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Latex Allergy

ICD-10 T78.4

Lee Petsonk and Barry S. Levy

Allergic reactions to natural rubber latex (NRL) range from rhinitis and conjunctivitis, to contact urticaria (hives), to asthma, to generalized urticaria, and rarely, to anaphylactic shock. Latex allergy results from direct skin (or mucous membrane) contact, as well as from inhalation of particles containing NRL allergens. Continued exposure of sensitized individuals to NRL increases the probability of triggering symptoms.

Latex hypersensitivity is generally documented using skin prick or serologic tests for latex-specific IgE antibodies. Latex allergy is recognized clinically when exposure-related symptoms occur in an individual with latex hypersensitivity. However, not all symptomatic individuals demonstrate hypersensitivity, using currently available test reagents.

Occurrence

Reports of latex hypersensitivity and allergy increased greatly in the 1980s and early 1990s, largely as a result of increased exposure to NRL antigens associated with the use of latex medical gloves. In the health-care setting, NRL is used in many products and NRL allergy can be a major occupational health problem. If protective latex gloves are used, workers in other industries also may become sensitized, such as during greenhouse work, housekeeping, food service, hairdressing, and emergency services. Latex products, such as balloons and condoms, are also frequently encountered outside the workplace. As a result, career and lifestyle options may be substantially limited for people with severe latex allergy. A number of studies have indicated that from 1% to 6% of the general population demonstrate laboratory evidence of latex hypersensitivity. Among health care workers and others who have frequent occupational contact with NRL allergens, the rate of latex hypersensitivity has averaged from 8% to 12%. Atopic individuals have significantly higher rates of latex hypersensitivity, generally rates 2- to 4-fold higher, than non-atopic individuals. The proportion of latex-sensitive individuals who are symptomatic depends upon the degree of allergen exposure. Among hospital employees, asthma triggered by latex exposure has been documented in up to half of sensitized workers. Recent evidence suggests latex-related health problems may be declining in the face of measures taken to reduce NRL antigen exposures by glove users, health-care institutions, and manufacturers.

Causes

"Latex allergies" are not actually reactions to the rubber polymer, but to one or more of the several hundred polypeptides and proteins in the milky fluid from the rubber tree (*Hevea brasiliensis*) that is used to make natural rubber latex. Exposures to less than a dozen of these proteins have been implicated as causing latex hypersensitivity and clinical latex allergy. In contrast to natural rubber latex, a number of commercial products are derived exclusively from synthetic rubber, such as latex paints. Because they do not contain NRL proteins, these products do not represent a hazard for the development of NRL allergy.

Pathophysiology

Latex hypersensitivity is generally mediated by the production of specific IgE, which can be triggered when proteins from a latex product are transferred to the skin or mucous membranes, such as during the wearing of gloves or the handling of other products made from natural rubber latex. Use of NRL gloves in the presence of eczema or rashes caused by detergents or by chemicals used in glove processing appears to increase the likelihood of developing latex allergy. In the past, most examination and surgical gloves were coated with starch powder. It is now recognized that the allergenic NRL proteins adhere to these powders, and can remain in contact with the skin

after the gloves are removed. Additionally, protein-powder particles are aerosolized when powdered latex gloves are removed. These particles can be inhaled by nearby workers and patients, exposing mucous membranes to NRL allergens.

Prevention

Prevention of occupational latex allergy is achieved by reducing potential exposure to NRL allergens. In the health-care setting, this involves the replacement of powdered latex gloves with either latex-free gloves or reduced-protein powder-free latex gloves, while maintaining effective glove barrier protection against microorganisms. Individuals at increased risk, such as those working in health care settings where latex gloves are used, should be adequately informed about the potential hazards of latex gloves and the personal and institutional measures that can be taken to prevent latex allergy.

A number of preventive measures have been endorsed by public health agencies and professional organizations:

- Employers should provide latex-free gloves for activities that are not likely to involve contact with infectious materials, such as food preparation, routine housekeeping, and maintenance.
- In workplaces where latex gloves and other products continue to be used, employers should routinely inform workers about signs and symptoms of latex allergy, and risk factors associated with its development, as well as the importance of early medical evaluation and intervention.
- All workers whose job requires exposure to natural rubber latex should be periodically evaluated for symptoms of latex allergy, and employers should develop policies related to latex allergy, providing for appropriate medical evaluation and care, and reasonable accommodations when necessary.

Other Issues

Workers should avoid contact with NRL gloves in the presence of eczema or other active skin disorders. Individuals may also develop latex allergy while receiving medical care, such as during surgical, obstetric, or gynecologic procedures resulting in skin or mucous-membrane contact with latex gloves or other medical supplies or equipment. Persons who have undergone multiple surgical procedures in which latex gloves were used, such as children with spina bifida or congenital urological anomalies, are at high risk of developing latex allergy. These children generally have been shown to have NRL allergy prevalence in the range of approximately 25% to 65%. Individuals with NRL allergy may also manifest allergic reactions to some fruits, including avocado, banana, chestnut, and kiwi, possibly due to allergen cross-reactions.

Further Reading

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Lead Poisoning

ICD-10 T56.0

James Keogh and Barry S. Levy*

Lead poisoning is a syndrome of intoxication caused by absorption of metallic lead, inorganic lead compounds, or, in rare instances, organic lead

* James Keogh (deceased) wrote the Lead Poisoning chapter for the first edition of this book. The chapter for this edition was revised and updated by Barry S. Levy, with the assistance of Howard Hu and Rick Rabin.

Preventing Occupational Disease and Injury Second Edition

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