

Asthma due to the ingestion of contaminated flour

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INTRODUCTION

Bronchial asthma after ingestion of flour contaminated with mites has recently been reported (1-4). We designed a prospective study to test the hypothesis that flour-induced reactions in the absence of food sensitivity might be the result of mite contamination. We have demonstrated that the ingestion of foods contaminated with different mite species was the cause of these reactions.

METHODS

Patients with systemic reactions after ingestion of flour-based foods, suggestive of IgE-mediated allergy, and without food sensitivities were included in a prospective protocol. Both flours implicated in reactions and control flours were examined microscopically in a blinded manner, and major *Dermatophagoides* allergens were quantified by monoclonal antibody techniques. Skin prick test and IgE determinations to mites and flours were performed. RAST-inhibition assays with mites and flours, spectrophotometric analysis of flours, and single-blind placebo-controlled oral challenges with flours were also carried out.

RESULTS

Twenty patients were included in our protocol. These included 16 women and 4 men, with a mean age of 22 ± 8 years. The most common clinical manifestations of the flour-induced reactions were dyspnea and wheezing, frequently accompanied by periorbital angioedema. All patients had a history of perennial rhinoconjunctivitis or bronchial asthma and sensitization to dust or storage mites, and 90% of them also had a history of acetylsalicylic acid (ASA) intolerance (5).

Microscopic examination of five flours that had been implicated in reactions disclosed a high level of mite

contamination. *Dermatophagoides farinae* were found in one flour and the storage mite *Thyreophagus entomophagus* in the other four flours. Our patients' skin test and specific IgE responses to the flours implicated to reactions were positive. RAST-inhibition studies with *T. entomophagus* showed partial cross-reactivity with *Tyrophagus putrescentiae*, and no cross-reactivity with *D. farinae*. A high level of Der 2 was found in the flour infested by *D. farinae*. Spectrophotometric determinations of ASA in the flours implicated in reactions were negative. Three oral challenges with contaminated flours resulted in systemic reactions with bronchial asthma.

DISCUSSION

It is well known that mites play a major role in respiratory allergy. However, little attention has been focused on the ingestion of mite-infested food as a possible cause of asthma. Erben AM *et al.* reported a case of anaphylaxis after the ingestion of beignets contaminated with *D. farinae* (1), in 1993 and recently, other reports have dealt with mite-ingestion reactions (2-4). We have studied several cases of anaphylaxis occurring after flour ingestion in patients who had no food allergies (6). Common clinical features included the coexistence of respiratory allergy to mites with ASA intolerance (5, 6).

Possible contamination of flours with ASA was discarded by spectrophotometric determination, meanwhile contamination with mites was confirmed by microscopic examination of flours. We have demonstrated by oral challenges that the reactions were in fact caused by mite ingestion. The finding of the rare storage mite *T. entomophagus* is also remarkable.

In conclusion, the ingestion of food contaminated by different mite species may induce allergic reactions including bronchial asthma. Therefore, patients allergic to mites, should be advised to avoid contamination of food by mites.

31751

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