

Diagnosis of Latex Allergy: The Importance of Hev b 11

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Key Words

Latex allergy · Hev b 11 · Molecular diagnostics

Abstract

We present the cases of 5 patients with a positive clinical history of cutaneous symptoms due to contact with latex products. A latex allergological assessment was made through skin prick tests (SPTs) both with commercial latex extracts and extemporaneous glove extracts, and serum-specific IgE to latex and glove-use tests. In addition, serum-specific IgE to recombinant allergens for *Hevea brasiliensis* was dosed. Molecular diagnostics in association with the glove-use test and, to a lesser extent, the SPTs with glove eluate are useful diagnostic tests to confirm the diagnosis of latex allergy in patients with mucocutaneous symptoms.

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The use of recombinants or purified natural allergen components enables the identification of specific profiles of sensitization in different groups of patients according to the frequency of reactivity against these allergens. Despite the identified specific patterns of sensitization in

latex allergy, it is not yet possible to attribute a specific role to each allergen.

We describe the cases of 5 patients (4 females and 1 male, aged 26–56 years, median 38.8) who presented with a positive clinical history of cutaneous symptoms (urticaria and/or angioedema) due to contact with latex products. Among them 2 subjects had professional exposure and 3 had undergone multiple surgeries.

After obtaining written informed consent from the patients, a latex allergological assessment was made through skin prick tests (SPTs) with latex extracts (ALK-Abelló, Lainate, Milan, Italy and Stallergènes, Paris, France) undiluted and diluted (1:1,000, 1:100, 1:10) in a glycerol-saline solution, and extemporaneous SPTs with glove extracts, which were prepared as reported previously [1]. Three patients showed positive results only for the latex extemporaneous SPT, while SPTs with commercial extracts gave negative results in all subjects. We then proceeded by dosing the serum-specific IgE to natural rubber latex (NRL; CAP System, Phadia, Uppsala, Sweden) (positive value >0.10 kU_{AL}/l). Specific IgE to NRL gave negative results (value <0.10 kU_{AL}/l), so we extended the investigation by dosing serum-specific IgE to recombinant allergens for *Hevea brasiliensis* (rHev b 1, 3, 5,

6.01, 6.02, 8, 9 and 11; ImmunoCap System, Phadia) (positive value >0.10 kU_{AL}/l). Surprisingly, we found exclusive positive results to rHev b 11 in all patients with a range of values of 0.18–0.23 kU_{AL}/l.

For further diagnostic evaluation we performed a glove-use test with each subject by employing the same batch of NRL gloves used for the latex extemporaneous SPTs as previously reported [2]. All patients reacted positively to this test whilst the same tests performed in 10 healthy controls and 10 atopic subjects gave negative results.

Hev b 11 is a class I chitinase present in the leaves of *H. brasiliensis* [3]. It is considered a minor allergen and has a close homology with Hev b 6.02 because of the high degree of sequence identity that characterizes the two allergens [4]. From our data it is possible to hypothesize that Hev b 11 is not represented enough in the eluate of gloves, a hypothesis confirmed by the detection of positivity to SPT with extemporaneous preparation in only 60% of cases. Instead it may be present in higher concentrations in the latex glove because the latex glove-use test was positive in all patients. From the studies conducted so far it is possible to consider that the allergens Hev b 1, 3, 5 and 6.02 significantly contribute to the allergenicity of latex gloves [5].

In the group of subjects examined here, it is possible to suggest that patients who are occupationally or surgically exposed to the Hev b 6.02 allergen have developed a sensitization against Hev b 11 through a phenomenon of cross-reactivity, albeit in the absence of specific IgE to latex. In our cases the latex-specific IgE were in fact undetectable, despite positive results for a molecular component such as Hev b 11. The contradictory results could be explained by the hypothesis that the extract of latex contains a minimal amount of Hev b 11 which is not able to bind specific IgE. One might also suppose that the Hev b 11 is present in the extract of latex used for the determination of specific IgE, but is hidden and therefore not available for binding to specific IgE.

The analysis of our data also shows the poor sensitivity and specificity of SPTs with commercial extracts that were negative. This finding leads us to suggest the absence, or the minimal presence, of Hev b 11 in commercial extracts, making them of little help in the diagnosis of latex allergy in the patients examined. However, molecular diagnostics in association with the glove-use test and, to a lesser extent, the SPTs with glove eluate are useful tests to confirm the diagnosis of latex allergy in patients with mucocutaneous symptoms.

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