

CONTACT POINTS

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Contact sensitization to European baseline series of allergens in university students in Beijing

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Population-based epidemiological studies are important in the surveillance of national and international contact allergy. Most published work, however, have originated from North America and Western Europe, and the prevalence of contact allergy

in the general population from mainland China has not previously been reported. The purpose of this study was to determine the prevalence of contact sensitization in university students in Beijing and to investigate the possible link in the prevalence of delayed hypersensitivity between eczema patients and a non-patient population.

Subjects and Methods

Healthy student volunteers from Peking University were recruited by an advertisement via the university education department stating that healthy volunteers were needed to test for the frequency of allergic reactions to common environmental allergens. Exclusion criteria included severe skin conditions, immunosuppressant treatment, or the use of corticosteroids within the 4 weeks prior to the study. A confirmed or suspected allergy was

neither an inclusion nor an exclusion criterion.

Two hundred and five volunteers (95 men, 110 women, with average age 25.8 ± 1.5 years, range 20–27 years) were patch tested with a modified European baseline series of allergens and IQ Chamber (Chemotechnique Diagnostics, Malmö, Sweden; Table 1). Allergens were applied to the upper back and the results were recorded at D2 and D4 according to International Contact Dermatitis Research Group (ICDRG) criteria (1). Corresponding data from 327 patients with eczema (100 men, 227 women, with average age 36.5 ± 13.8 years, range 19–78 years) who attended a dermatitis clinic for patch testing in the same period were compared by using SPSS 11.0 (Systat version 11.0, SPSS, Chicago, IL, USA). All participants were ethnically Han Chinese. A local ethics committee approved this study and oral consent was obtained from the subjects.

Table 1. Prevalence of contact sensitization to a modified European baseline series of allergens in Beijing

Allergens	Conc.% (w/w)	Volunteers (<i>n</i> = 205)			Patients with eczema (<i>n</i> = 327)		
		Male (<i>n</i> = 95)	Female (<i>n</i> = 110)	Total	Male (<i>n</i> = 100)	Female (<i>n</i> = 227)	Total
Black rubber mix	0.6	1	0	0.5	4	1.3	2.1
2-Bromo-2-nitropropane-1,3-diol	0.25	0	0	0	1	0.9	0.9
Carba mix	3.0	4.2	0.9	2.4	15	2.6	6.4
Cl+Me-isothiazoline	0.01	0	0	0	4	4	4
Cobalt chloride	1.0	4.2	5.5	4.9	4	8.4	7
Colophonium	20.0	2.1	0.9	1.5	3	5.3	4.6
Epoxy resin	1.0	0	0.9	0.5	0	1.3	0.9
Ethylenediamine dihydrochloride	1.0	1.1	1.8	1.5	9	0.9	3.4
Formaldehyde	1.0	1.1	1.8	1.5	3	5.7	4.9
Fragrance mix I	8.0	0	4.5	2.4	7	13.2	11.3
Imidazolidinyl urea	2.0	0	0.9	0.5	3	1.8	2.1
Mercapto mix	2.0	1.1	0.9	1.5	1	0	0.3
<i>N</i> -(cyclohexylthio) phthalimide	1.0	0	0.9	0.5	2	0.9	1.2
Nickel sulfate	5.0	5.3	11.8	8.8	9	20.7	17.1
Paraben mix	16.0	0	0	0	1	0.9	0.9
<i>Para</i> -phenylenediamine	1.0	0	0	0	6	8.4	7.6
Potassium dichromate	0.5	1.1	3.6	2.4	7	6.6	6.7
Quaternium-15	1.0	0	0	0	0	2.6	1.8
Sesquiterpene lactone mix	0.1	0	0.9	0.5	4	0.4	1.5
Thiuram mix	1.0	0	0	0	0	0.4	0.3

Conflicts of interest: The authors have declared no conflicts.

Results

Thirty-seven volunteers (18%) exhibited one or more positive patch-test reactions. This was less than those with eczema (145/327, 43%), which was statistically significant. ($P < 0.0001$, χ^2 test). Patch test results are shown in Table 1. In the volunteer arm, reactions to nickel were commonest (8.8%), followed by cobalt chloride (4.9%), potassium dichromate (2.4%), and fragrance mix (2.4%). In patients with eczema, the commonest positives on testing were nickel sulfate (17.1%), fragrance mix (11.3%), paraphenylenediamine (7.6%), and cobalt chloride (7%). Of the 18 volunteers with positive nickel reactions, current relevance was found in 3 of these, past relevance in 8, and the relevance of the other 7 subjects was unknown. The positivity rate of all allergens in patients with eczema was more than twice that of volunteers except that of Mercapto mix, which was high in volunteers although this did not reach statistical significance (Table 1).

Discussion

Our results show that contact allergy is also common in volunteers in Beijing. A weakness of our study is that it relies on a self-selected population. Those with a history of dermatitis might have used this study to be tested, potentially leading to bias. In spite of this, the prevalence of contact sensitization to nickel (8.8%) is still lower than that of Australia (20%) and Norway (19.2%) but comparable to that reported in Western Europe and USA (median prevalence 8.6%, range 0.7–27.8%) (2–4). The lower age distribution of our population studied (20–27 years) may partly contribute to it because patch-test positivity tends to increase with age. Another interesting finding is that the prevalence of contact allergy in patients with eczema is parallel to that in volunteers (except Mercapto mix) supporting the notion that we may extrapolate frequency from an eczema group to a general population (5). The reason for the high rate of positive reactions to Mercapto mix in volunteers is unclear and the relevance of these reactions has yet to be determined.

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