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Elastic encasing material for mattresses may be a hidden source of occupational latex exposure in health care facilities

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Key words: Encasing material, Hev b 5, latex allergen content, latex allergen sensitization profile, latex allergy.

In most cases, the use of latex-free protective gloves and working in a latex-free environment

may prevent latex allergy (1). However, natural rubber latex (NRL) may also be present in hidden nonlabelled sources

and contact with these products is rather difficult to avoid. We present the case of a 54-year-old latex-allergic nurse who complained of work-related contact urticaria on the hands and rhinoconjunctivitis when she or other nurses used powdered latex gloves at their workplace. She had been diagnosed as having type I hypersensitivity to NRL in 1996 using *in vitro* serologic tests and skin prick tests with latex extracts. Her symptoms and lesions subsided after using vinyl gloves and working in a latex-minimized environment.

From 2002, she worked in the oncological unit of her hospital and the rhinoconjunctivitis relapsed. Her symptoms were aggravated at work and she reported improvement when away from work.

A case of a latex-allergic nurse with symptoms due to encasing materials of mattresses.

Further diagnostic procedures in the Dermatology department including serologic, patch and skin prick tests excluded sensitization to aerosol-delivered medications and to the disinfectants used in her unit. However, she had regular contact with two new elastic encasing materials for mattresses. She regularly turned the mattresses during bed making and did not wear gloves. The manufacturers of the encasing material indicated that it was made out of latex but latex-free. Skin prick tests with latex extract (100 IR/ml; Stallergènes, Antony, France) were positive and during skin prick testing, conjunctivitis and ocular itch also occurred, which cleared after 60 min without any treatment. Skin prick- to prick-tests and scratch-tests with the encasing materials were negative.

In vitro tests with the UniCAP System (Pharmacia Diagnostics, Uppsala, Sweden) showed a latex-specific IgE-value of 2.4 kU_A/l (CAP class 2). Specific IgE tests with recombinant latex allergens (kindly provided by Dr HP Rihs, BGFA) (2) showed positive results to rHev b 6.01 (0.83 kU_A/l; CAP class 2) and to rHev b 5 (2.81 kU_A/l; CAP class 2) and negative ones (< 0.35 kU_A/l) for all other tested single allergens. The two new elastic encasing materials for mattresses (A and B) were analyzed for their total water-extractable protein content (measured by modified Lowry method) (3), total latex allergen content [measured by competitive radioallergosorbent test (RAST)-immuno-inhibition assay] (4) and their content of the Hev b 1, Hev b 3, Hev b 6.02 and Hev b 5 [using the FITkit™ ELISA (FIT Biotech Oyj PLC, Tampere, Finland)]. The protein contents were 45 µg protein/g material for elastic encasing material A and 12 µg protein/g material for B. The total latex allergen content was 30 ng latex allergen/g material for material A and also for B. The contents of Hev b 1, Hev b 3 and Hev b 6.02 were below their detection limits (< 1.2 ng/ml for Hev b 1 and Hev b 3 and < 0.1 ng/ml for Hev b 6.02) and only Hev b 5 could be detected in the encasing material A and also in B (A: 3.0 ng Hev b 5/g material and in B: 3.7 ng Hev b 5/g material).

Our data showed that the protein as well as the latex allergen content of these materials were very low compared with other latex devices (4). However, the presence of Hev b 5 in the encasing materials as well as specific IgE antibodies against Hev b 5 in the serum of our patient indicate that these materials may be the possible cause for the recurrence of the symptoms. However, latex gloves and/or glove powder with the allergens of NRL are considered to be the original and major cause of the latex exposure and sensitization in our patient, like in other health care workers (HCW). Especially sensitization to Hev b 5, a major allergen in latex, determined in our patient, is common among HCW (5). However, the amount of aeroallergens was not measured at the workplace of our patient.

Currently, avoidance of latex containing equipment, the use of non-latex alternatives and a latex-free or latex-minimized environment are mandatory in the case of sensitized patients. However, this may be difficult if nonlabelled devices are used. A prerequisite for avoidance and/or labelling is the analysis of the allergen content, which can be performed in the case of latex, e.g. with the available immunoassays.

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Accepted for publication 28 October 2003
Allergy 2004; 59:790–791
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