

LETTER TO THE EDITOR

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Natural Rubber Latex Hypersensitivity with Skin Prick Test in Operating Room Personnel

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ABSTRACT

Hypersensitivity reactions to natural rubber latex have increased recently, especially among people with high exposure to latex allergens. Hypersensitivity reactions to latex are related to many conditions like occupational asthma. Our study was performed to determine the prevalence of hypersensitivity to natural rubber latex and potential food cross reactions in operation room personnel in Shiraz hospitals. In this cross-sectional, descriptive study, 580 operation room personnel filled out our questionnaire which included data about their personal history, symptoms of latex hypersensitivity, and other related allergies such as food hypersensitivity. An informed consent was obtained and skin prick tests were performed for natural rubber latex and potential food cross reactions (kiwi, banana, and potato). The obtained data were analyzed by SPSS and Chi-square test. Results: 104 (17.9%) of the operating room personnel showed positive latex skin tests. We revealed a significant correlation between those with positive skin tests to latex with atopia, urticaria, and food hypersensitivity. The prevalence did not vary by sex, age, education, surgical and non-surgical gloves users, or history of contact dermatitis. Latex hypersensitivity is common among operation room personnel. Evaluation of symptoms and prediction of future diseases necessitate screening tests in individuals at risk.

Key words: Hypersensitivity; Latex; Operation Room

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LETTER

Immunoglobulin E-induced hypersensitivity to the protein in latex is a common health issue and is becoming progressively more significant.¹

The amount of latex contact which induces hypersensitivity is unknown and depends on each person's tolerance. Natural latex is composed of different materials which cause hypersensitivity due to immunological, chemical, and other reactions.²

Atopia is the most significant risk factor for latex hypersensitivity. Statistics show that 67% of health care personnel with latex hypersensitivity have atopia.³

This was a cross sectional, descriptive study on operation room personnel in 10 different hospitals in Shiraz in 2008. In this study, 580 operation room personnel who regularly used latex gloves at least twice a week participated.

A questionnaire consisted of data including career, place of occupation, amount and length of latex glove use, using gloves while dishwashing, or any other kinds of material with latex, like condoms. It also included a past history of seasonal allergies, asthma, hypersensitivity to kiwi, and potatoes, and a positive family history of hypersensitivity and contact dermatitis. Symptoms related to all types of allergies were asked such as asthma, atopia, and seasonal allergies, which are all, type-1 hypersensitivity reactions. Questionnaires were filled out and afterwards skin prick tests were performed.

The different stages of this study were fully explained to the participants, giving data on the advantages and possible side effects, so a complete consent could be obtained.

Participants were divided into those with a bachelor's degree (B.S) and above and others who had a lower educational degree. Those with high latex glove use (>3x per week, each over 2 hours) were separated from those with less use.

The skin prick tests were done using Steallergen's natural latex solution. Carbolic saline was used as a negative control test and histamine 0.1% was used as a positive control test. Skin prick tests for banana, kiwi, and potato were done using their commercial extracts. Skin prick tests for fruits and latex were done separately. Participants did not take any anti-histamine drugs since a week before the tests. These tests were only done on participants who had positive histamine and a negative saline test (positive histamine test =wheal>3mm and negative saline test=no reaction).³

The mean diameter of the wheal induced by each test was measured. Data were analyzed using SPSS and Chi-Square test.

Table 1: History and types of Allergy of operation room personnel

Characteristic	Number	Percentage
Females	409	70.5
Males	171	29.5
High Education	354	61
High Latex Glove Use	380	65.5
Other Types of Gloves (Non-surgical)	275	47.4
History of Hypersensitivity(Atopia)	245	42.2
History of Contact Dermatitis	114	19.7
Seasonal and Non-seasonal Allergy	189	32.6
History of Food Allergy	113	19.5
History of Asthma	28	4.8
Family History of Atopia	268	46.2
History of Urthicaria	101	17.4

Among the 580 participants in this study, 104 (17.9%) showed a positive skin test to latex. Two of them developed wheeze, skin lesions, and generalized pruritus.

There was a significant correlation between positive skin prick tests and atopia, urthicaria, and food allergy. 20.5% of participants with positive skin prick tests had a history of atopia, 24% had a history of contact dermatitis, 33.2% had a history of seasonal allergy, and 100% had family history of atopia in 1st degree relatives. No correlation was seen between positive skin tests and sex, education, contact dermatitis following glove use, and asthma.

Participants who had a positive skin prick test to latex also had positive tests to kiwi. Those with positive tests to banana and potato were very few; therefore we excluded them from comparison.

Our results showed that the prevalence of latex hypersensitivity in operation room personnel was 17.9%, whereas it is below 1% in the normal population.⁴ Although only a small proportion of them were symptomatic and/or had occupational asthma, but this high prevalence showed that there was high contact and immunologic hypersensitivity had a role.

Even though the significance of the asymptomatic participants with positive skin tests was not clear, but it could resemble those who will become symptomatic in the future.

In our study there was not any significant correlation between positive skin prick tests and contact with other types of latex materials, such as household gloves, condoms, and previous surgeries. The number of gloves used by each participant did not show a significant correlation with a positive skin test for latex, either.

The high prevalence of latex hypersensitivity in our study might have been due to poor control of latex particles' concentration in room air and the unawareness of personnel (on how latex hypersensitivity develops). Allergy to tropical fruits like banana, kiwi, avocado, and tomatoes have a cross reaction with latex hypersensitivity.⁵

In our study only kiwi had a significant correlation with latex hypersensitivity, maybe because they are not local fruits and therefore not used commonly.

Measuring the concentration of latex particles in OR air and comparing the results with symptoms of latex hypersensitivity could reveal the methods of transition and its possible risks.

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