

Correspondence

OPTIMIZING ALLERGIC DISEASE PREVENTION SCREENING IN NEWBORNS

To the Editor:

Early identification of children at risk for allergies would be helpful in preventing the subsequent development of allergic disease and in reducing disease-associated costs.¹⁻⁴ The purpose of this study was to identify in routine practice the population rate of atopic allergies among infants in an industrialized country using in vitro diagnostic screening tests (Phadiatop for inhalants and the Fx5 radioallergosorbent test for food allergens) and to evaluate possible correlations between the screening result and the development of clinical signs of atopic allergy later in life.

Two hundred seventy-eight healthy infants (aged 12 months), 55% male and 45% female, living in an industrial city were screened for total IgE and specific IgE to food and inhalant allergens after having obtained informed consent from their parents. After 8-year follow-up, 143 randomly chosen children were observed for the presence of clinical signs of allergic disorders.

The total IgE determinations and the 2 screening tests (Phadiatop and Fx5: soy, peanut, milk, egg, wheat, and fish) were performed by means of fluoroenzymatic immunoassay (CAP-FEIA; Pharmacia, Uppsala, Sweden). Cutoff ranges for total IgE serum levels were fixed at 20 kU/L given the child's age.

We built a decision tree (Weinstein) to compare the total IgE and the Fx5 screening results on the basis of a cost-efficacy model. Because no well-agreed-on estimates exist regarding prevention efficacy (because estimates equally divided between efficacy and prevention do not exist), we considered a basal value of 80% (based on our own experience), and then we performed a sensitivity analysis on the entire range of 0% to 100%. To quantify the decision tree, we calculated the sensibility and specificity of both tests and considered the prevalence of allergic disease equal to 20% according to personal experience and data reported in the literature (Fig 1).

The analysis performed using the decision tree revealed that the total IgE test predicts disease in 17% of cases vs 10% for the Fx5 screening test. Regarding the cost-efficacy analysis, the total IgE test seems to be the best one because it is more effective and less expensive. Because in this study the least expensive test was also the most effective, we did not consider the costs of treating future disease development. Comparing the strategy "perform IgE" with the strategy "no test," we demonstrate that the cost is approximately \$40 per averted disease. This cost is minimal compared with the cost of treating an allergic disease. The sensitivity analysis on the most variable parameter of the tree (ie, the prevention efficacy) shows that the result is robust with respect to its variation.

The possibility of preventing allergic disease might be achieved by reducing dietary allergens, which are responsible

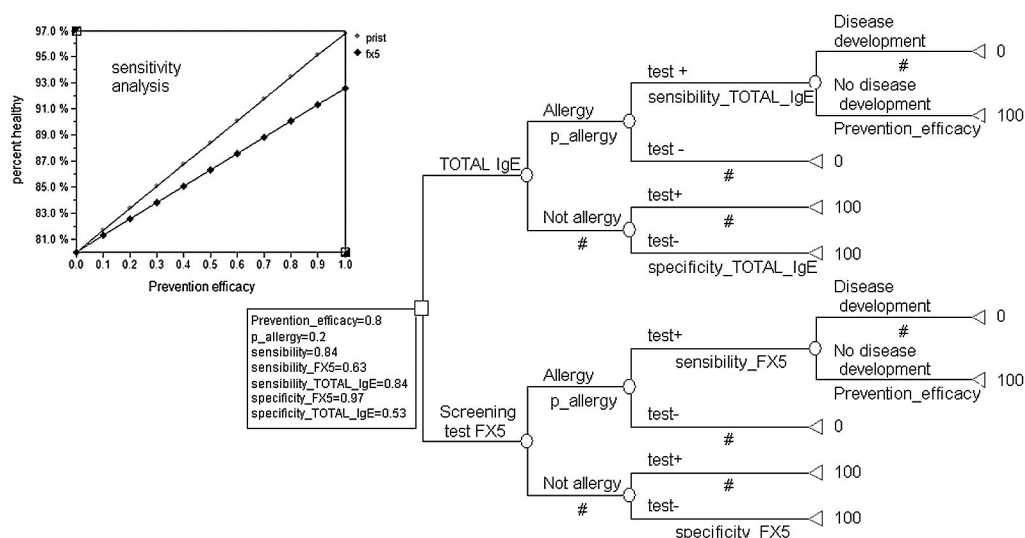


Figure 1. The decision tree representing the options for screening newborns for allergic disease. Terminal nodes represent the probability (in percentage) of developing disease. Numbers under the arcs are the probabilities of the corresponding events.

for sensitization and phenotypic expression of the disease. In the present case the least expensive test was also the most effective; thus, we did not consider the costs of treating future disease development because this would not change the decision tree result.

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CONTACT DERMATITIS TO LEVOBUNOLOL EYEDROPS SUPERIMPOSED ON IgE-MEDIATED RHINOCONJUNCTIVITIS

To the Editor:

Patients with seasonal allergy know what a pesky problem red, irritated eyes can be. Usually, they can seek relief through medications that contain antihistamines, decongestants, or corticosteroids. Sometimes, however, resistant symptoms require further investigation.

A 66-year-old man was followed up by his ophthalmologist for 2 years for red, itchy, burning eyes and eyelids unresponsive to systemic antihistamines and a short course of oral corticosteroids (Fig 1). Previous allergies included a generalized urticarial reaction to penicillin. He was taking lisinopril for hypertension and using levobunolol hydrochloride (Betagan; Allergan Inc, Irvine, CA) eyedrops for the past 3 years to treat glaucoma. Screening for common environmental allergens by an allergist confirmed allergic seasonal and perennial rhinoconjunctivitis secondary to grass, house dust, and tree pollen. This finding, along with the clinical appearance, suggested an IgE-mediated (type I) hypersensitivity reaction.

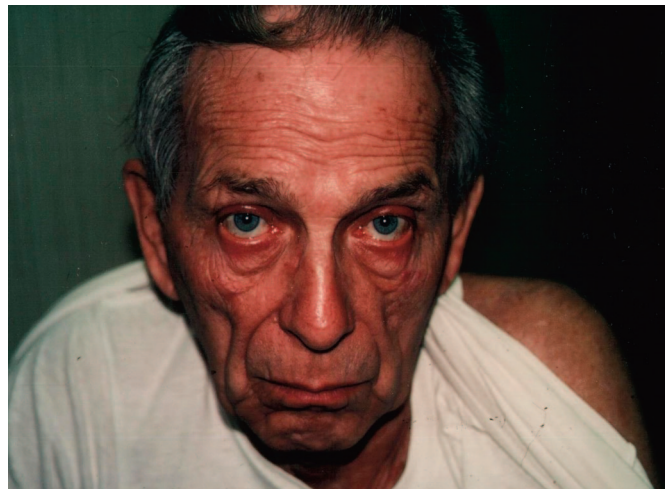


Figure 1. Erythema and edema are noted bilaterally on the upper and lower eyelids in a patient who complained of incessant itching and burning.

Physical examination showed erythema, edema, lichenification, and excoriations on the upper and lower eyelids. Patch testing using a Finn Chamber containing levobunolol from the patient's stock bottle of levobunolol hydrochloride eyedrops revealed a strongly positive papulovesicular reaction at 72 hours. There was no reaction to standard patch test materials, including thimerosal or benzalkonium chloride preservatives. Patch testing to the specific ingredients in the eyedrops obtained from the manufacturer revealed a 3+ positive reaction to levobunolol but a negative reaction to all the other ingredients (polyvinyl alcohol, benzalkonium chloride, edetate disodium, sodium metabisulfite, sodium phosphate monobasic, and sodium chloride). The patient's symptoms resolved rapidly with topical application of hydrocortisone cream twice per day to the eyelids and elimination of levobunolol eyedrops.

When ocular symptoms suggest an IgE-mediated (type I) hypersensitivity reaction but symptoms fail to respond to traditional therapy, physicians must consider other causes. Allergic contact dermatitis, a type IV hypersensitivity reaction, may appear long after the introduction of a topical medication and may mimic a type I reaction. This is particularly true in cases in which an established diagnosis, such as IgE-mediated allergic rhinoconjunctivitis, offers another explanation for the symptoms.

The vehicles or preservatives in eyedrops are well-known sensitizers that commonly cause allergic contact dermatitis.¹ In this case, the active ingredient proved to be the culprit of the symptoms. Levobunolol hydrochloride is a nonselective β -adrenergic blocker used in ophthalmic solution to reduce elevated intraocular pressure.² Local and systemic adverse effects are infrequent, despite its widespread use, but contact dermatitis has been reported.^{1–4} The importance of patch testing cannot be overemphasized.

β -Blockers are not in the standard patch testing trays, and testing to the medication itself must be performed to arrive at the

proper diagnosis. If that result is positive, individual ingredients in the medication can often be obtained from the manufacturer, and further testing should be performed to substantiate that the reaction is truly allergic and not irritant. In conclusion, when symptoms of allergic rhinoconjunctivitis fail to remit, closer examination is necessary because the solution to the diagnostic puzzle may be "right in front of your eyes."

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ASTHMA, COCKROACHES, AND PROTOZOAL FORMS: CHANCE OR NOT CHANCE?

To the Editor:

Cockroach allergy is considered an important factor in the development of asthma and seems to have a great impact on its morbidity, especially in children.¹ The existence of various species of protozoa, pathogenic and nonpathogenic, is reported in the hindgut of cockroaches.^{2,3} A recent article⁴ reports on the presence of protozoal forms in house dust mites and their relation to respiratory allergy.

After the dissection of intestinal extracts from cockroaches belonging to the German cockroach species *Blattella germanica*, we studied them in sterile saline serum under phase-contrast microscopy, which showed peculiar structures, round or oval and 15 to 20 μ m, and the existence of filiform projections around the cell body (Fig 1). These protozoal forms are similar in morphologic features, under the same

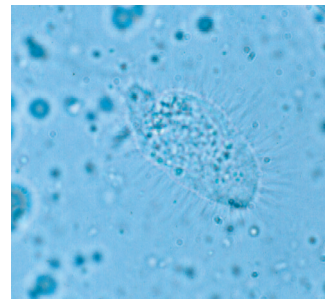


Figure 1. Protozoal form with filiform projections observed in intestinal extract from cockroach (fresh sample, original magnification $\times 1,000$).

observation conditions, to those found in intestinal extracts of house dust mites (*Dermatophagoides pteronissinus* was studied). The peculiar protozoal forms reported herein are different in morphologic features to other well-known protozoa that we have also seen in intestinal extracts of cockroaches, such as *Balantidium coli* and *Nyctotherus ovalis*, which are bigger and possess a brush-edged ciliary arrangement.

Cockroach allergens have been identified by means of immunochemical techniques,⁵ and many of these allergens have been cloned and produced as biologically active recombinant proteins. Research studies have provided evidence that protease-activated receptors may play an important role in contributing to the allergenesis of cockroaches.⁶ Although it is accepted that such allergens arise from the body or feces of cockroaches, it may be supposed that such a synthesis could also occur in these peculiar protozoal forms, as other protozoa species synthesize proteases that, owing to their nature, act on the epithelia of such pathogenic agents.⁷

Recently, DNA sequences from a novel trichomonad flagellate not previously recognized as a human parasite, belonging to the genus *Tetratrichomona*, were identified in the human respiratory tract,⁸ although the pathogenic potential of these parasites in the airways is not clear.

Considering that there still exist unknown areas in the pathogenesis of asthma, it seems advisable to explore new possibilities that until now have not aroused sufficient interest or been seriously considered. The finding set out in this communication, although we do not consider it to be a chance one, is still only a morphologic observation. We believe that further studies, using molecular techniques, are necessary to establish the place of these peculiar protozoal forms and their possible role in the pathogenesis of asthma.

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Errata

In the practice parameter “Contact dermatitis: a practice parameter” (*Ann Allergy Asthma Immunol*. 2006;97(Suppl 2):S1–S38), the authors were incorrectly listed as editors on the cover. The correct list should be: Chief Editors: Vincent S. Beltrani, MD; Leonard Bernstein, MD; David E. Cohen, MD; and Luz Fonacier, MD. In addition, members of the Joint Task Force on Practice Parameters were omitted. The complete list should be Task Force Reviewers: David Khan MD; John Oppenheimer, MD; Dana Wallace, MD; Jay Portnoy, MD; David Lang, MD; Sheldon Spector, MD; Richard Nicklas, MD; Joann Blessing-Moore, MD; Steve Tilles, MD; and Diane Schuller, MD.

In the November issue of *The Annals*, the article “Impaired specific antibody response and increased B-cell population in transient hypogammaglobulinemia of infancy” (*Ann Allergy Asthma Immunol*. 2006;97:590–595) was published as a review article. The article type was mistakenly classified and should be considered an original contribution.