THE INTERRELATION OF ALLERGY AND OTOLARYNGOLOGY

W. V. MULLIN

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Allergy, defined by Pirquet[1] as altered reactivity of cells and tissues, is perhaps the most popular term used to define a large group of unpleasant symptoms affecting about 10 per cent of our population. The word atopy, meaning "strange disease," used by Coca and Cooke[2] to describe these symptoms, is very appropriate, for a strange disease it surely is. The term "vasomotor rhinitis" hardly describes the disease, and if cases thus designated are carefully and properly studied, some specific cause for the symptoms can usually be discovered. Although much that has been said about allergy is purely theoretical, many facts, based on practical observations and experience, are known. I shall not offer any discussion of the theories regarding this disease, but shall confine myself to a consideration of these known facts, especially as they pertain to the joint field of the internist and the otolaryngologist. Too often skin tests alone are relied on for a diagnosis and as an index to treatment, without sufficient consideration of the role of the sinuses in the production of the symptoms and of their relation to the treatment.

For this reason, although allergy may affect the cells of any part of the body and produce symptoms referable thereto, the symptoms of chief concern in this paper are those that involve the nose, the sinuses and the tracheobronchial tree.

There is a marked tendency for the disease to occur in a child whose mother and father are both allergic; in such a case the symptoms are more marked, and the treatment is accordingly more difficult. The choice of the right treatment and its success will depend on proper diagnosis, and there is no short route to diagnosis. A definite plan of examination must be followed in every case. A detailed and carefully elicited history is absolutely essential. This should include the family history, a description of the patient's environment and the time at which the first symptoms were noticed. If these symptoms are more marked at night or early in the morning, something in the patient's room or home should be suspected as the cause. If they are worse during the day, something in the patient's occupation may be the causative factor. If symptoms are first noticed during the summer months, the pollens should be sus-

pected. The patient should be asked whether relief has ever been secured by changing his environment. The history alone may determine what protein substance should be suspected.

Next to the history and symptoms, the appearance of the nasal mucosa is important. It will be found to be peculiarly pale and edematous, and when once this sign is fixed in the mind's eye of the examiner, its appearance will always make him suspicious of the presence of allergy. It must also be kept in mind that the appearance of the mucosa over the turbinals and the septum is an indication of the condition of the membrane that lines the sinuses, and therefore the sinuses should be examined carefully. The condition of the sinus mucosa may be due to allergy, and a secondary purulent infection may exist on the surface and in the cavity of the sinus. This is particularly true of cases of long standing. An x-ray picture of the sinus may be misleading if it has been taken during an attack of allergy, and it may not indicate accurately the true thickness of the mucosa, as Proetz[3] has so well demonstrated. By means of the injection of iodized poppy seed oil 40 per cent, Proetz showed a case in which the antral membrane, which had previously been normal in thickness, became thickened a few hours after the patient had suffered an attack of asthma, almost obliterating the sinus cavity.

On the roentgenogram, the allergic membrane may look as if a cyst or polyp were present. I have records of cases in which edema of the nasal mucosa was seen; the membrane fell into folds and gave the characteristic appearance of early polyp formation. On roentgen examination, the maxillary sinuses were found to be opaque and appeared as if granulations were present. I have seen the entire membrane return to its normal appearance and the sinuses become clear as the result of the elimination of the foreign protein, which in one case proved to be derived from feathers.

The next step in the examination should be the skin test, which should be made by one who is especially trained in this work. The proper interpretation of reactions is essential. By referring to the carefully recorded history of the patient, the necessity for a large number of tests may be greatly reduced. Entire reliance should not be placed on the skin reactions, for, as has been indicated, they constitute only one part of the examination. Scratch tests should be made first, and if the reactions are negative, intradermal tests should be made. If positive reactions are obtained that coincide with the history and environment of the patient, and if the symptoms of allergy disappear, when he is not allowed to come in contact with the offending proteins, what could be more satisfactory?

But one must be prepared for the following conditions: The skin may be allergic and other parts of the body may escape sensitization, or the reverse may be true; the nasal and bronchial mucosa may be sensitive while the skin is not. In some cases the skin may be hypersensitive and may show multiple reactions even to substances to which the patient is never exposed. This is particularly true in regard to pollens.

The skin tests may be positive when the patient is symptom-free. The patient who presents a typical history and symptoms of allergy and whose reaction to skin tests is negative presents a difficult problem. If on examination of the nasal secretions eosinophils are found in abundance, and if the blood shows eosinophils amounting to more than 4 per cent, the probability that allergy is present is increased. The examination of the stained blood smear for eosinophils must be made by one who is well trained in this procedure.

In the cases studied by my associates and myself we have confirmed the ether reaction of the urine described by Barber and Oriel,[4] which consists of the finding of a proteose substance in the urine during the acute or paroxysmal stage of allergic conditions. However, I do not find that this test can be relied on sufficiently for it to have any diagnostic value.

In the course of the examination, time should be taken to explain to the patient what allergy really is, what a difficult problem it presents, that improvement is not easily attained, and that therefore he must become interested in his own problem, study his own environment and cooperate in every way with the physician. If no positive reactions are found and no infection is found in the sinuses, it may be necessary to resort to eliminative diets.

Every allergist should have a sufficient knowledge of botany to be able to advise his patient how, when and where he can avoid the wind-borne pollens to which he is sensitive, for he must either do this or be made immune to them by treatment. That bacteria and their products cause sensitization and allergic reactions is questioned by some. I believe that they do, for I have seen cases in which I have felt sure that the teeth and sinuses were responsible. In this connection, the following case is presented.

Report of a Case

A middle-aged woman had nasal obstruction due to a typical allergic condition of the nasal mucosa. A feeling of tightness in the chest was gradually developing, and a few asthmatic symptoms were present. All skin tests, both scratch and intradermal, gave negative results. The eosinophil count amounted to 6 per cent, and the nasal

secretion showed many eosinophils. A roentgen examination of the sinuses showed the left maxillary sinus to be completely opaque, and the presence of a large cyst or polyp was suspected. Cultures from the nasal secretion were made, and a group of nondescript organisms was found. The patient was tested with an antigen made from these organisms, and the reaction was negative. The left antrum was washed, and only a small amount of secretion was obtained, from which a culture was made and Streptococcus was grown. The patient was tested with this antigen, and no reaction was obtained. A culture was likewise made from the stool, and a negative reaction was obtained. The left maxillary sinus was operated on by making an opening through the canine fossa, and a large cyst was exposed, the contents of which were aspirated and implanted on Rosenow's brain broth; the cultures, however, were sterile. A portion of the cyst wall was then implanted on the brain broth, and a streptococcus was grown. When the patient was tested with an antigen made from this streptococcus, the reaction of the skin was positive.

Comment

This case bears out a statement that I have made that from an absorptive standpoint the infection within the lining membrane of the sinus is more important than the free pus within the cavities of the sinus.

All cases of bronchial asthma are not due to allergy. A review of 315 cases of bronchial asthma studied at the Cleveland Clinic showed that allergy was present in 164; in 97 definite, proved infection was present in the nasal accessory sinuses, and in 54 there was neither allergy nor infection in the sinuses. In this unclassified group, some nervous reflex was believed to be present which imparted undue stimulation to the vagus nerve and the sympathetic nervous system, thus accounting for the asthmatic paroxysms.

It is conceivable that if the nasal and sinus mucosa is allergic for a long period of time, it will become infected and degenerate. The decision as to when an operation should be performed on an allergic sinus always calls for good judgment. If the cause for the allergy is found and eliminated, does the membrane have the power to restore its function? If it has this power, operation should not be performed. In early cases of allergy, operation should not be resorted to until every possible effort has been made to find the cause of the allergy and to remove it. In patients who cannot be relieved from their symptoms as long as their sinuses are filled with infected membrane, operation should be performed. If it is felt that the sensitivity is due to bacteria, operation should be performed.

In some cases of our series, vaccines seemed to be of benefit, cultures being taken from the infected sinus. In bronchial asthma, a culture is also taken from the tracheobronchial tree. Whether these vaccines act in a specific manner or as a foreign protein is a question that I am unable to answer. At the Cleveland Clinic all of the cases have been studied as to the possibility of an endocrine dysfunction, and no basis for glandular extract therapy has been found. The same statement holds true in regard to calcium.

In conclusion, it may be stated that allergy presents an increasingly perplexing problem which required combined study by the otolaryngologist and the internist and the utmost cooperation on the part of the patient.

References

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