Latex sensitivity among dental students

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Summary:
Objectives: **Nowadays latex allergy represents a relevant social and occupational problem because this substance constitutes the first material to realize many dental and non-dental products. Dental students regularly use latex gloves and they are at increased risk for latex sensitivity, during their education.**
Aim: **This study aimed to assess latex allergy in dental students.**
Methods: **146 dental students, 70 males and 76 females (age range 22-36) were included in the study. A cross-sectional study was performing by using a questionnaire, allergy skin prick testing to latex and specific IgE.**
Results: **We detected that 26.7% of tested individuals used gloves more than 2 years. 62.3% of students underwent gloves 5 days in a week and 75.3 % used gloves till 4 hours daily. 5.1% of dental students announced history of atopy and 9.6 % of dental students reports food allergy. 28.4% reports contact eczema when using latex gloves. 1.4% of persons use latex free gloves. 49 of the students underwent a skin prick test. In this study we detected 10.2% positive reactions to latex allergen of all tested individuals. We found specific IgE to latex in two positive patients.**
Conclusion: **Dental students are at high risk for latex sensitization. We observed more positive skin prick test reaction in students who reported personal history of atopy.**

Key words: latex sensitivity, dental student, prick test

Introduction

Dental practitioners are at increased risk for latex sensitivity like other health care providers who regularly use latex gloves. They are also at risk for irritant or allergic contact dermatitis which can be due the allergy of natural rubber latex [1].

Reports of serious allergic reaction to natural rubber latex are not uncommon in dentistry. The prevalence of type I allergies in high-risk patient groups can range as high as 17% for health care professionals and over 50% in patients with spina bifida [2].

The number of people with allergy to natural rubber latex has increased significantly in recent years. The ubiquitous use of latex gloves and other latex products in healthcare has resulted in a parallel increase of latex-associated adverse reactions [3]. An

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adverse patient reaction after dental rubber dam placement has been reported by et al. [4]. About 1 min after the isolation of the tooth with a rubber dam the patient presented signs and symptoms of hypersensitivity. Several studies propose that evolution of patients with occupational rhinitis or asthma as a result of immunoglobulin E-mediated allergy to latex [5].

In this study we aimed to investigate the latex sensitivity in dental students.

Materials and methods

146 dental students, 70 males and 76 females (age range 22-36) from faculty of Dental Medicine, Medical University, Sofia were included in the study.

The self – administrated questionnaire contains basic demographic information, personal history of hay fever, asthma, atopy, food allergy (kiwi, celery, chestnuts, tomato, banana, etc), respiratory discomfort associated with gloves used and other latex products, contact eczema, type of gloves (latex or latex free) and their using daily and weekly were also registered.

After the questionnaire 49 of students underwent skin prick test with a commercial extract of nonammoniated latex (Stallergènes, Paris, France). Histamine dihydrochloride (10 mg/ml) was used as positive control and physiological saline as negative control. Responses to latex allergen were classified from the mean wheal diameters as negative < 3 mm and positive > 3 mm. The results from questionnaire and positive skin prick test are given in *Table 1.*

Only in positive students (skin prick testing) were measured specific IgE to latex

Table 1. Questionnaire responses and skin prick test results

		Students (n = 146)
Mean age (years)		023
Sex:	Males	070 (43.7%)
	Females	076 (51.4%)
Personal history:	Hay fever	000
	Asthma	000
	Atopy	008 (5.1%)
	Food allergy	014 (9.6%)
Symptoms on exposure to latex gloves and other latex products:		
	Asthma	000
	Rhinitis or conjunctivitis	000
	Eczema	042 (28.4%)
Glove use: Age:	till 2 years	107 (73.3 %)
	more than 2 years	039 (26.7%)
Hours:	till 4 h/daily	110 (75.3%)
	more than 4 h/daily	036 (24.7%)
Weekly:	till 4 days	055 (37.7%)
	more than 4 days	091 (62.3 %)
Glove type:	Latex glove	144 (98.6%)
	Latex free	002 (1.4%)
Skin prick test results (n=49):		
	positive	005 (10.2%)
	negative	044 (89.8%)

in serum with enzyme immunoassay (ImmunoCap System) according to the manufacturers instructions.

All participants gave informed consent before the skin prick testing and serum evaluation of specific IgE.

Information from the questionnaire was coded and entered a database file. Statistical analysis was performed using SPSS package. Spearman correlation coefficient was used.

Results

A total of 146 dental students completed the self – administrated questionnaire.

We detected that 26.7% of tested individuals used gloves more than 2 years. 62.3% of students underwent gloves 5 days in a week and 75.3 % used gloves till 4 hours daily. 5.1% of dental students announced history of atopy and 9.6 % of dental students reports food allergy. 28.4% reports contact eczema when using latex gloves. 1.4% of persons use latex free gloves.

49 of the students underwent a skin prick test. In this study we detected 10.2% positive reactions to latex allergen of all tested individuals.

We found specific IgE antibody to latex only in two positive patients.

Positive skin prick test/ atopy and atopy/ contact eczema were the two pairs, showing statistically significant correlation - Spearman's correlation coefficients ($p = 0.000$ and $p = 0.003$).

No statistical correlation were found between daily, hours and weekly used of latex gloves and positive skin prik testing and exist of contact eczema in dental student.

No statistical correlation was found between positive skin prik testing and hand contact eczema.

Discussion

Regular exposure to latex-containing products, not only gloves in a dental environment can cause both adverse allergic and non allergic reactions among dental practitioners and their patients.

Gloves are now worn routinely by most general dental practitioners and dental students while treating patients, with latex being the most commonly used glove material [6]. They prevent the transmission of microorganisms between patients and healthcare workers. The Department of Health has issued revised guidance for protection of healthcare workers from bloodborne infections, with specific suggestions for glove use [7].

By means of a questionnaire, this study surveyed 146 students in one dental school in respect of their exposure to latex gloves.

No one of the studied individuals reported asthma symptoms, symptoms of conjunctivitis or rhinitis on exposure to rubber products. 28.4% reports of contact eczema when using latex gloves.

We observed that all students with atopy were positive to latex allergen.

Tarlo et al. assessed the prevalence of latex sensitivity and possible risk factors in staff and students of a Faculty of Dentistry. In their study 13% of the tested individuals reported symptoms of rhinitis or conjunctivitis. Overall, 10% of 131 subjects who underwent skin prick tests had a positive response to natural rubber latex [1]. In concordance of our findings the authors found that latex allergy were related to a personal history of atopy.

et al. alert doctors of dental surgery to the possibility of latex sensitivity in both outpatients and inpatients. Also they found that subjects who were latex-allergic were significantly more likely to be atopic and had positive IgE test to cross-reactive foods [8].

The skin prick test is the most reliable methods of diagnosing sensitization to natural rubber latex [9]. There are reports of anaphylactic reaction in Europe and in USA when use of self made latex dilution in prick testing has led to fear of in vivo diagnostics [10].

In this study we used Stallergènes latex allergen. Positive skin prick test to latex we observed in 10.2 % of dental students.

In all of positive student we measure the serum specific IgE latex antibodies by ImmunoCap System. Only two patients had increased IgE antibodies to latex (1.56 kUA/L and 1.64 kUA/L).

Seppa et al. [11] suggest that RAST and AlaSTAT are the most commonly used in vitro test for diagnosis of sensitization to natural rubber latex, but they are less sensitive then the skin prick test.

Conclusion

Dental students are at high risk for latex sensitization, during there education. More of them report contact eczema when used latex gloves, and it is due to friction between gloves and the skin. We observed correlation between positive skin prick test and personal history of atopy, but we didn't find dependency between daily, hours and weekly used of latex gloves and positive skin prick testing. In all atopic students we found positive skin prick test to latex allergen.

Latex free gloves must be available for a sensitized individual, both to use at work and when undergoing medical examinations, surgery and dentistry.

Acknowledgement: We thank Ewofarma company, K. Ivanova, E.Taneva and the students of Dental Medicine for assistance and their participation.

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