Can Mold Allergy be Diagnosed with a Skin Test or Specific IgE Antibodies?

Ren-Bin Tang*

Department of Pediatrics, Taipei Veterans General Hospital, and National Yang-Ming University School of Medicine, Taipei, Taiwan, R.O.C.

In this issue of the *Journal of the Chinese Medical Association*, Liang et al[1] describe a study that evaluates the skin test (Tori Ltd, Tokyo, Japan) and specific IgE antibodies (ImmunoCAP system; Pharmacia, Uppsala, Sweden), which are designed to identify mold allergy. Five fungal antigens (*Candida*, *Alternaria*, *Aspergillus*, *Cladosporium* and *Penicillium*) were included in this study.

With the steadily increasing prevalence of atopic disorders in the pediatric population over the past several decades, it is more essential than ever to develop a simple, rapid test that identifies inhalant allergens in these atopic individuals.[2] Fungi are well known as sources of allergens that cause allergic rhinitis and allergic asthma in Taiwan.[3–5] *Penicillium citrinum* and *Aspergillus fumigatus* are prevalent indoor airborne fungal species that have been implicated in human respiratory allergic disorders.[6,7] Fungal allergens, on the whole, show significant differences in incidence among different age groups.[5,6]

Allergy skin testing for immediate hypersensitivity is a cornerstone in the evaluation of the patient with allergic disease.[8,9] Skin prick tests are quick, low cost, highly sensitive and safe. This seemingly simple test, however, is subject to multiple variables that can affect the result. Some of them are patient-dependent, such as the patient age, underlying skin condition, or use of medications that can interfere with the test results. Testing-dependent variables include the quality of the extracts used, the testing technique and device used, the location on the body to which the tests are applied, and the distance between individual test sites.[10] Finally, individual physician scoring and interpretation of allergen skin test results may add further variability.

Specific serum IgE is widely used in the diagnosis of IgE-mediated allergic diseases. The Pharmacia ImmunoCAP system (CAP) represents the standard method of diagnosis and is accurate enough to diagnose specific IgE.[11] Previous studies have established a strong agreement of both the multiple allergosorbent chemiluminescent assay (MAST-CLA) and CAP with the skin prick test. Both MAST-CLA and CAP were comparable in their ability for diagnosing allergies to tested allergens. They can be used as a screening test to measure allergens.[12–16] Inhalant allergens of house dust mites and fungi are also detected by the immunoblotting method.[17,18] A good correlation between the immunodot assay and the skin test was confirmed in asthmatic children.[19] The electroblotting technique is fast, convenient, and highly suitable for both allergen composition studies and screening of antibody specificities. As new and more effective immunomodulatory approaches for specific IgE activity become available, it will be more important than ever to diagnose these mold allergens, so that appropriate interventions can be initiated.[6,7,20]

Skin test and specific IgE usually correlate equally well with clinical allergic symptoms. Concordance for results of skin testing and the radioallergosorbent test was high for most allergens except for *Candida* allergens.[21–23] Both tests can be used as grounds for instituting immunotherapy in an efficient manner. When CAP is used as grounds for immunotherapy, a skin test with an initial diluted dose of immunotherapy should be done to evaluate the tolerable dose of the allergenic extract.[24]

Chapman[25] considered that the clinical aspects of fungal sensitivity are essential for assessment of exposure potential and clinical testing. Allergy skin test material

*Correspondence to: Dr. Ren-Bin Tang, Department of Pediatrics, Taipei Veterans General Hospital, 201, Section 2, Shih-Pai Road, Taipei 112, Taiwan, R.O.C.
E-mail: rbtang@vghtpe.gov.tw • Received: September 5, 2005 • Accepted: November 8, 2005

is unavailable for most airborne fungi. Those that are available are not standardized. A major management approach for patients with proven sensitivity to fungal antigens and a clear correlation with clinical illness is avoidance of fungal sources.[25]

The article by Liang et al[1] in this issue illustrates the difficulties that arise in a study attempting to evaluate mold allergy with the skin test and CAP. This article describes no significant correlation between the two tests to *Candida*, *Alternaria*, *Aspergillus*, *Cladosporium* and *Penicillium*. The positive rates of the skin test and CAP were 56% versus 9% for *Candida*; 22% versus 1% for *Alternaria*; 16% versus 9% for *Aspergillus*; 15% versus 1% for *Cladosporium*; and 32% versus 8% for *Penicillium*. There was no attempted correlation with clinical disease, and the possible clinical application of the data to mold allergy was tenuous. As reported by Piette et al,[26] the improper performance of skin prick tests leads to unreliability, as it may result in an unacceptable number of false-positive results and lead to wrong allergy diagnosis and incorrect treatment.

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