

The Pattern of Allergic Contact Hand Dermatitis at a Tertiary Skin Clinic in Sarawak, Malaysia

To the Editor:

Data on allergic contact dermatitis in Sarawak and Malaysia are lacking. Sarawak is a multiethnic state comprising 40 ethnic groups in East Malaysian Borneo. In Sarawak, the skin clinic at the Sarawak General Hospital is the only facility in the whole state offering the service of patch testing. The pattern of patch testing has never been reported. Thus, a retrospective study was done to determine the pattern of allergic contact hand dermatitis at Sarawak General Hospital between 2000 and 2008.

Patients with an exclusive diagnosis of allergic contact hand dermatitis were included in the study. The patients were patch-tested with European Standard series patch tests (Trolab, Hermal, Reinbek, Germany) mounted on the patients' backs with Finn Chambers (Norgesplaster A/S, Vennesla, Norway) on Scanpor tape (Epitest Ltd Oy, Tuusula, Finland). The patches remained in place for 48 hours. The first reading was performed at 48 hours, the second at 96 hours. The result was interpreted according to International Contact Dermatitis Research Group recommendations. Statistical analysis was performed with SPSS version 15 software (SPSS Inc, Chicago, IL). The chi-square test was used for categorical data, and the Mann-Whitney test was used for continuous data. The level of significance was set at $p < .05$.

A total of 11,401 new patients were seen at the skin clinic at Sarawak General Hospital between 2000 and 2008; 1,230 patients (10.8%) had a confirmed diagnosis of allergic contact dermatitis. Only 164 patients had an exclusive diagnosis of allergic contact hand dermatitis in which the allergen was deemed relevant to the dermatitis. Of these patients, 139 (84.8%) were females and 25 (15.2%) were males. Chinese patients constituted 43.3% ($n = 71$) of cases, whereas native patients made up 56.7% ($n = 93$) of cases. The native patient population consisted of

Sarawakian Malays (59.1%, $n = 55$), Bidayhuhs (21.6%, $n = 20$), Ibans (15.1%, $n = 14$), Kelabits (2.1%, $n = 2$), and Kayans (2.1%, $n = 2$). The mean age was 40.2 years (SD, 14.40), the actual ages ranging from 13 to 85 years.

Table 1 shows the pattern of allergens causing allergic contact hand dermatitis. The most common allergen was nickel (38.4%), followed by fragrance mix (22.6%), cobalt (9.1%), balsam of Peru (4.9%), and paraben mix (4.3%). A similar pattern was seen in neighboring Singapore.¹

Among the Chinese, the pattern was similar to the common pattern. Among the natives, however, paraben mix was identified as the third most common allergen, followed by potassium dichromate and 5-chloro-2-methyl-3-isothiazolin-4-one. This finding is interesting and is probably related to occupational exposure to the allergens. The natives are highly involved in agricultural industry, and this might explain the higher prevalence of 5-chloro-2-methyl-3-isothiazolin-4-one, a common allergen in pesticides. Unfortunately, in this study, the occupations of the patients cannot be considered for analysis because they were not recorded in one-third of the case folders.

Table 2 shows the clinical characteristics of patients with allergic contact hand dermatitis due to common allergens (ie, nickel, potassium dichromate, fragrance, and cobalt). Nickel dermatitis was significantly more common in females (93.7% vs 79.2%, $p = .01$). This corresponds to the findings by Goh in Singapore.²

Potassium dichromate allergy was found to be more common in men (86.7% vs 33.3%, $p = .01$). This is not surprising considering that men, especially those in the construction industry, are more likely to be in contact with cement. In Taiwan and Singapore, potassium dichromate allergy was more common in men and was occupation related.³

Fragrance allergy (the combination of fragrance mix and balsam of Peru allergies) were seen more commonly in older patients (mean age, 43.8 yr vs 38.9 yr; $p = .03$). Wantke and colleagues showed that the incidence of reaction to balsam of Peru peaked in the older patients, especially in men.⁴ This might be related to cumulative exposure to the allergen, which increases with age.

In contrast, patients with cobalt allergy were significantly younger (mean age, 31.5 yr vs 41.1 yr; $p = .01$). Moreover, Chinese were more likely to develop cobalt allergy (80% vs 39.6%, $p = .003$). The reason for the higher incidence of cobalt allergy in Chinese compared to the natives is unknown but may be related to occupational exposure.

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Table 1. Frequencies of Allergens Causing Hand Eczema

Allergen	No. of Allergic Patients		
	All (n = 164)	Chinese (n = 71)	Natives of Sarawak (n = 93)
Nickel sulfate 5%	63 (38.4%)	24 (33.8%)	39 (41.9%)
Fragrance mix 8%	37 (22.6%)	18 (25.4%)	19 (20.4%)
Cobalt chloride 1%	15 (9.1%)	12 (16.9%)	3 (3.2%)
Balsam of Peru 25%	8 (4.9%)	5 (7.0%)	3 (3.2%)
Paraben mix 16%	7 (4.3%)	2 (2.8%)	5 (5.4%)
Potassium dichromate 0.5%	6 (3.7%)	2 (2.8%)	4 (4.3%)
Colophony 20%	6 (3.7%)	3 (4.2%)	3 (3.2%)
5-Chloro-2-methyl-4-isothiazolin-3-one 0.01%	6 (3.7%)	2 (2.8%)	4 (4.3%)
Neomycin sulfate 5%	4 (2.4%)	1 (1.4%)	3 (3.2%)
para-tert-Butylphenol formaldehyde resin 1%	3 (1.8%)	1 (1.4%)	2 (2.2%)
Thiuram mix 1%	2 (1.2%)	0	2 (2.2%)
Formaldehyde 1%	2 (1.2%)	0	2 (2.2%)
N-Isopropyl-N-phenyl-p-phenylenediamine 0.1%	1 (0.6%)	1 (1.4%)	0
Sesquiterpene lactone mix 0.1%	1 (0.6%)	0	1 (1.1%)
Mercapto mix 1%	1 (0.6%)	0	1 (1.1%)
Quaternium-15 1%	1 (0.6%)	0	1 (1.1%)
Mercaptobenzothiazole 2%	1 (0.6%)	0	1 (1.1%)

The limitation of this study was its retrospective nature. The lack of vital information (especially regarding the patients' occupations) and the small number of patients with allergies to the less common allergens prevented the statistical analysis of these variables.

In conclusion, the pattern of allergic contact hand dermatitis in Sarawak is similar to patterns in other Asian countries. However, it is noted in Sarawak that cobalt allergy is more common among the younger Chinese patients than among the native patients.

Table 2. Characteristics of Patients with Allergic Contact Hand Dermatitis from Common Allergens

Allergy	Yes	No	p Value
Nickel			
Age (mean/yr)	39.3 ± 16.5	40.8 ± 13.0	.29
Chinese	24/63 (38.1%)	47/101 (46.5%)	.18
Female	59/63 (93.7%)	80/101 (79.2%)	.01
Atopy	10/63 (15.9%)	17/101 (16.8%)	.53
Potassium dichromate			
Age (mean/yr)	43.5 ± 7.56	40.1 ± 14.59	.45
Chinese	2/6 (33.3%)	69/158 (43.7%)	.48
Female	2/6 (33.3%)	137/158 (86.7%)	.01
Atopy	1/6 (1.67%)	26/158 (16.5%)	.66
Fragrance			
Age (mean/yr)	43.8 ± 12.75	38.9 ± 14.80	.03
Chinese	23/45 (51.1%)	48/119 (40.3%)	.14
Female	37/45 (82.2%)	102/119 (85.9%)	.37
Atopy	6/45 (13.3%)	21/119 (17.6%)	.34
Cobalt			
Age (mean/yr)	31.5 ± 11.21	41.1 ± 14.42	.01
Chinese	12/15 (80.0%)	59/149 (39.6%)	.003
Female	14/15 (93.3%)	125/149 (83.9%)	.30
Atopy	5/15 (33.3%)	22/149 (14.8%)	.76

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