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Trichophyton Asthma

In the current issue of *CHEST* (see page 898), Matsuoka et al¹ report on a strong association between sensitization to proteins from the fungus *Trichophyton* and the severity of asthma. Their report opens up an old controversy. In the 1930s, Cooke² and others often referred to asthma presenting in adults as “infectious” rather than “intrinsic.” At that time, both bacterial and fungal infections were thought to be relevant to the occurrence of severe asthma in adults. Wise and Sulzberger³ argued further that onychomycosis was an important cause of sensitization associated with urticaria, sinus disease, or asthma. However, when Rackemann⁴ described intrinsic asthma in 1948, the term was taken to be synonymous with “idiopathic” asthma. Subsequent to those conflicting views, many asthma specialists became nihilistic about the investigation of specific causes of asthma in adults. Despite this, there are now several well-recognized forms of adult asthma for which specific treatments are recommended. These include Samters triad and allergic bronchopulmonary aspergillosis (ABPA), as well as perennial asthma in patients with sensitization to indoor allergens.^{5,6} Vocal cord dysfunction should also be included among those forms of asthma with an etiologic basis because, though the mechanism of obstruction is very different, this condition is often misdiagnosed and treated inappropriately with oral steroids. Collectively, an important and unifying feature is that each of these types of asthma can benefit from different treatments.

There are two other syndromes related to fungal sensitization that are less well recognized, but important to identify in individual cases. These are the various forms of allergic bronchopulmonary mycosis (ABPM) and “*Trichophyton* asthma.”^{7,8} In cases of ABPM, many different fungi can be present in the lungs including *Curvularia*, *Drechslera*, or *Candida*.⁷ The condition has symptoms in common with ABPA, and individual cases have been reported to respond to antifungal treatment. In relation to *Trichophyton*, we have published extensively on the sensitization to *Trichophyton* proteins in patients with severe asthma. These articles have included evidence that

both the lungs and nose can be specifically sensitized although this fungus only colonizes the nails and skin⁸; elucidation of key proteins that give rise to sensitization⁹; and improvement of asthma in sensitized patients who received specific antifungal treatment in a controlled trial.^{1,10} The phenomenon of *Trichophyton* asthma has been confirmed in work from several countries including Venezuela, Turkey, and, now, Japan.^{1,11} However, the clinical entity is not widely recognized, for several possible reasons. First, the condition is not very common; second, it generally requires intradermal skin tests to demonstrate sensitization, owing to the low quality of fungal extracts; and third, because physicians are surprisingly reluctant to prescribe systemic antifungal treatment. The article¹ in the current issue of *CHEST* reports on *Trichophyton* sensitization among a large cohort of patients with asthma presenting to a specialist clinic in Japan. Key findings are the strong association with the severity of asthma and the establishment of sensitization using serum radioallergosorbent assays for IgE antibodies to *Trichophyton*.

When the significance of fungal colonization was first recognized, treatment posed a problem because there were no effective oral antifungal agents.³ As recently as 25 years ago, the situation was still not simple because the antifungal agents available, such as griseofulvin, ketoconazole, and amphotericin B, had severe side effects. The situation has changed dramatically with the availability of less toxic antifungal agents (eg, fluconazole, itraconazole, and terbinafine). Both fluconazole and itraconazole have been used in successful controlled trials in patients with asthma.^{6,10} Most recently, Denning et al¹² from Manchester, UK, reported a successful controlled trial of itraconazole therapy in patients with severe asthma and fungal sensitization. While the results were impressive, we think it is better to define the specific fungal organism involved and, if possible, treat the fungus specifically. In all patients with uncontrolled asthma who are sensitized to fungal antigens and have evidence of colonization, we would recommend the consideration of antifungal treatment. However, where possible the fungal organism in the lungs or on the feet should be identified. Though this may be challenging owing to

Table 1—Fungal Colonization and Other Treatable Factors Related to Severity of Asthma*

Syndrome	Treatment
Aspirin sensitivity and nasal polyps (Samters triad)	Aspirin desensitization
Vocal cord dysfunction	Speech therapy or nebulized cromolyn
Sensitization to indoor allergens and perennial exposure	Allergen avoidance and/or immunotherapy
ABPA	Itraconazole or voriconazole
ABPM	Relevant antifungal treatment
Trichophyton asthma	Fluconazole or itraconazole

the wide range of organisms that can colonize these sites. There is increasing evidence^{6,13} in favor of identifying the sensitivity in order to optimize antifungal treatment. We would particularly argue in favor of specifically identifying organisms in the lungs of patients with atypical ABPA or ABPM that may require bronchoscopy.^{6,7}

The important implication of recent developments is that asthma in adults that does not respond to first-line treatment should be investigated (Table 1). This investigation should include not only such routine investigations as lung function, sinus CT scanning, sensitization to common inhalant allergens, and evaluation of evidence for ABPA, but should also include an evaluation for evidence of colonization with a range of fungi including *Alternaria*, *Candida*, and *Trichophyton* as well as *Aspergillus* species.^{7,10,12} It is important not to define patients as being steroid dependent or uncontrolled without excluding the causes that do respond to specific treatment.

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Balancing the Risks and Benefits of Thromboprophylaxis in Patients Undergoing Podiatric Surgery

Surgery and immobility are recognized as important acquired risk factors for the development of venous thromboembolism (VTE).¹ Providing thromboprophylaxis to patients at moderate-to-high VTE risk has thus become an important patient safety initiative.² Equally important has been a growing interest in identifying patients at low risk for VTE who do not need thromboprophylaxis, and who potentially may be unnecessarily subjected to the risks, costs, and inconvenience associated with thromboprophylaxis.

Patients undergoing orthopedic procedures of the hip and knee are recognized as a high-risk popula-

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