

Association between allergic disease and reactivity to recombinant Der p 2 allergen of house dust mites in a tropical situation

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Supported by Projects CONICIT RPV170041, BID BTS 65, World Bank VEN/002/96/14, Congreso de la Republica/Ministerio de Educación/UCV and CDCH/UCV.

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J Allergy Clin Immunol 1998;101:562-4.

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0091-6749/98 \$5.00 + 0 1/54/88668

Abbreviation used

WME: Whole mite extract

Immediate hypersensitivity skin tests with allergenic extracts provide a useful aid in the diagnosis of allergic diseases. Although positivity in these tests is directly related to the presence of IgE antibody against the allergen tested, this is not necessarily synonymous with a

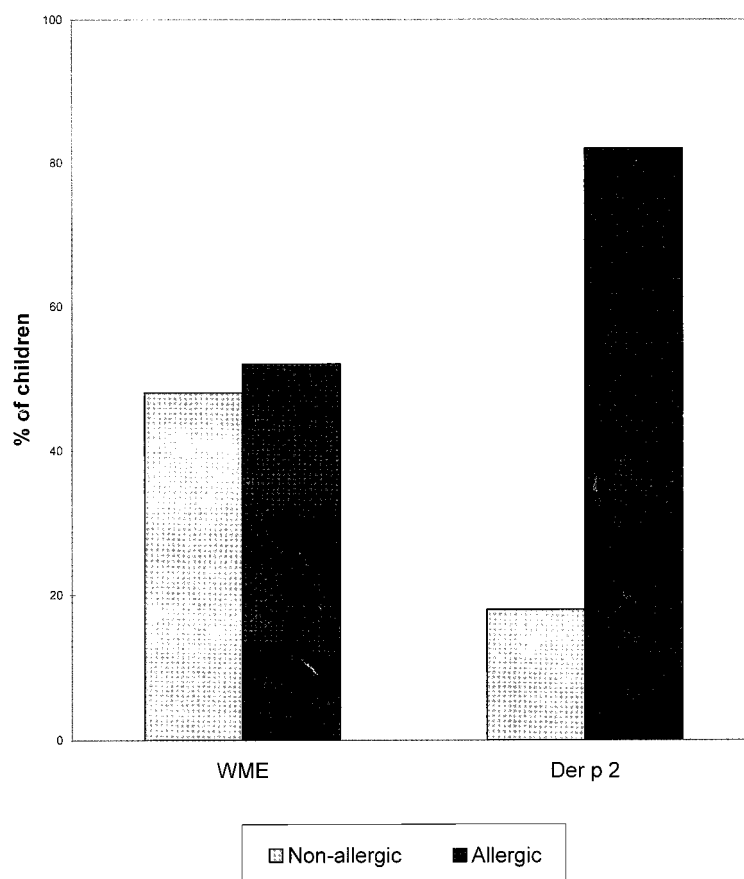


FIG. 1. Percentage of children who had positive skin test reactions with WME or Der p 2 and who either did or did not report allergic symptoms. Note that reactivity of children with positive reactions to WME to glutathione-S-transferase fusion partner of recombinant Der p 2 allergen was 11%.

disease state, because persons with an atopic disposition can show skin test reactivity without manifesting allergic symptoms.¹ This frequently occurs in tropical situations in which helminthic infection is endemic, because these parasites can nonspecifically potentiate the synthesis of IgE antibody against common environmental allergens without this having evident clinical consequences.² These observations indicate that the possession of specific IgE antibody and sensitized mast cells, along with exposure to the appropriate allergen, are not in themselves sufficient for the expression of the physiologic changes that are recognized as the symptoms of allergic disease.³

In this study we related allergic history with the reactivity to extracts of the house dust mite *Dermatophagoides pteronyssinus* and one of its principal allergens (Der p 2) in a group of 6-year-old schoolchildren who underwent a routine medical examination in Caracas, Venezuela (latitude, 10° N), and in whom helminthic infection is endemic (point prevalence of 28% and accumulative prevalence of almost 100%). *Ascaris lumbricoides* and *Trichuris trichuria* were the dominant parasites.⁴ We obtained the permission of the Ethical

Committee of the Institute of Biomedicine for this study, as well as that of the medical service where the children were examined. These tests were also ratified by the National Council of Scientific and Technological Investigation of Venezuela and the Academic Council of the Medical Faculty of the Central University of Venezuela. The informed consent of the legal guardians of the children was also obtained. Ninety-one children were examined medically, and their accompanying parent was questioned with emphasis on the establishment of a history of allergic disease, taking respiratory symptoms into particular account. Rhinitis was reported in 27% of the children, and asthma was reported in 16%, with the combined prevalence of disease being 35%. All of the children were then skin prick tested with an extract of *D. pteronyssinus* (whole mite extract [WME]; Commonwealth Serum Laboratories, Melbourne, Australia), which is by far the most important aeroallergen in Venezuela.⁴ Thirty percent of the group were found to have positive immediate reactions (wheal diameter, ≥ 3 mm) to this allergen. These children were then tested with recombinant Der p 2 that had been prepared as a fusion protein with glutathione-S-transferase and puri-

fied by affinity chromatography.⁵ This allergen was used at concentrations that started at 0.1 µg/ml and increased in 10-fold steps until a positive reaction occurred, but the concentration did not exceed 100 µg/ml. Only 41% of the children who had positive reactions to WME also reacted to Der p 2. When the children who had positive reactions to these tests were divided according to whether they had a recent history of allergic disease, we found that 48% of the persons who had positive reactions to WME did not report clinically relevant respiratory symptoms. In contrast, this occurred in only 18% of those with positive reactions to Der p 2 ($p < 0.001$) (Fig. 1).

We have previously shown that over 80% of Venezuelan patients attending an allergy clinic are sensitive to house dust mites, and the positive skin test reactions to WME and Der p 2 are very similar.⁶ Therefore the present results suggest that in the situation of endemic helminthic infection that exists in this country, positive skin test reactions to WME in an unselected group of children does not necessarily indicate an allergic condition. However, testing with purified Der p 2 allergen better discriminates between a nonsymptomatic atopic state and clinically relevant allergy. This might indicate that although many components of house dust mites can stimulate IgE antibody synthesis, the responses against

some of these allergens, such as Der p 2, are more closely associated with the manifestation of clinical symptoms than others.

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