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P. O. Box 3116
Jackson, Tennessee 38301

Food Allergy – The Great Masquerader

*William G. Crook, M.D.**

> Sit down before fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abyss nature leads, or you shall learn nothing.
>
> HUXLEY[30]

If you practice in an office, clinic, or hospital out-patient department, you'll see youngsters who look pale and show dark shadows under their eyes. In addition, many of these youngsters will sniff, snort, and clear their throats. And some of them will also complain of headache, stomach ache, and aching in their legs and other muscles.

You'll also see children whose parents bring them in for a check-up because a teacher may have complained, "Johnny is so tired and sluggish, I wonder if he's getting enough rest." And you'll see still other children whose mothers say, "Mike is so hyperactive and irritable; there are days when I simply can't stand him." Such children may also experience trouble in learning and in getting along with siblings, schoolmates and teachers. As a result, they may be labeled "dyslexic" or said to be suffering from "school phobia" or "minimal brain dysfunction."

Children with symptoms such as these have been described repeatedly in the medical literature for over 50 years.[4-6,8,10,12-14,24,29,38,39,44,47,48] Yet physicians differ considerably in their views as to the cause of their symptoms.[37] For example, in a period of less than 2 years, three separate articles appeared in *Pediatrics*[36,46,53] describing children with abdominal pain, headache, limb pain, fatigue, irritability, pallor, cough, and other systemic symptoms.

The author of each of these reports said, in effect, "We feel complaints of this sort are caused by some sort of functional or emotional disorder in the child. Some of these complaints are based in the constitution of the child; others are deeply rooted in the child's domestic environment; still others are said to be based on 'growing-up anxiety' experienced by the child who is reared by overprotective, oversolicitous, and overdependent parents, especially mothers."

However, the conclusions of the authors of these reports were challenged by a number of correspondents[3,7,8,15,33,45] who said, in effect,

*The Children's Clinic, Jackson, Tennessee

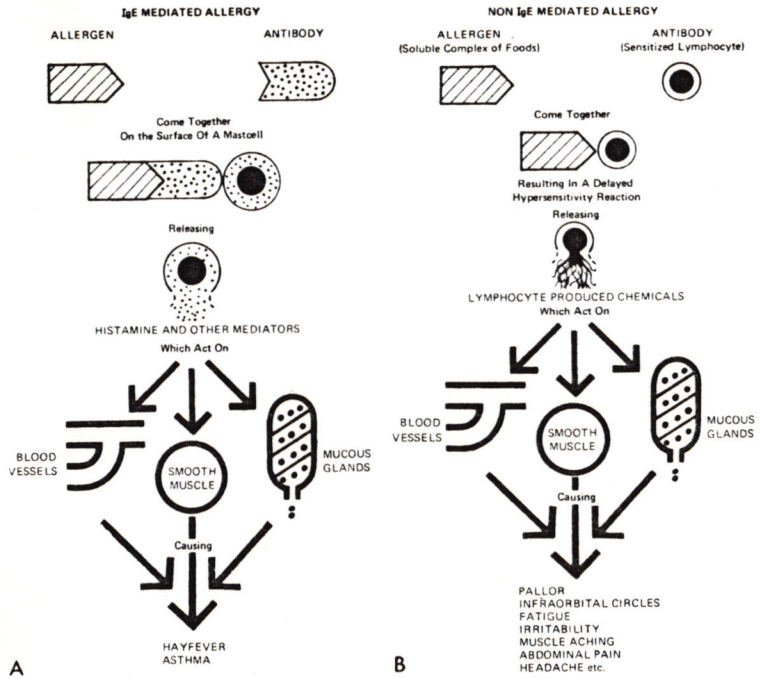

Figure 1. *A*, IgE mediated allergy commonly causes reactions in the respiratory tract. *B*, Non-IgE mediated allergy commonly causes more diffuse systemic reactions, producing symptoms in the nervous system, gastrointestinal tract, musculoskeletal system and elsewhere in the body. However (more often than generally recognized) IgE mediated allergy may cause systemic symptoms[1, 31, 52] (even when asthma and hayfever are minimal or absent). And non-IgE mediated food allergy may cause asthma[14] and allergic rhinitis.

"Before you blame these diverse systemic and nervous system symptoms on 'emotional' causes, you should eliminate the possibility of food allergy."

In my general pediatric practice during the past 20 years, I've seen many, many pale, tired, nervous children with headache, abdominal pain, leg ache, and other systemic symptoms. Although I found some of these children to be suffering from such conditions as improper nutrition, chronic infection, or a psychosomatic disorder, in over 4000 of these youngsters non-IgE mediated food allergy was the principal cause of their symptoms.

In the remainder of this article, I will describe and discuss the *allergic tension-fatigue syndrome* and some of the other common "allergy masquerades." However, before doing so, I want to talk about the term "allergy" and to discuss the controversy over the use of this term.

1. Group A physicians reserve the term "allergy" for those reactions in which immunologic mechanisms are known to be operative.[18] According to the often quoted Gell and Coombs classification, there are four immunologically distinct types of allergy. And (if you're in office practice)

the main immunologic type of allergy you can look for in your patients is Gell and Coombs Type I (reaginic IgE mediated allergy).

This sort of allergy is associated with immediate acting, positive skin tests and a positive Prausnitz-Kustner (PK) reaction. It characteristically causes asthma and hayfever due to inhalants. Less commonly, foods may cause this sort of allergy with symptoms of various sorts. In patients with this type of food allergy, skin tests are usually positive (Fig. 1*A*).

2. Group B physicians (whose beliefs I share) hold that allergy is a hypersensitivity to a specific substance (food, dust, pollen, etc.) which, in similar amounts, is harmless to most people. Although some types of allergy, such as asthma and hayfever due to grass pollen, are accompanied by positive skin tests, there are other types of allergy, especially hidden (masked or delayed onset) food allergy, which are not accompanied by positive skin tests.

This sort of allergy (also called nonreaginic or non-IgE mediated food allergy) causes symptoms in almost any and every part of the body. However, since the foods causing this type of allergy are usually those the patient eats every day, the relationship of the allergenic foods to the patient's illness is rarely suspected unless and until the physician actively searches for such a relationship.

The symptoms in both reaginic and nonreaginic allergy can be explained on the basis of: (a) smooth muscle spasm, (b) increased capillary permeability, and (c) overactivity of the mucus-secreting glands of the body.

Although the mechanism of nonreaginic or non-IgE mediated food allergy has not yet been demonstrated, Ellis[17] commented recently, "There's no reason why soluble complexes of food and antibody cannot be involved in some adverse food reactions. Furthermore, lymphocytes secrete all sorts of biologically-active soluble substances and therefore cell-mediated immune reactions may be present in patients with non-IgE mediated food allergy. In such patients, the symptoms may be due to some lymphocyte-produced chemical" (Fig. 1*B*).

COMMON ALLERGY MASQUERADES

The Allergic Tension-Fatigue Syndrome

According to Speer, this syndrome should be regarded as a primary disorder affecting the nervous system. He further pointed out that although this disorder can be caused by both inhalant and food allergy, it's more often caused by food allergy, especially delayed onset food allergy.

Speer divided the nervous system symptoms into two main groups, the *fatigue group* and the *tension group*. In addition, he pointed out that both the fatigue group of symptoms and the tension group have motor and sensory components (Table 1).

The allergic tension-fatigue syndrome may occur alone or it may be accompanied by other allergic syndromes, including asthma, hayfever, or eczema. Interestingly enough, these systemic and nervous system symptoms are often due to allergens different from those causing respiratory or skin allergies.

Table 1. *Symptoms and Signs of the Allergic Tension-Fatigue Syndrome**

Tension	Motor tension (hyperkinesis)	Overactivity, restlessness
		Clumsiness
		Poor manual behavior
		Inability to relax
	Sensory tension (irritability) (hyperesthesia)	Irritability
		Oversensitivity
		Insomnia
		Photophobia
		Hypersensitivity to pain, noise
Fatigue	Motor fatigue	Tiredness
		Achiness
	Sensory fatigue	Sluggishness
		Torpor
Associated systemic manifestations	Less common mental and nervous symptoms	Mental depression
		Feeling of unreality
		Bizarre and irrational behavior
		Paranoid ideas
		Inability to concentrate
		Nervous tics, paresthesias
	Almost invariably present	Pallor
		Infraorbital circles
		Nasal stuffiness
	Common, but not present in all patients	Infraorbital edema
		Increased salivation
		Increased sweating
		Abdominal pain
		Headache
		Enuresis

Reproduced from Speer, F.: The Allergic Child. New York, Hoeber, 1963, p. 333. Used with permission.

In addition to nervous system manifestations, children with the allergic tension-fatigue syndrome often show associated systemic manifestations, including especially pallor, nasal stuffiness, abdominal pain, headache, and limb pain.

FATIGUE SYMPTOMS. The child with *motor fatigue* seems to feel weak and tired. He may have to interrupt his play in order to rest. Youngsters even more severely affected are too tired to sit up at their desks in school and may ask for permission to lie down on the floor and rest.

Equally dramatic is the drowsiness and torpor of the child with *sensory fatigue*. Such a child is especially listless in the morning. His mother may have trouble waking him up; and awakened, he seems to be in a dream state. Children with this type of fatigue will often be found sleeping at home or at school, even though they've had plenty of sleep the night before.

In my experience, allergy is the commonest cause of otherwise unexplained fatigue in children. Although food is the usual cause of allergic fatigue, pollens and other allergens may also cause fatigue.

The English physician Charles Blackley,[1] during his classic experimental research on hayfever more than a hundred years ago, not only noted that accidental inhalation of pollen caused "a violent attack of sneezing" and a "copious discharge of thin serum" from his nose, but that in the course of a few hours he developed a "sense of weariness over the whole body."

Sternberg,[52] in 1942, reported a patient who experienced incapacitating somnolence and associated hypotension each year during ragweed pollen season, even though the patient showed no associated nasal or bronchial symptoms. The patient's symptoms subsided following treatment with pollen extract. This confirmed a previous report by Kahn.[31]

During my early years of practice, I was totally ignorant of the relationship of allergy to fatigue in children. When I finally became aware that such a relationship was possible, I began to look for these children. To my surprise, I found dozens of them among my regular patients.[5]

Many of these children had been tired for so many years their parents and I had accepted their inertia and listlessness as a "normal" part of their physical or emotional makeup. And I've been gratified dozens of times to have a parent come in and say, "Since I got milk and corn out of Johnny's diet, he's just a different child."

Naturally, before I conclude that the tired child suffers from allergy, I rule out anemia, chronic infection, endocrine disorders, rheumatic fever, and other causes of fatigue. And I've been thrilled by the number of pale, drowsy, tired, listless children whose entire outlook on life has changed when hidden food allergens were removed from the diet.

TENSION SYMPTOMS. "If Susie eats a food containing cane sugar or milk, she becomes so irritable you can't stay in the house with her. She can't sit still in the daytime and she rolls and bumps around in her bed at night. She won't mind and no matter what I do, I can't please her. When I take her off sugar and milk, she isn't the same child." So goes a typical description of the "hyper" symptoms manifested by many of my patients.

As with the allergic fatigue symptoms, the allergic tension or "hyper" symptoms fall into two main groups: Those involving *motor tension* and those involving *sensory tension*.

Typical of the motor symptoms of some of these children is their restlessness and constant state of activity. They fidget, twist, turn, grimace, jump, and jerk. They are often clumsy in using their voluntary muscles. They drop things, make noise, damage family possessions, and consequently bring on even more trouble for themselves.

The sensory tension symptoms of *irritability* and *inability to be pleased* are perhaps the most common in these children. These personality traits, when exhibited repeatedly, gain for the child the reputation of being spoiled. Parents often wonder just where they have failed.

The net result of this hyper group of symptoms is to make these unfortunate youngsters unpleasant little people to have around. This in turn causes them to be reprimanded and punished by parents and teachers and rejected or ignored by their siblings or contemporaries. Thus are planted the seeds of more trouble. And most of these children understandably develop secondary mental, emotional, and behavior problems (Fig. 2).

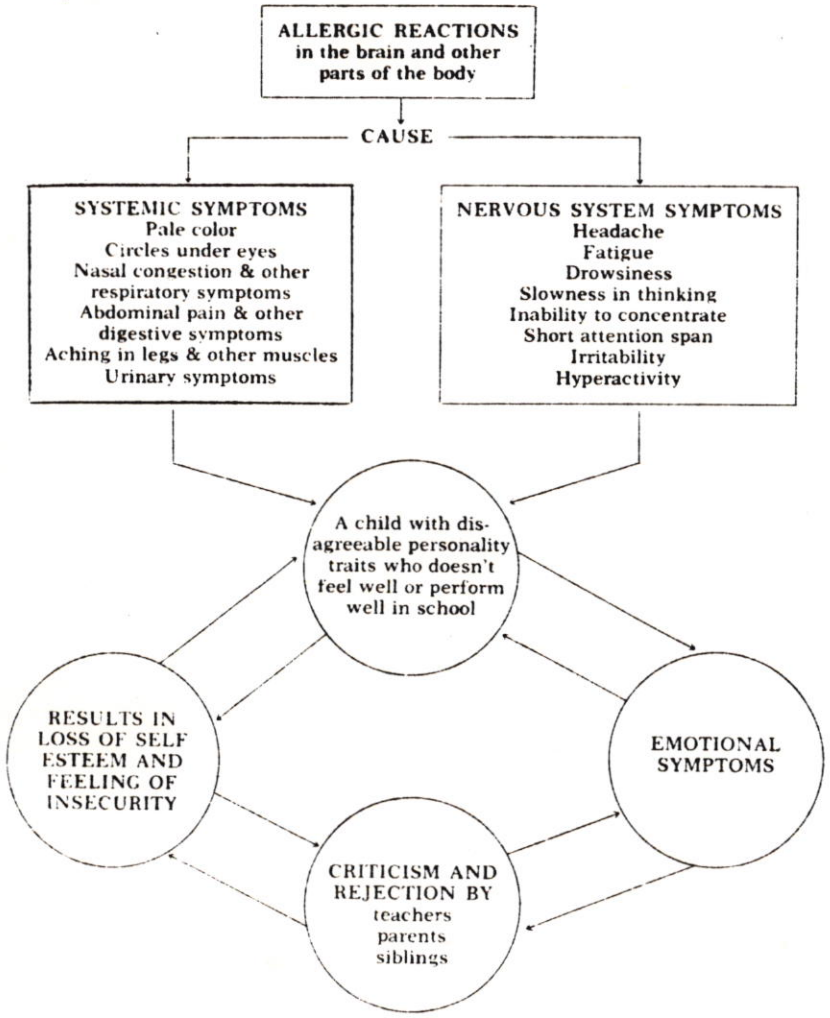

Figure 2 The relationship between systemic and nervous system allergy and emotional behavior and learning problems in children. (Reproduced from Crook, W. G.: Can Your Child Read? Is He Hyperactive? Jackson, Tenn., Pedicenter Press, 1975. Used with permission.)

Recurrent Abdominal Pain

A variety of disorders can make a child complain, "Mama, my stomach hurts." Included among these are emotional upsets, chronic infection, renal disease, intestinal parasites, and malignant disease.

Although such disorders, especially emotional upsets, can and do cause abdominal pain in children, in my experience a hidden food allergy is the commonest cause of this symptom. I'm especially apt to suspect food allergy in a child with abdominal pain if he looks pale and has circles under his eyes, and if his mother says, "Johnny is forever picking his nose.... I wonder if he has sinus. Also, he's often tired and irritable and complains of headache and aching in his legs."

Although I agree that lactose intolerance may cause abdominal pain and other digestive symptoms in both children and adults, I feel that when a child suffers from some of the systemic symptoms I've described which involve other parts of the body following milk ingestion, a true milk allergy exists.

Headaches

I see a lot of youngsters who complain of headache. Not infrequently, some of them have been to family physicians, ophthalmologists, otorhinolaryngologists, and neurologists. And when such children have been found to have normal blood pressure, normal sinus x-rays, normal skull x-rays and electroencephalogram, normal vision, and normal findings on physical and laboratory examination, either the mother or the physician is apt to conclude, "Johnny is complaining of headache to get attention. He must be suffering from an emotional problem."

I feel that many children who complain of headache are victims of allergy. Here's what seems to happen: Allergens of almost any sort, especially foods, rather than produce a rash, sneezing, or wheezing, can cause an allergic reaction within the head. A part of this allergic reaction is spasm and other changes which take place in the intracranial blood vessels. Extra fluid may leak out. The brain may swell. This may cause a dull ache or pain and throbbing. Glaser,[24] McGovern and Haywood,[35] and others[50, 51] acknowledge the important role of allergy in causing headaches in children.

Glaser[26] commented: "In adults, inhalants may cause migraine, but in children migraine is usually due to food. The characteristic thing about childhood migraine is that the child often has headache and stomach ache at the same time. Interestingly enough, as the child grows older, he is less apt to have abdominal pain with headache, but the headaches are apt to become more severe."

Leg Ache and Other Musculoskeletal Symptoms

A lot of people, especially older adults, suffer from arthritis of one sort or another, which may cause varying degrees of crippling. Perhaps even more people, including children, complain of milder degrees of muscle and joint pain. Obviously, many conditions and disorders can cause aching or swelling in muscles and joints, including orthopedic abnormalities, inadequate exercise, too much exercise without proper preconditioning, etc. But in my experience, a commonly overlooked cause of musculoskeletal discomfort is allergy.

Over 40 years ago, Rowe[44] described intermittent joint swelling caused by allergy. Randolph,[40] Speer,[48, 49] and Kaufman[32] have also described aching joints and muscles caused by allergy, especially food allergy. Bullock and Deamer[3] commented: "We've seen patients who have been diagnosed as 'rheumatic' because of leg ache and fever. One patient had a muscle biopsy because of leg ache and fatigability. The patient's symptoms disappeared following elimination of chocolate milk from the diet."

In my own practice, I've seen many patients with aching and even swelling in muscles and joints whose symptoms subsided following the

elimination of an allergenic food from the diet. Interestingly enough, in a number of these youngsters, a presumptive diagnosis of rheumatoid arthritis had been made before the allergic cause of the patient's symptoms became apparent.[9]

Bedwetting and Other Urinary Disturbances

If you're like most physicians, you rarely think of allergy when a child wets the bed, shows albumin in his urine, or suffers from repeated urinary tract infections. Yet, allergy can play a part in causing genitourinary disorders. And the medical literature contains a surprising number of reports documenting this relationship.[9] These include studies by Breneman[2] and Gerrard,[21] showing the relationship of allergy to bedwetting in children. Apparently, when some children eat a food they're sensitive to, the smooth muscle in the urinary bladder shows increased spasm. This makes the bladder smaller and keeps it from holding a normal amount of urine. When the bladder can't hold as much as is normal, the child will urinate more often during the day and may wet the bed at night.

Allergy may also play a much more important role than is commonly recognized in causing other disturbances of the urinary tract. For example, Harrison[27] and Gerrard[22] have speculated on the relationship of allergy to recurrent urinary tract infections in children. Matsumura[34] has documented the relationship of albuminuria, the cause of which was previously unknown or undetermined, to food allergy.

Allergy can also cause other types of genitourinary symptoms including vaginal discharge and urinary frequency. The causes of symptoms of this type include foods (including food coloring and additives) and contact sensitivity to bubble baths, soaps, and other irritants.

Respiratory Tract Disorders

I agree with Glaser[25] and Deamer[16] who feel that allergy of the respiratory tract almost always masquerades as respiratory tract "infection." Deamer listed some typical characteristics of allergic respiratory disease which often masquerade as infection: (1) Cold symptoms include frequent sneezing and itching of the nose. (2) The child tends to have a night cough which may persist for days and weeks at a time. (3) The child tends to cough on exertion and periodically comes down with attacks of bronchitis or pneumonia. (4) In spite of the child's coughs and sneezes, other family members do not seem to "catch the cold."

Heiner[28] and Gerrard[19, 20] have also stressed the importance of cow's milk allergy as a causative factor in recurrent bouts of respiratory disease in children, including bronchitis and pneumonia.

False Anemia

Anemic children look pale and sallow. So do children with such chronic disorders as malnutrition, nephrosis, and rheumatoid arthritis, even when they aren't anemic. In my experience, allergy is the commonest cause of pallor seen in pediatric office practice. Typically, the pallor is accompanied by circles under the eyes ("allergic shiners"). Although I don't know the mechanism of pallor in allergic children, I feel that increased capillary permeability causes leakage of fluid into the skin, giving the face a puffy, pale, pasty appearance.

Learning Problems

I feel that non-IgE mediated food allergy plays a crucial role in causing behavior and learning problems in children. Certainly, the sluggish, stuffy, drowsy child with a headache or stomach ache simply cannot perform well in school. Neither can an irritable, hyperactive child with a nervous system allergy. So children with systemic and nervous system allergy often do not perform well in school. As a result, they lose their self-confidence and self-esteem, and develop secondary emotional problems (see Fig. 2).

I don't intend to imply that allergy is the *only* cause of learning problems in children and the disturbed behavior that usually accompanies such problems. However, in my experience, allergy is *the* most important factor contributing to such disorders in many – and perhaps most – children.

To document my impressions in this area, I carefully reviewed my findings[11] in 45 consecutive children who came to me during an 8-month period (between August 1, 1973 and March 31, 1974) with the complaint of hyperactivity and/or learning problems. And I found that nervous system symptoms flared up in 41 children when the child ate a food he was sensitive to. Moreover, these symptoms were partially or totally relieved when allergenic foods were avoided.

Each child was allergic to an average of three foods: 28 of the 41 were sensitive to milk, 28 were sensitive to cane sugar, 20 were sensitive to egg, 13 were sensitive to wheat, and 12 were sensitive to corn. Other foods which were incriminated, listed in order of decreasing frequency, were legumes, chocolate, beef, potato, pork, citrus, beet sugar, yeast, and food coloring.

Miscellaneous

Other childhood disorders, both common and uncommon, in which I feel allergy plays a role include big tonsils and adenoids, recurrent serous otitis, and digestive problems, including recurrent diarrhea and encopresis.[10]

A final allergy masquerade seen commonly in high school and college students with fatigue and cervical adenitis is "pseudomononucleosis." Victims of this disorder (described years ago by Randolph) are tired, allergic teenagers who show a few cervical lymph glands. I've seen at least a dozen such youngsters whose symptoms were still being blamed on an attack of "mono" experienced 1 or 2 years previously. Yet, the fatigue in these patients vanished when food allergens were eliminated.

DIAGNOSIS

To make a diagnosis of nonreaginic food allergy, you must first think of it when you see a pale, tired, nervous child with circles under his eyes and a variety of other systemic complaints. You next take a good history

and carry out a careful physical examination and order a few simple tests, including a complete blood count, routine urinalysis, urine culture, sedimentation rate, and tuberculin test. You need not do allergy skin tests for foods, since such skin tests do not help in the diagnosis of non-IgE mediated food allergy.

You then put the child on an elimination diet. What foods do you eliminate? If your patient was colicky, stuffy, and irritable during the first year of life while taking a cow's milk formula, you should suspect milk as a probable troublemaker. You should also suspect milk if either parent dislikes milk or if the child is prone to frequent bouts of bronchitis and other respiratory syndromes.[20, 23]

On the other hand, if a child exhibited irritability, restlessness, and the like during the first year of life, in spite of the elimination of cow's milk, I've found that such a child is often allergic to corn or cane, common "hidden" dietary ingredients.

Another way to get a clue in children with systemic and nervous system allergy is to ask a mother, "What's Johnny's favorite food?" If he drinks a lot of chocolate milk, I'm apt to suspect both chocolate and milk. On the other hand, if he drinks orange juice or eats eggs every day, these are the foods I suspect. Similarly, in the child who "craves" sweets and who eats sugar-coated cereal, I've found cane sugar to be a common culprit, especially in causing hyperactivity, irritability, and other nervous system symptoms.

You next prescribe an elimination diet. In carrying out such a diet, you direct the patient to avoid a suspected food (or foods) for 7 to 21 days. When an initial elimination diet, avoiding the foods which are the most likely culprits, doesn't relieve my patient's symptoms, I usually prescribe a basic elimination or "rare food diet." While on such a diet, the patient avoids any and every food he eats more often than once a week. If, while on the diet, his symptoms subside, foods are added one at a time and reactions are noted.

Carrying out such a diet is amazingly simple . . . *if* you compare it to such complicated medical studies as gastrointestinal or genitourinary x-rays or electroencephalograms and other in-hospital diagnostic procedures. However, careful instruction of the parent—and the patient—is essential if the diet is going to be worthwhile. Such instruction requires some 20 to 30 minutes (or more) of someone's time. Moreover, the person giving the instructions should be interested, enthusiastic, and knowledgeable if they are to motivate and help the parent and the child to carry out the diet accurately and thoroughly. (Further diet instructions can be found elsewhere.[10, 41, 42, 44, 54])

In evaluating children with suspected food allergy, I also use the *sublingual provocative test*. Admittedly, the mere mention of this test results in sharper "provocative reactions" in the breasts of many orthodox immunologists than the test itself provokes in the food-sensitive patient! Yet, in my hands, this test has been of inestimable value.

I'll admit that I can't explain why this test works or how it works, but it does work. And it gives me valuable clues as to a particular patient's food sensitivity, clues that help me considerably in deciding which foods my patient should avoid while on a trial elimination diet.

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