

Skin Tests; Allergens;
Hypersensitivity; Respiratory
Tract Infections; Physicians,
Family

Skin testing with solutions containing inhaled allergens remains the investigation of choice to determine the cause of upper respiratory tract allergy manifesting as allergic rhinitis and conjunctivitis,¹ and in this article the experience of a family physician in private practice with skin testing is described.

The incidence of allergic rhinitis in the general population is estimated at 10-20%,² while Weinberg estimates that more than 20% of the paediatric population is effected by allergens and that allergy plays a role in about 40% of patients in a typical paediatric practice.³

Allergy or atopy is currently defined

as an inherited ability to produce immunoglobulin-E (IgE) antibodies against small quantities of allergens in the atmosphere as a result of normal exposure, and manifests as allergic rhinitis, allergic asthma, infantile eczema, urticaria or a combination of these conditions.⁴ Immunoglobulin-E plays a decisive role in the pathogenesis of allergic conditions and illnesses and it is now possible to determine IgE antibodies quantitatively against specific antigens.

Atopy must be considered in patients, especially children, with repeated attacks of upper and lower respiratory tract infections, gastrointestinal symptoms like diarrhoea and abdominal pain, and dermatological problems.⁵

While the family history and clinical findings may suggest allergic disease, confirmation of the diagnoses of atopy requires the demonstration of specific IgE antibodies to an environmental allergen by skin testing or specific *in vitro* IgE determination. At present the measurement of the total IgE level in the blood is widely used as an *in vitro* screening test for an atopic diathesis when patients present with non-specific upper respiratory tract disease or asthma.⁶ While this is a useful test,⁷ it has its limitations when used in populations where parasitic infestation is common.

The skin testing procedure

Skin testing involves the application of an allergen (or different allergens) to the skin, most conveniently on the flexor side of the forearm, by placing a small drop of the test solution next to each other on pre-marked sites at least 3cm apart, and then a lancet is placed through the drop of extract

... Skin Testing

into the skin at a 45 degree angle, after which the lancet is withdrawn. As an alternative, especially in younger children, the skin testing solution can be applied on the skin of the back.

The reaction of the patient to the allergen is read after 20 minutes and the reactions are assessed according to the degree of erythema and the size of the wheal produced after

Atopy should be considered in children with repeated attacks of respiratory tract infections

allowing for any positive response to the glycerosaline negative control. The positive histamine control is used as a 4+ reading, regardless of the size of the wheal. The rest of the reactions are read in comparison to the positive histamine control, ranging from a 4+ reaction as very sensitive to a 1+ reaction as slightly positive. It is important that these reactions are interpreted in conjunction with the history and clinical picture. Skin tests purely confirm the clinical diagnosis.

The advantages of skin testing

1. Simplicity.
2. Speed.
3. Cost effectiveness.
4. Many tests may be done in one session.
5. Positive tests correlate with the clinical picture.
6. Little discomfort for the patient.

Method

All white patients seen in a family practice in the north-western suburbs

of Johannesburg during 1988, presenting with more than three episodes of colds or non-specific upper respiratory tract infections during any one season, were subjected to skin testing with solutions containing inhalant allergens.

A complete medical history was taken from every patient, with particular emphasis on a family history of atopy, followed by an examination of the upper and lower respiratory tract and the skin. Findings of allergy included turbinate hypertrophy, serous otitis media, tenderness of the paranasal sinuses to pressure or percussion, pus and mucus in the nose and/or throat and tonsillar hypertrophy.

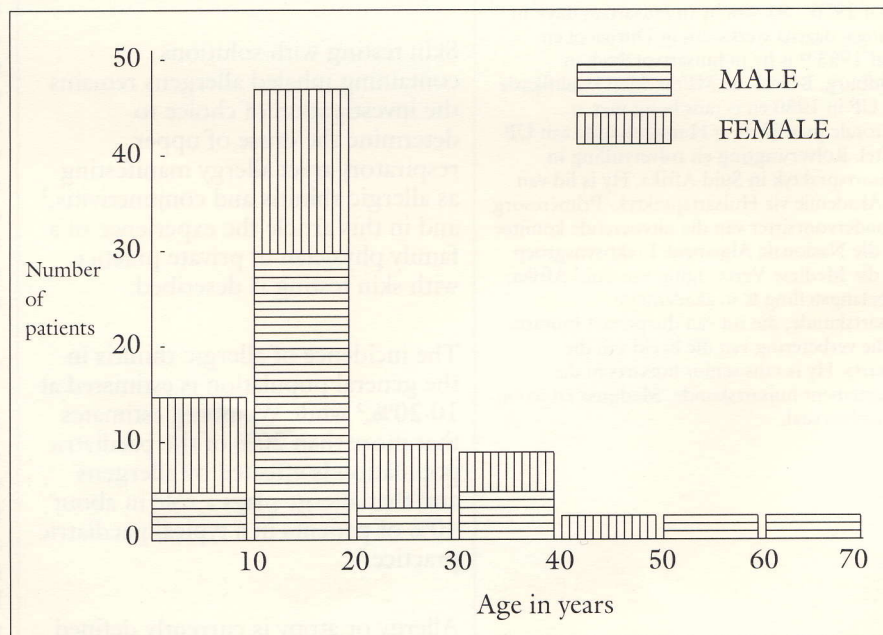
The skin tests were performed by the author with the standard kit of *Dome Glycerinated Skin Testing Solutions* (Bayer-Miles). The allergen solutions

were applied to the forearms with the patient sitting, and all patients were observed by the author. An emergency set with adrenalin, hydrocortisone, antihistamine and an intravenous infusion set was always at hand in case of an anaphylactic reaction requiring resuscitation. Fortunately this was never needed!

The standard test kit consisted of the following.

1. Positive histamine control.
2. Negative glycerosaline control.
3. Cat hair and epithelium.
4. Dog hair and epithelium.
5. Feathers.
6. Five grass pollen mixture.
7. Bermuda grass pollen.
8. Zea mays (Maize pollen).
9. Tree pollen.
10. House dust mite.

Figure 1. Age distribution



... Skin Testing

Prior to performing the test, every patient was informed about the reasons why the test was done and the procedure was explained. No patient refused to undergo the test.

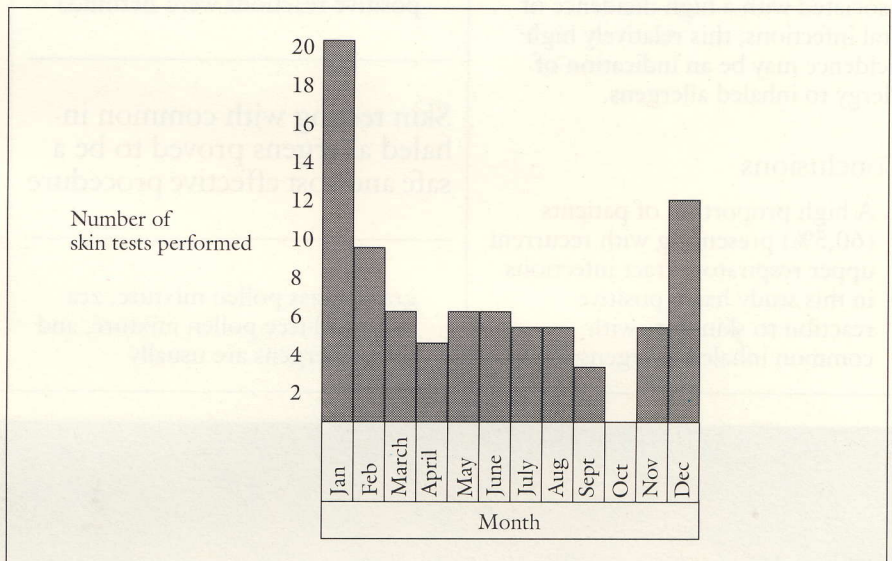
The skin tests were performed on 81 patients, 39 (48,1%) females and 42 (51,9%) males with mean age 18,7 years (range: 5-64 years).

60,5% of patients with recurrent upper respiratory tract infections, had a positive reaction to skin tests

Results

Forty nine (49) of the patients (60,5%) who underwent the skin testing procedures had a positive reaction to at least one allergen and the following allergens were responsible for the majority of the reactions.

Figure 3 Number of skin tests performed per month



Bermuda grass - 45 (94%) patients

Grass pollen mixture - 41 (83,7%) patients

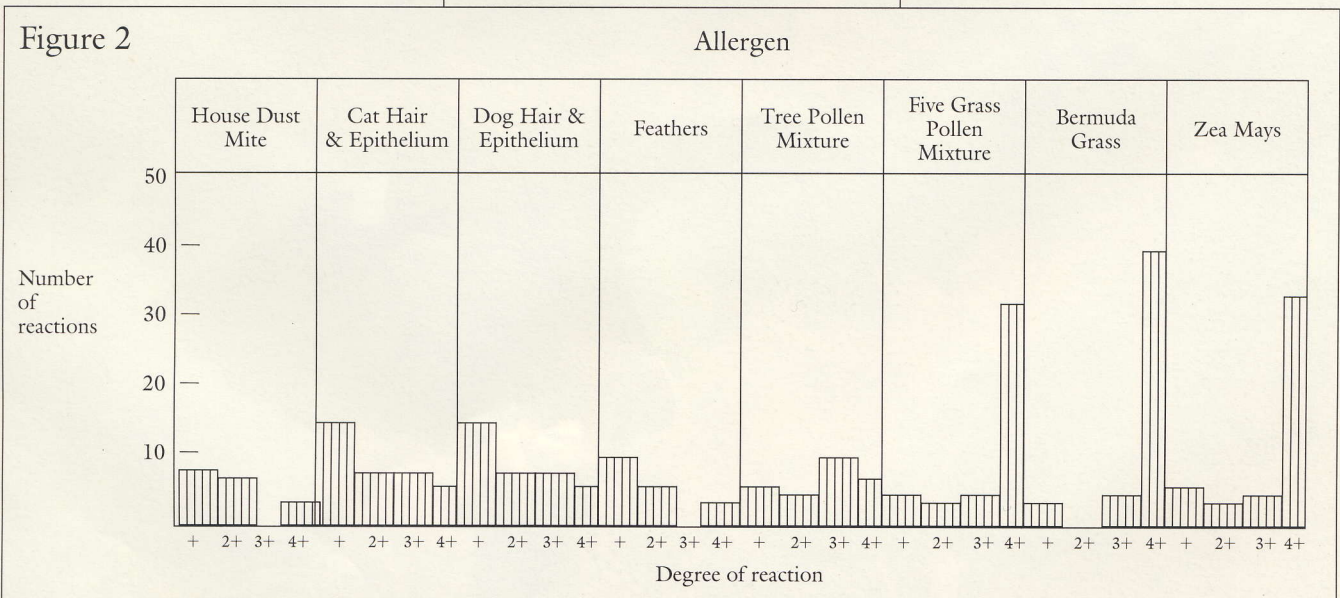
Zea mays - 41 (83,7%) patients

Tree pollen mixture - 31 (63%) patients

(More than one positive reaction were observed in most patients).

During the months of November, December, January and February skin tests were performed on 46 patients (56,8%) presenting with recurrent upper respiratory tract infections, and

Figure 2



... Skin Testing

although this period is usually not associated with a high incidence of viral infections, this relatively high incidence may be an indication of allergy to inhaled allergens.

Conclusions

1. A high proportion of patients (60,5%) presenting with recurrent upper respiratory tract infections in this study had a positive reaction to skin tests with common inhaled allergens.

2. The allergens causing the majority positive reactions were Bermuda

Skin testing with common inhaled allergens proved to be a safe and cost effective procedure

grass, grass pollen mixture, zea mays and tree pollen mixture, and these allergens are usually

confined to summer and autumn. House dust mite, cat hair and epithelium and dog hair and epithelium caused very few positive reactions.

3. Although an age-sex register of the practice was not available, it seems from this study that most allergies causing symptoms occurred during the second decade of life, with males being affected almost twice as often as females in this group.



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4. Skin testing with common inhaled allergens is a safe and cost effective procedure, and it is recommended as one of the first investigations to be performed on patients presenting with recurrent upper respiratory tract infections.

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