

## NUTRITIONAL ALLERGY IN CHILDREN\*

by

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The increasing consideration being given to allergy in the diagnosis and treatment of various diseases justifies, if justification be necessary, repeated reminders of its value. The word allergy was coined by Pirquet in 1905 and was defined by him as a state of "altered reactivity"<sup>1</sup>. Wolff-Eisner<sup>2</sup> in 1907 states that urticaria belongs to the group of manifestations resulting from hypersensitiveness to proteins. Schloss<sup>3</sup> in 1912 applied food proteins to the skins of patients and showed that the removal of reacting foods benefited cases of giant urticaria, eczema, asthma and certain gastro-intestinal disturbances. Blackfan<sup>4</sup>, Talbot<sup>5</sup>, Walker<sup>6</sup>, Piness<sup>7</sup>, Rowe<sup>8</sup> and others have since definitely established protein allergy as the etiologic factor in a number of diseases.

The present attitude toward food as a cause of disease is well expressed by Funck<sup>9</sup>, "The most deadly poison most frequently administered is the daily food". He believes that the basis of allergic nutritive conditions is faulty absorption from the gastro-intestinal tract and damage to the liver, so that partially-digested proteins are absorbed without being completely catabolized. In a carefully controlled study of ninety-eight cases of marasmus Anderson and Schloss<sup>10</sup> showed that artificially fed infants absorb foreign protein during periods of diarrhea and that such absorption is followed by the appearance in the blood of a specific precipitin and the anaphylactic antibody.

The application of allergy in a practical way to the patient who presents either definite or indefinite symptoms is what interests us as practitioners of the healing art. A careful family and personal history with allergy in mind is the first significant step. We have become tuberculous and cancerous minded in history-taking but not allergic minded. The presence of asthma, hayfever or eczema within two generations of the patient is definitely suggestive. Cooke<sup>11</sup> reports a series of cases in which 48 per cent gave a positive family history; Piness and Miller<sup>12</sup>, 41 per cent. If with an inherited predisposition there is also a history of eczema or of digestive trouble in infancy, allergy should be carefully considered.

It was our privilege to visit the allergy clinics of California recently. Special mention should be given the public and private clinics of George Piness in Los Angeles and the clinic of Albert H. Rowe in Oakland. The allergy research now in progress at the University of California Medical School promises solution of certain perplexing problems.

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## SYMPTOMS

Symptoms referable to allergy group themselves around the portions of the body affected:

(1) HEAD: (a) Recurrent migraine is an inviting field for allergic study. The eyes are often overblamed for headaches. If biliousness be considered a cathartic is too often given and the real cause allowed to go on undiscovered. (b) Conjunctivitis, coryza, naso-pharyngeal and sinus congestion may be due to, or aggravated by, protein hypersensitiveness. Repeated attacks of acute coryza are often due to allergy and when this is corrected the sufferer remains free from the so-called "head-colds".

(2) CHEST: Bronchitis, bronchial asthma, asthma. Peshkin<sup>13</sup> states that food allergy is a less frequent cause of these affections in children than pollen and animal emanations but is never-the-less often the only factor or at least a complicating one. An annual roentgenogram of a child's chest may reveal unsuspected bronchial thickenings of allergic origin.

(3) ABDOMEN: (a) Gastro-intestinal conditions: Colic, vomiting, nausea, distress, distention, diarrhea and constipation. Laroche<sup>14</sup> and Rowe<sup>15</sup> have especially emphasized these conditions as resulting from allergy. Many of our difficult feeding cases in children are in allergic individuals and their food idiosyncracies are protective in nature. We may consider ourselves very fortunate in having methods of determining whether a food dislike is psychologic or physiologic.

(b) Eneuresis: As this condition is primarily a neurosis food sensitization may be a contributory or exciting cause. A recent patient of ours, four years old, with nocturnal eneuresis, showed positive skin tests to milk, wheat, oatmeal, and eggs. When these were eliminated the eneuresis disappeared within ten days. Unfortunately, not all cases recover so readily.

(4) SKIN: Urticaria, eczema, dermatitis, erythema, intertrigo, chafing and angioneurotic edema should be investigated from the standpoint of food allergy. O'Keefe<sup>16</sup> and Shannon<sup>17</sup> have shown that the eczematous breast-fed baby is benefited by removing from his mother's diet those foods to which the baby gives positive skin reactions. At present only a small proportion of the children suffering from these various skin diseases are given the advantages of allergy tests.

(5) GENERAL CONSTITUTIONAL CONDITIONS: Many general conditions of unknown cause have been traced to allergy. Probably many more will be when the skin tests are more universally used. Fevers of undetermined origin are occasionally associated with allergy.

It is reasonable to postulate an increased resistance to pathologic bacteria concomitant with the improvement in health which so frequently follows a properly adjusted diet.

## DIAGNOSIS

The diagnosis of allergy in those cases where the history is negative or indeterminate must rest upon protein skin tests or diet tests or both. With over two hundred proteins available, together with the simplified methods of making special extracts for certain cases, one can readily determine a patient's skin reactivity. We have given over three hundred tests to some of our patients. As many as fifty tests at a sitting have been made in an infant fourteen months old without untoward results. Generally, however, from one to two dozen tests per sitting are preferable. If the scratch test gives unsatisfactory results, then intracutaneous injections or passive transfer tests may be made. Different workers report that from 20 to 50 per cent of allergic individuals do not give positive skin responses to all the proteins to which they are sensitive. Hence, dietetic tests of various kinds have been developed. The "Elimination diet" of Rowe<sup>18</sup> is a scientific method of omitting the foods which experience shows are the most frequent causes of trouble.

## TREATMENT

The treatment of allergic conditions is simple if the offending proteins can be definitely determined. Desensitization is best accomplished in the case of foods by omitting from the diet for a prolonged period all those proteins to which the person is susceptible. Re-testing should be done before such foods are again added to the diet. With pollens and animal emanations desensitization is best accomplished by means of properly diluted antigens. We have successfully desensitized a case of allergy to eggwhite by hypodermic injections but this is not the method of choice and should be used only in unusually hypersensitive cases where it is impracticable to remove all egg-containing foods from the diet.

A review of our own cases shows that previous to the beginning of this year we have treated one hundred and two allergic infants and children. Our results in this group, including asthma and hayfever cases under treatment for more than one season, shows over 90 per cent cured or improved. Others have obtained equally good results with children but no one has reported anything like as favorable results with adults.

This is one reason why physicians handling children should strive to find and to treat all cases of allergy. When these same patients are older, the hypersensitiveness becomes so involved with bacterial invasions that its eradication is difficult if not impossible.

## CASE REPORTS

A few illustrative cases will emphasize some of the more important points:

## 1. ECZEMA:

F. H., No. 2714, born of healthy parents and breast-fed till ten months of age, was seen by us when fifteen months old. The family history indicated no asthma, hayfever or eczema. The complaint was eczema extending from cheeks to knees. He was treated with external applications and the eczema gradually disappeared to reappear at three years of age. Skin tests were then made and he was found markedly sensitive to one of the foods that he loved best—celery. His mother stated that he would eat celery by the bunch. When this article of food was eliminated, the eczema disappeared. He is now six years old. Although he has had no celery for three years the scratch test is still positive for celery. There has been no recurrence of the eczema. A careful physical examination and roentgenograms reveal no evidence of allergy at the present time.

## 2. ECZEMA AND ASTHMA:

D. M., No. 1996, six weeks old, weighing seven pounds, was referred by Dr. Dora Underwood because of eczema of the scalp and face, intertrigo and a failure to gain in weight due to an insufficient quantity of breast milk. Omission of milk, eggs and oats from the mother's diet, together with suitable local treatment, gave gradual improvement. The boy was, of course, kept on the breast and manual expression utilized after each feeding. Three weeks later complementary feedings were unnecessary, as the mother's milk supply was adequate. This child was not seen again until five years old. The mother stated that she weaned the baby at four months, and shortly thereafter the eczema returned and lasted until eighteen months of age, when asthma appeared. She said that for three and one-half years she had been compelled to get up at least once at night on account of the child's asthma. Protein skin tests at this time (5 years of age) showed marked sensitiveness to eggs and nuts and moderate reactions to cow's milk, peas, onions, peanuts, wheat and oats, and to cat and rabbit hair. The offending foods were eliminated from his diet, and the child kept away from cat and rabbit hair. Ephedrine was prescribed for emergencies. In the year that has elapsed since the treatment was begun no asthmatic attacks have occurred and the child has become and remained apparently normal.

## 3. BRONCHIAL ASTHMA:

S. P., No. 3380, a well developed, undernourished boy, five years old; family history negative for tuberculosis, asthma and hayfever. Complaint: too short of breath to play like other children, wheezy breathing, frequent bronchitis and formerly hives. Trouble began

after an influenza attack three years before. Eggs eaten on two successive days caused vomiting. Over one hundred skin tests had already been made on him and the physician eliminated all reacting foods. This had cured his hives. As eggs had given a negative reaction, the doctor had included them in his list of allowed foods in spite of the history.

Our tests likewise proved negative for eggs and milk but positive for wheat, spinach, cat hair, pneumococci, pertussis and influenza bacilli. Roentgenographic study showed bronchial thickening on both sides extending to base and to apex. Diaphragmatic movements were normal. Inspiration produced marked sternal depression which was permitted by the presence of rachitic costomalacia. Respiration was noisy, labored and wheezing. Sibilant breath sounds and at times moist rales were noted.

Treatment consisted of a diet which eliminated all reacting foods, plus the suspected ones like milk and eggs. Ephedrine was prescribed for use during attacks. A subcutaneous blood transfusion of 16 ounces of paternal blood was given. Mixed respiratory and pertussis vaccines were administered. Ultra-violet irradiation was given sufficient to maintain a good coat of tan. Cod Liver oil and later acterol (12 drops daily) were administered. The severity of asthmatic attacks gradually decreased. His weight improved from  $39\frac{3}{4}$  pounds to 50 pounds in seven months. He was not entirely free from asthma but the infrequency of attacks and the prompt response to a single dose of adrenalin or ephedrine removed the parental worry. He had spent the best winter of his life and could run and play normally. The second winter under treatment has shown still greater clinical improvement. The mother reported that an occasional breaking of dietetic rules causes no noticeable reaction.

## 4. REPEATED COLDS AND URTICARIA:

L. G., No. 3137, a well developed girl, sixteen years old, was sent in with a diagnosis of erythema multiforme of nine months duration. At times the eyes would swell shut and lips and face become swollen and the joints swollen and painful. She reports that hives were produced by aspirin, tried twice, and by green apples and strawberries. Her history shows frequent "colds" since babyhood. Physical examination shows an acute coryza and pharyngitis and scattered patches of urticaria. Scratch tests gave positive reactions to wheat, lettuce, spinach, English walnut, strawberry, onion, pineapple, grapefruit, orange, egg and cocoa. Apples were negative, though known to cause urticaria. These foods were eliminated from her diet and a vaccine, prepared from the streptococci obtained from nose and throat, was administered. Recovery was so prompt as to suggest food allergy as the sole or the chief cause. During the succeeding fourteen months neither "colds" nor hives have been noted.

## COMMENT

Nutritional allergy is a much more frequent cause of children's ailments than is generally appreciated. Dislike of a certain food that is perhaps mistakenly considered a whim or a notion may be that child's instinctive method of self-protection. Forcing him to eat the food without first determining his allergic response to cutaneous tests can hardly be considered a square deal. The ancient truism that "One man's meat is another's poison" is worth keeping constantly in mind. Mild eczema in babies is too often passed by as insignificant, whereas it may be the precursor of hayfever or asthma in later life. Repeated respiratory infections and gastro-intestinal disturbances may have a deeper basis than is at first apparent. The treatment of allergy in children gives a much higher percentage of cures than can be obtained in adults. One thereby prevents much ill health, loss of time and invalidism.

## SUMMARY

1. Clinical and laboratory research of the past few years demonstrates that allergy is a fundamental cause of much ill health in both children and adults.

2. Protein skin tests by the scratch or intracutaneous methods or by passive transfer are of distinct scientific value in diagnosis, prognosis and treatment.

3. A review of one hundred and two cases of allergy in children occurring in private practice shows over 90 per cent cured or improved.

4. Typical case histories are given to illustrate some of the problems involved.

5. Treatment based on the results of skin reactivity alone will yield a lesser percentage of cures than when elimination diets are also utilized.

6. A personal or family history suggestive of allergy should arouse professional interest and pique one's diagnostic vanity.

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