
Can we diagnose atopy with a laboratory test?

In this issue of the *Annals*, Fiocchi and colleagues¹ describe an excellent study that evaluates the utility of the Phadiatop Infant (Pharmacia Diagnostics AB, Uppsala, Sweden), which is designed to identify children with atopic disease. The Phadiatop Infant is a new multiallergen test to detect IgE antibodies to several food and inhalant allergens. With the prevalence of atopic disorders increasing steadily during the past several decades and now affecting more than 20% of the pediatric population, it is more essential than ever that we have a simple, rapid test to identify these atopic individuals. Several studies^{2,3} have demonstrated that allergen specific IgE antibodies to food and inhalant allergens early in life, especially in children with atopic dermatitis, are highly predictive of future respiratory allergy and persistent asthma. In addition, ongoing studies^{4,5} are demonstrating that allergic children with atopic dermatitis, asthma, or both tend to have more severe disease than their nonsensitized counterparts and that early intervention with immunotherapy may prevent the development of further sensitization and asthma.

In young children, a variety of disorders can lead to eczematous rashes and upper and lower respiratory tract symptoms. Given the many children who experience multiple upper respiratory tract symptoms and episodes of wheezing, it is clear that primary care physicians must see the bulk of these children and decide who is experiencing self-limited respiratory symptoms and who is atopic and likely to experience persistent atopic disorders, eg, allergic rhinitis and asthma. A simple test that would allow primary care physicians to distinguish allergic from nonallergic children early in life and enable them to initiate appropriate therapy in mild cases or refer the children to an allergy specialist in more severe cases would be extremely useful. Such a test would also enable the specialist to quickly screen referrals before embarking on a time-consuming and more costly allergy evaluation.

In their article, Fiocchi et al¹ compared the results of the Phadiatop Infant with the clinician's diagnosis of atopy. The clinician's diagnosis was based on history, physical findings, skin prick test reactions, and in vitro allergen specific IgE determinations. Using the clinician's diagnosis as the "gold standard," the investigators found that the Phadiatop Infant had a sensitivity of 92%, a specificity of 82%, positive and negative predictive values of 80% and 93%, respectively, and an efficiency of 86% (number of true positives plus true negatives divided by the number of tests performed). Although these test characteristics seem to be very acceptable for a screening test, the investigators decided to reevaluate the 14 children who tested positive to the Phadiatop Infant at

the initial evaluation but were diagnosed as "nonatopic." Thirteen of the 14 children were available for evaluation 2 years later, and 12 were diagnosed as having atopy at the follow-up visit. Given the subsequent changes in clinical diagnoses, the utility of the Phadiatop Infant would be even more impressive: sensitivity, 93%; specificity, 97%; positive predictive value, 97%; negative predictive value, 92%; and efficiency rating, 95%. If these findings are confirmed in further large-scale studies, the Phadiatop Infant should provide an excellent test for quickly distinguishing atopic from nonatopic children.

Approximately 14 years ago, we⁶ performed a similar study using the Phadiatop Pediatric (Pharmacia Diagnostics AB). We compared the allergist's diagnosis to the outcome of this multiallergen radioallergosorbent test and found a similar excellent correlation between the test and the physician's diagnosis.⁶ This test is similar to the one used by Fiocchi et al¹ and had similar excellent diagnostic characteristics: sensitivity, 92%; specificity, 88%; and efficiency, 90%. As suggested by us many years ago, and as convincingly shown more recently by Fiocchi et al, qualitative multiallergen tests provide an excellent means for primary care physicians to identify atopic children, enabling them to provide more appropriate care for patients with mild disease or to refer those with more severe disease for further allergy evaluation. It also provides the researcher with a much more specific test for diagnosing atopy in large patient populations. As new, more effective immunomodulatory approaches become available, it will be more important than ever to diagnose these atopic children early so that appropriate interventions can be initiated, minimizing the effects on the child and his or her family.

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