

PROBLEMS IN THE PRACTICE OF ALLERGY*

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An increasing interest in the subject of allergy is developing in South Africa. Discussion and country-wide correspondence with medical men through the years has revealed eagerness to acquire a knowledge of the specific approach to the allergic patient. Nevertheless, there still exists considerable misconception of the theoretical and practical aspects of allergy. Sometimes the outlook on allergy matters is rather mechanically routine; this inevitably leads to diagnostic inaccuracies and therapeutic disappointments. Not infrequently a patient is sent with a brief note: 'This patient has asthma. Please test and make a vaccine'. This, indeed, is a naive view of what asthma is and reflects a lack of understanding of the kaleidoscopic pattern of exogenous and endogenous factors that may be involved in allergic disorders.

The incidence of allergic conditions in the community is constantly increasing, not only because of the likely transmission of inheritable allergic tendencies, but also because of the increased opportunity for sensitization. Sensitivity reactions may occur in various industrial processes, and in the widespread use of antibiotics and drugs, and of plastics and other synthetic products.

There is little doubt that it would be to the advantage of medical students if more time and opportunity were made available to them to become better acquainted with the theory and practice of allergy. Since allergy involves an understanding of immunological principles, a sound basic knowledge of immunology should be acquired in the pre-clinical years, followed later by instruction in the field of clinical allergy. There is a great need as well for properly staffed and equipped allergy clinics in the larger hospitals and certainly in the teaching hospitals. It is not enough to have a department where skin testing and desensitization procedures are carried out by non-medical, or even medical, staff who are but superficially acquainted with, or only casually interested in, allergy. With a proper allergy clinic conducted in cooperation with the physicians, otorhinolaryngologists, paediatricians, dermatologists and other specialists of the hospital, much more could be accomplished for the patients. In addition, however, students in their pre- and postgraduate years would have invaluable facilities for making contact under guidance with patients with all types and stages of allergic complaints.

Careful history-taking, based on a sound knowledge of medicine, is essential in the diagnosis and treatment of allergic patients. It is, of course, of the utmost importance to ensure, first of all, by thorough physical examination, the absence of any organic or other type of defect which might account for the patient's symptoms. For this pur-

pose there may be need for special investigations of the nose and accessory sinuses and of the chest, employing X-ray examination, if indicated. Laboratory aid may have to be invoked in the study of the nasal secretions or sputum for pathogenic organisms, pus cells or eosinophils. A blood count is frequently of help in deciding if a condition is of allergic origin, if it is remembered that eosinophilia may also occur in conditions not related to hypersensitivity. Stool and urine examinations may be required to determine the presence of associated bacterial or parasitic invasion.

In a true allergic condition symptoms are due to an antigen-antibody reaction mechanism resulting in the liberation of histamine or histamine-like substances. Nevertheless, effects similar to those in vasomotor rhinitis, asthma, or even certain skin and gastro-intestinal conditions, may follow vasomotor imbalance from physical causes as well as from infection, hormonal disorders and emotional stress. In confirming the allergic origin of a patient's condition, the following differences between allergic and infective vasomotor rhinitis¹ may be helpful:

	Allergic	Infective
Onset	Sudden	Gradual
Sneezing	+++	±
Itching of nose	+++	±
Nasal discharge	Watery, mucoid, profuse	Thick, mucopurulent
Nasal congestion	Present	Marked
Constitutional symptoms	No	Yes
Attacks	Multiple, recurrent or constant	Occasional, free between attacks
Improvement with adrenaline or antihistamines	Yes	No
Associated allergies and allergic family history	Yes	Not necessarily
Allergic skin reactions	Yes	No
Nasal mucous membrane	Pale, oedematous	Hyperaemic
Blood eosinophilia	Likely to be present	Absent

RESPIRATORY ALLERGY

When the classical respiratory allergy symptoms of hay fever, vasomotor rhinitis, or asthma are present, diagnosis is a simple matter. All too often, however, especially in children, the so-called minor respiratory conditions—frequent or continuous 'colds', congested or running nose, sniffing, and postnasal drip—are not thought of as being allergic in origin. As a result these are regarded as infections and treated with antibiotics and drugs. Many 'sinus' conditions and repeated attacks of bronchitis fall

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into the same category. Of course, antibiotic and drug medication are of value if superimposed infection has occurred, but the fundamental allergic state must be treated. If that is done properly the chances of recurrence of symptoms are minimized. Nasal polyps usually indicate a basic allergic condition, especially if they recur after removal, although possible psychogenic factors cannot be ignored.

Experience has shown that the removal of tonsils and adenoids is not of benefit in the control of respiratory allergy in children. The indications for tonsillectomy, well summarized in a recent discussion,² include repeated attacks of tonsillitis and continued ill-health from focal sepsis. "The case for adenoidectomy is much stronger because adenoids may cause considerable postnasal obstruction, postnasal discharge, cough at night and nasal speech."² The need for careful differential diagnosis in such conditions so closely simulating respiratory allergy is obvious.

Respiratory allergic states may be divided into those that have a seasonal character and those in which the symptoms are perennial, i.e. not limited to any particular time of the year. The usual cause of seasonal hay fever and asthma is the inhalation of pollens from plants flowering in that season. A knowledge of the pollination periods of local plants is essential for a true evaluation of the specific aetiological agents involved.

Seasonal Respiratory Allergy

In South Africa summer respiratory allergy is very common, especially in the grasslands of the highveld.² Grass pollination extends from October to March, with a maximum incidence in January and February. A patient whose symptoms are confined to that period will almost certainly prove to be grass-pollen sensitive. It must be borne in mind, however, especially where the skin test is negative, that since peaches, plums, apricots and grapes become available in the summer, sensitivity to these fruits may be aetiological associated with the seasonal symptoms. A more unusual cause of summer respiratory allergy, more especially in patients working at or living near sewage works, is the inhalation of the fine dust resulting from the disintegration of the dry friable bodies of the dead psychoda (sewage flies)—the small flies which appear in large numbers at such works from October to March.⁴

Species of the compositae group of plants, representing the garden flowers of the 'daisy' type, pollinate throughout the year. Cosmos and khaki weed flower in the late summer (March and April), while the veld varieties make their colourful show in the Cape in the spring (September and October). Compositae pollinosis, however, is not an important condition, but may occur in gardeners, florists and other persons in close contact with the flowers. Symptoms appearing in the spring (August-October) are due to tree pollens, and spring sufferers should be submitted to confirmatory skin tests for sensitivity, especially to the pollens of poplar, plane and oak trees. The cypress tree flowers from May to October and occasionally produces hay fever in this winter-spring period.⁵ The pollen of the prosopis tree is responsible for hay fever and asthma in certain parts of South West Africa where it

occurs.⁶ In South Africa, however, the prosopis is found in relatively small numbers, but should be thought of in the parts of the Cape Province, Orange Free State and the Transvaal where it is known to grow.

Non-seasonal Respiratory Allergy

This has a diverse aetiology and may be associated with exogenous or endogenous factors or both. Among the exogenous factors are 'inhalant' substances in the patient's vicinity—commonly feathers, the hair and dander of domestic animals, and house dust. Occupational dusts may be responsible for vasomotor rhinitis, asthma and even forms of dermatitis in farmers, millers and others who handle cereals⁷ or lucerne,⁸ or in woodworkers from the inhalation of specific wood dusts.^{9,10} It should not be forgotten that sensitivity to foods often gives rise to symptoms of respiratory allergy.

Sensitivity to air-borne fungi may have to be considered in patients living at the coast, near water-courses, in damp houses, or in homes with cellars or thatched roofs, and in those who come into contact with moulds in greenhouses or during horticultural or agricultural activities. Sensitization to fungi sometimes occurs from the use of old coir or other mattresses.¹¹ The commoner atmospheric fungi in South Africa consist mainly of species of *cladosporium*, *alternaria*, *epicoccum*, *penicillium*, *phoma* and yeasts.¹² Their extracts are available for skin testing to confirm the suspicion of possible fungus sensitivity. On the other hand, positive skin reactions to fungi are frequently obtained, but in the absence of other evidence should not be interpreted as necessarily reflecting corresponding clinical sensitivities. The meaning of such skin reactions is at present under investigation. Patients sometimes complain of nasal or chest symptoms from the inhalation of road dust while driving, or of tobacco or fireplace smoke, or from contact with the fumes of petrol, turpentine, paint, perfume or other odours. These are not true allergens, but the symptoms of rhinorrhoea, nasal congestion, sneezing and even asthma probably result from their irritant effect on a basically allergic mucosa. There is generally a reduction or disappearance of symptoms from these causes if the allergic condition is brought under control.

SKIN TESTING

Skin testing has a definite place in the diagnosis of allergic conditions, but its usefulness as a diagnostic tool depends upon the understanding of its indications and limitations. Skin testing does not necessarily provide a diagnosis, nor does desensitization based on skin-test reactions necessarily constitute treatment. If relied on as a routine, or if haphazardly carried out in the approach to allergy patients, therapeutic frustration will result and these procedures will unjustly be brought into disrepute. The scepticism about, or even frank condemnation of, their value which is sometimes heard indicates a lack of comprehension of their role in allergy control. Skin testing, when indicated, must be carried out with technical correctness, and should follow a carefully-taken history for clues about the possible exogenous factors involved.

The number of extracts representing all possible inhalant, food and other allergens significant in different

patients is almost infinite. The decision concerning the test-extracts to be employed in a particular case rests with the physician after close study of his patient. Experience has shown that preliminary skin tests with the commoner inhalant substances—local pollens (according to season), animal dander, feathers and house dust—are desirable, followed if necessary by tests with the extracts of less common substances which can be readily prepared to meet special indications. Occasionally, however, testing with a reasonable range of protein extracts in puzzling cases may itself lead to clues of clinical sensitivities worth following up.

Techniques

The usual skin-testing techniques involve the scratch and intradermal methods. It is wise to do scratch tests first to eliminate the possibility of severe reactions that might otherwise occur with the intradermal route in highly sensitive subjects. Scratch tests, giving a negative or insignificant reaction, are not necessarily indicative of absence of skin sensitivity to the material used and should be confirmed by the intradermal method, using not more than 0.02 ml. for the injection. If a scratch-test reaction is definitely positive a further test by the intradermal route should not be done.

The 'prick' test is sometimes used, where a drop of the extract is placed on the skin and lightly pricked through with a needle. The fluid is then wiped off and the minute amount of extract which has penetrated the tissue is sufficient to reveal a skin sensitivity. The severe reactions to skin tests sometimes complained of are the result of failure to carry out the preliminary screening scratch test or of the injection of too large a quantity of the extract in the intradermal test. It is advisable to withhold antihistamine drugs from patients for some 12 hours before they are skin tested.

Significance of Skin Reactions

Skin testing is carried out with sterile extracts suitably preserved and standardized. These tend to lose their allergenic potency with time and should therefore be kept cold and away from the light to maintain this potency for as long as possible, and, in any event, should be replaced every few months. A positive skin reaction consists of a weal 1 cm. or more in diameter, with or without pseudopodia.

The significance of each positive reaction must be sensibly assessed. For example, a person giving a positive reaction to cat hair, who can handle cats with impunity and allergic immunity and who in any event seldom meets a cat, obviously does not require to be desensitized against cats. Similarly, the person who shows a marked skin reaction to grass pollen, but only develops symptoms in winter, does not need desensitization against this essentially summer allergen.

The significance of skin reactions is not, however, always so simple. Thus, house dust often plays an important part in the symptoms of respiratory allergy, and the use of the extract in desensitization is warranted, although the indications for its use are not always clear-cut. This is well brought out in those cases of 'climate allergy' in which it appears that coastal house dust, a

more potent allergen than inland house dust, probably plays a part.^{13,14}

In every series of skin tests a test with control fluid, i.e. the fluid used in the preparation of the extract, should be done first. If this control reaction is positive it will be found that all the reactions with the other protein extracts used are similarly positive, indicating, not a multiple sensitivity, but the condition of dermatographia.

FOOD SENSITIVITY

The question of allergic sensitivity to foodstuffs is a rather complicated one, but deserving of more attention. Gastro-intestinal symptoms (colic, vomiting and diarrhoea) certainly, and often also even chest symptoms and skin conditions, should lead to consideration of food intolerance if an organic basis for these conditions has not been elicited. The occurrence of these symptoms when breast-feeding has partly or wholly given place to cow's milk, cereals and fruit juices, should be a warning against the persistence of such feeding and should encourage trials with substitute foods. The importance of food allergy in patients with upper or lower respiratory-tract symptoms is frequently overlooked.

The diagnosis of food allergy may be so simple a matter that the patient himself lists the foods that produce the symptoms of his allergic complaint or symptoms of 'indigestion', indicating a type of intolerance. It may, however, be exceedingly difficult in cases where there are multiple food sensitivities or where symptoms are constantly present. Diagnosis of food sensitivities is best attempted by elimination diets in which certain foods under suspicion are omitted from the diet for periods of 3 weeks or longer and the effects of such omission are observed.

Skin testing for food sensitivity is by no means as reliable as that for 'inhalant' sensitivity. A patient is often clinically sensitive to certain foodstuffs but not so according to skin tests, and *vice versa*. Nevertheless, where the aetiological diagnosis is unduly difficult, the patient may be submitted to food tests with advantage. The most that can then be said is that the foods giving positive reactions should be regarded with suspicion, and trial elimination of these foods from the diet should be recommended. It must be made clear, however, that food tests, even more than inhalant tests, should be regarded as a means to supplement and not displace clinical judgment. They should, as far as possible, be confirmed by trial diets, and the patient should only be deprived of a suspected foodstuff on the basis of such a clinical trial.

CONTROL OF ALLERGIC CONDITIONS

The treatment of allergic conditions is fundamentally a clinical matter, where immediate symptoms need to be controlled by drug or other therapy, and the necessary steps taken to prevent the recurrence of symptoms by rendering the patient able to withstand the responsible provocative agents. Unlike specific diseases where a single agent invades a susceptible host, the 'allergens' in the patient with hypersensitivity responses may be many and varied. The whole medical armamentarium often needs to be brought to bear on allergic conditions, which

may defy control by routine techniques in a busy practice.

The vasomotor changes that characterize respiratory, as well as skin and gastro-intestinal allergies, may be partly or wholly associated with endogenous factors—physical, infective, hormonal and psychological—which should not fail to receive consideration in the evaluation of the occurrence and persistence of symptoms.

The aggravation of symptoms during the menstrual or pre-menstrual period or in pregnancy, should be enquired into. Almost the whole range of 'allergic' symptoms may be provoked by psychological stresses in some persons with or without an accompanying true allergenic factor. A sympathetic hearing of the patient's story, more readily revealed in an unrushed atmosphere of calm, will not infrequently expose the emotional factors contributing to, aggravating or even initiating the symptoms. In general, it is wise to regard symptoms of allergy, particularly in the absence of simple exogenous factors, as a *pattern of reaction to life and living*. With that view in mind, the patient's personality (consisting of the physical and emotional self), and his domestic, occupational and social circumstances, will come to be carefully evaluated.

When the clinical history, confirmed by the results of skin tests, points to a definite exogenous factor in the condition, two therapeutic approaches are possible—the avoidance of the incriminated substance or desensitization against its effects. The former is easy if it means merely the avoidance of animal or feather contact or of certain foodstuffs, but becomes well-nigh impossible when the inhalants are those with the universality of atmospheric pollens, fungi or house dust. It is not practicable to attempt to persuade a patient to give up his cabinet-making business or cereal mill or store because he is sensitive to wood dust or to cereals. It is obvious that in these circumstances desensitization is necessary. In short, allergic desensitization is indicated when the aetiological agent has been accurately defined, but cannot ordinarily be avoided. Often even when avoidable, as in sensitivity to cats or dogs, desensitization should be recommended because of the patient's liability to develop symptoms when in the homes of other people who keep these pets. It is always important to specify precisely how the attempt at avoidance is to be made. Thus, if feather dust is to be eliminated from the patient's environment, he must be instructed to use kapok or foam-rubber pillows and to replace the eiderdowns with blankets or to encase them in plastic or other dust-proof material. It is generally forgotten that similar attention should be paid to these articles on the bed of anyone sharing the room.

DESENSITIZATION

The results of desensitization with the correct allergens and the recommended techniques are very satisfactory. It must be remembered, however, that any associated sensitivities and endogenous factors which are present should be attended to simultaneously.

Desensitizing with a combination of all the extracts which have given a positive skin reaction is asking for therapeutic failure. It is unlikely that a patient is *clinically* sensitive to the multiple and varied proteins that might have produced positive skin reactions. The inclusion of a large number of extracts merely means that those of

clinical significance will be diluted by those which are not.

Persons with hay fever symptoms, strictly confined to the summer, giving positive reactions to grass pollen nevertheless often show marked reactions to other test substances. The history, as always, provides the guide, and desensitization to grass pollen is sufficient even though the other positive-reacting substances seem to cry out for inclusion!

Desensitization Technique

The usual methods of desensitization are by the subcutaneous and the intradermal routes. The intradermal method has been found highly satisfactory in South Africa and the details and advantages of this method have been fully described.²⁵ The aim of desensitization is to increase the state of hyposensitization gradually until the patient is rendered symptom-free. This state is generally reached when the full-strength extract can be administered with nothing more than a local reaction of a wheal 1-2 cm. in diameter. An important point in the intradermal desensitization technique is that, once the full-strength extract is reached, the intervals between injections are slowly increased until the patient is finally receiving a 'booster' or maintenance dose of the extract every 6-10 weeks. If this is not done in seasonal hay fever, then pre-seasonal desensitization may later on have to be recommended *de novo*.

Desensitization to Foodstuffs

Sensitivity to foodstuffs cannot be dealt with adequately by desensitization with their extracts. The results are not satisfactory and severe reactions, especially with eggs, fish, shell-fish and nuts may occur unless great care is taken. Desensitization by the method of injection of extracts is, however, warranted and very effective when symptoms are caused when the foodstuffs have been *inhaled*, e.g. wheat and other flours during baking, or maize, wheat, rye, and lucerne dusts during milling or handling. A judicious respect should be paid to the food dislikes of children manifesting allergic symptoms. Elimination of such foods from the diet for a few weeks may be worth while. In any event, the anxious mother with her intense absorption in the child's eating what is 'good for him' should be dissuaded from coercing or even coaxing him to eat these foods for the trial period. An allergic basis should be considered when investigating the physical and psychological causes of 'behaviour problems' in children. The control of an underlying food or other allergy sometimes beneficially changes the child's social conduct.

Desensitization to foods is best attempted by complete abstinence for a prolonged period, after which sensitivity is generally diminished or lost. The method of oral desensitization is sometimes effective, where gradually increasing quantities of the allergenic foods are taken until tolerance to them is acquired. The patient should be given explicit instructions concerning what he may or may not eat, e.g. a patient told to omit 'milk' will dutifully do so, but it may not occur to him also to avoid cheese, ice cream, milk puddings, etc. Similarly, an instruction to avoid cocoa might not convey to the patient the necessity also of omitting chocolate and chocolate-flavoured drinks. While

the cereals constituting 'porridge' generally refer to oatmeal, mealie meal (maize) or kaffir corn ('maltabela'), the term 'cereals' to many means only those products which come in large highly-decorated cardboard packets.

Suitable diets should be worked out for patients for whom certain foods have to be eliminated and which have come under suspicion either during the diet-trial or in the subsequent feeding when the allergenic effects of particular foods have been confirmed. A food diary could be kept in which the patient himself or the parent of the child patient records the foods eaten in the 24 hours preceding an allergic episode. When a number of such entries are compared, specific foods taken during these periods may obviously be incriminated as the responsible agents. The result of specific food elimination may sometimes be quite dramatic, but the search for the responsible factor is often a long and tedious one both for doctor and patient. The reason is probably that a relatively mild food sensitivity, hardly producing symptoms under ordinary circumstances, may develop into allergic manifestations when pollens, fungi, house dust, feathers or animal dander are at the same time inhaled by a patient specifically sensitive to these substances. Difficulties may also arise when mild, though multiple, food sensitivity is present, or under conditions of physical or emotional stress. In other words, the allergen may not be a single food at all, but only one element in the aetiological mosaic.

SKIN ALLERGY

Skin conditions encountered in practice may have an allergic basis, and due consideration should be given to this aspect at least in eczema and 'dermatitis'. Infantile eczema commencing when a breast-fed baby has been put on cow's milk, cereals or fruit juices, generally reflects a sensitivity to one or other of these foods. If this fact is not recognized and the giving of such foods is persisted in, the infantile eczema may disappear after a year or two, but in many cases allergic symptoms, first of the upper and subsequently of the lower respiratory tract, will follow.

The approach to, and the difficulties encountered in, urticaria have previously been discussed.¹⁶ Urticaria, particularly of the chronic type, may prove specially trying aetiological and therapeutically and, like the perennial types of upper and lower respiratory conditions occurring as a vasomotor manifestation, there may be no true allergic basis for the condition. The diagnosis of contact dermatitis is not generally difficult, and frequently the patient himself knows that the skin lesions occur at the site of contact with metallic articles, jewellery, plastic materials, nylon, wood, cosmetics, plants, fruit, etc.

Confirmatory skin testing in contact dermatitis by the injection of the corresponding extracts is not helpful. The diagnostic 'patch test' may be employed; here some of the suspected material is applied directly to the cleansed skin and held in position by 'elastoplast' for 24-48 hours. The occurrence of a local reaction of congestion or vesiculation, confined to the site of the patch, signifies a positive response. Desensitization by injecting an extract of the material hypodermically is of no value in contact dermatitis. Avoidance of contact constitutes the most effective control. In occupational contact dermatitis, however, the

use of barrier creams or other protective agents may have to be considered.

SUMMARY

While there is increasing interest in the subject of allergy in South Africa, considerable lack of appreciation of the underlying principles and appropriate techniques still prevails. It is suggested that more time and opportunity be made available to medical students to acquire the specific knowledge and skills required in the approach to the allergic patient, and that adequately equipped and properly staffed allergy clinics be established in the larger hospitals.

An attempt is made to deal with some of the problems and to resolve some of the difficulties which experience has shown to be most frequent in allergy diagnosis and control.

The importance of regarding allergic disorders as associated not necessarily with a single aetiological agent, but with a mosaic of possible factors—physical, infective, hormonal and psychological—is emphasized. In other words, the symptoms of allergy, particularly in the absence of a simple exogenous agent, could with advantage be thought of as a *pattern of reaction to life and living*. If that is done there will be less chance of overlooking the causative factors that might lie in the patient's personality, and his domestic, social and occupational circumstances.

The principal allergic conditions are discussed and mention is made of those not generally recognized as having an allergic origin—frequent or constant 'colds', types of 'sinusitis', and repeated attacks of 'bronchitis', as well as various skin conditions.

The place of skin-testing and desensitization in the control of allergic conditions is discussed, and consideration is given to the difficulties that may be encountered in skin-testing methods; materials and scope; the significance of reactions; and the avoidance of severe reactions. The indications for desensitization are discussed, as well as the extract constituents required and the techniques advocated.

The pollination times of the more important local plants are given in explanation of seasonal respiratory allergy symptoms. Atmospheric fungus sensitivity is described and the significance of positive fungus skin reactions is evaluated.

The more unusual sensitizations likely to be met with in South Africa are referred to, including wood dusts, cereal and lucerne dusts, and the sewage fly (psychoda).

The part played by foods in allergic conditions is discussed, as well the use of trial and elimination diets in diagnosis and control.

The diagnosis and control of the allergic factors in certain skin conditions is considered, more especially with regard to eczema, urticaria and contact dermatitis.

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