HAND ECZEMA IN MALAYSIANS

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SUMMARY

One-hundred-and-four patients with hand eczema were studied. The female to male ratio was 1.9:1 and peak incidence was in young adulthood. In females, housewives constituted the biggest group while in males, mechanics/engineers was the biggest group. 30% of the patients had contact sensitivity on patch testing to a standard series. Balsams, medicaments, rubber ingredients, nickel and formaldehyde were the common allergens. The contact sensitivity was considered relevant in 65% of cases.

INTRODUCTION

Hand eczema is a convenient topographical description which embraces those cases of eczema that persistently or predominantly affect the hands alone. [1] The definition excludes cases where the hands are secondarily involved as part of a more widespread eczematous eruption. It is a common problem and accounts for 21-36% of all cases of eczema. [1,2] This form of eczema is particularly distressing because it tends to be disabling apart from being uncomfortable, visible and socially embarassing. Contact allergy often plays a part in hand eczema and patch testing is useful to identify the allergens responsible. [1]

This study focuses on the epidemiological features and pattern of contact allergy in a group of 104 Malaysian patients with hand eczema seen over a three-year period from 1980 to 1983.

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MATERIALS AND METHODS

All new patients seen by the author at the Skin Clinic of the University Hospital with a presentation of hand eczema over the three-year period were entered into the study. Clinical data was collected through an interview and examination conducted personally by the author. Each patient was then subjected to a patch test using the Al-test unit (Imeco Astra Agency, Sweden) devised by the International Contact Dermatitis Research Group. [3] The allergens were from 'Trolab' (K-Trolle-Larsen, Hellerup, Denmark). A standard battery of 25 allergens plus a control (petrolatum) was routinely applied. The 25 allergens were:

Potassium dichromate	Thiuram-mix
Cobalt chloride	PPD-mix
Nickel Sulphate	Naphthyl-mix
Formaldehyde	Carba-mix
Paraphenylenediamine (PPD)	Ethylenediamine dichloride
Balsam of Peru	Fragrance-mix
Neomycin sulphate	P-chloro-m-cresol
Parabens	Caine-mix
Chinoform	Disperse Yellow 3
Colophony	Phenol formaldehyde resin
Wool alcohols	P-tertiary butylphenol formaldehyde resin (PTBP)
Epoxy resin	Mercaptobenzthiazole (MBT)
Mercapto-mix	

This battery is based on the European Standard Battery [1] and includes all the substances used in the latter except for sterosan and turpentine which were no longer available from the supplier (K-Trolle-Larsen). In certain individual cases supplementary allergens based on clinical suspicion were used in addition. The test units were applied with Dermicel tape (Johnson and Johnson) following the method described by Fregert *et al* [2] and readings taken after 48 and 72 hours.

RESULTS

Sex and Age distribution

The group of 104 patients contained significantly more female (68) than males (36).

In both sexes most cases occurred in young adulthood, with a peak at 20-29 years of age for the males and 20-39 in the females (Table I).

TABLE I
AGE AND SEX DISTRIBUTION

	Age (years)							
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	Total
Male	1	19	5	7	3	0	1	36
Female	11	23	27	4	3	0	0	68
Total	12	42	32	11	6	0	1	104

Duration of hand eczema

The majority of patients had suffered from this condition for more than a month when first seen (Table II) indicating that this disease is usually a chronic problem. In the males there was unexpected dip in the > 5 year category, suggesting perhaps a tendency for healing to occur after this period of time.

TABLE II
DURATION OF DISEASE

	> 1 month	1 month to 1 year	1-5 years	> 5 years	Total
Male	4 (11%)	16 (44%)	14 (39%)	2 (6%)	36 (100%)
Female	3 (4%)	15 (22%)	38(56%)	12 (18%)	68 (100%)

Occupation

Most of the females were housewives, teachers, nurses, office workers and students, while most of the males were mechanics, technicians and factory workers (Table III).

TABLE III
OCCUPATION OF PATIENTS

	Male	Female	Total
Housewives	0	17	17
Teachers	0	5	5
Nurses	0	8	8
Office-workers	6	16	22
Students	3	15	18
Factory workers	8	2	10
Mechanic/Engineer	9	0	9
Technicians	6	2	8
Doctor/Dentist	2	0	2
Retired	2	0	2
Cooks	0	2	2
Maid Servant	0	1	1
Total	36	68	104

Prevalence of Atopy

A patient was considered to be an atopic individual if his/her eczema was associated with asthma or hayfever in the patient himself/herself or with a history of eczema, asthma or hayfever in close relatives.

Atopy so defined was present in 36% of the group, with no appreciable difference in the two sexes (39% for males and 34% for females; $\chi^2 = 0.09$, $p => 0.9$).

Patch test reactions to standard battery

30% of the group gave a positive test with the standard battery. Among females the positivity rate was 34% while among males the positivity rate was 22% (Table IV). This difference is not statistically significant (χ^2 1.01, $p => 0.3$).

TABLE IV
INCIDENCE OF POSITIVE PATCH TEST REACTIONS

	No. of patients tested	No. with positive tests	
		to standard battery	to supplementary allergens
Male	36	8 (22%)	5 (14%)
Female	68	23 (34%)	12 (18%)
Total	104	31 (30%)	17 (16%)

The incidence and pattern of positive tests to the different allergens in the standard battery is

TABLE V
INCIDENCE AND PATTERN OF POSITIVE REACTIONS TO DIFFERENT ALLERGENS IN THE STANDARD BATTERY (% of total tests)

	Male		Female	
	This series	European series[3]	This series	European series[3]
Balsams	14	19	19	18
Medicaments	11	6	7	5
Nickel	5	2	9	11
Formaldehyde	5	3	5	4
Rubber ingredients	3	5	13	5
PPD	0	6	1	4
Chrome	0	14	1	3
Cobalt	0	9	0	8

detailed in Table V. The figures of a combined European study [3] are given for comparison. The group 'balsams' include fragrance-mix, colophony and Balsam of Peru; 'medicaments' include neomycin, parabens, wool alcohols, caine-mix, chinoform and p-chloro-m-cresol; 'rubber ingredients' include thiuram-mix, mercapto-mix, carba-mix and naphthyl-mix.

Patch test to Supplementary allergens

16% of the group had positive reactions when tested with allergens suspected clinically to be implicated, based mainly on the history and occupation (Table IV). These allergens include garlic, hibitane, clove oil, benzoyl peroxide, onion, shampoo, tooth-paste, freon, acetone.

DISCUSSION

This series of patients showed an obvious female preponderance (female:male = 1.9:1). Agrup [4] in a survey of hand eczema in South Sweden also found a female dominance, the female to male ratio being 2:1 in the general population and 1.5:1 in an outpatient clinic. Wilkinson *et al* [5] in a combined study of patients from five cities in Europe found slightly more males than females (1:0.8). However, these patients constituted a selected group from referral centres with a special interest in industrial and contact eczema and the figures are probably weighted by the fact that more males than females tend to get referred for assessment at the centres since hand eczema in females is more liable to be acceptable or dismissed as 'housewives' eczema. [5]

In both sexes the condition is uncommon below 20 years of age and the bulk of patients are young adults. This perhaps relates to the beginning of the working life in the males and the onset of marriage and housework in the females, with the consequent increased chance of exposure to irritants and allergens. Other studies [4,6] have also shown the incidence to be low in the below 12 age group and in the old (above 50 age group).

The prevalence of atopy in this series was 36%. This is considerably higher than the prevalence of atopy in the general population which has been estimated at 20%. [7] Glickman *et al* [8] have shown the prevalence of atopy to be even higher (82%) in a group of patients with hand eczema in America. Thus, in consonance with the American experience, it appears that patients with the atopic diathesis are more prone to develop hand eczema.

The occupational background often plays a role in determining the risk of developing hand eczema. In this series of patients the biggest group in the males are mechanics/engineers, followed by factory workers. Patients in these occupations are often exposed to greases, oils and other industrial irritants and allergens. Out of the six male technicians, four work in the laboratory and are exposed to various chemicals while two are engaged in the printing trade. In females, hand eczema is often considered to be potentially related to domestic work with the associated excessive exposure to soaps, detergents, cleansers, food materials and other substances [6] and this observation is applicable to this series of patients too. The biggest single group in the females of this series consists of housewives. The other big groups are office workers, students, nurses and teachers, but on questioning the majority of these are also involved in doing housework at home. For instance all the female teachers and nurses are married and do housework on their own without any domestic help. Fourteen out of the 16 female ofice-workers and eight of the 15 female students also do housework. In contrast, only one out of all the males in the series does housework.

Patch testing of the 104 patients revealed that 30% were positive to at least one allergen in the standard battery. This is comparable to the positivity rate of 32% found by Wilkinson [3] in a series of 385 patients in England. However, in a combined study of five European centres [5] the positivity rate was as high as 40%. There is no sex difference in the positivity rates of patch testing in

our series and this is also true in the other two studies quoted above [3,5].

Of the allergens to which the patients are reactive, the balsams constitute the most common group in both males and females. For the males, the other allergens in order of rank are medicaments, nickel, formaldehyde and rubber ingredients, while for the females the ranking order is: rubber ingredients, nickel, medicaments, formaldehyde, PPD and chrome. Compared to the European series some differences require comment.

Chrome

This is common in the Europeans (especially males) but not in Malaysians. This probably reflects the difference in the level of industrialisation and the pattern of industries in the two communities as chrome sensitivity is usually occupational [9] and the metal is the most frequent sensitizer in industrial workers [9].

Cobalt

This is usually linked to chrome sensitivity in males as the 2 metals usually occur together in industrial sensitizers. [9] The high level of cobalt sensitivity in European females has been attributed to the presence of cobalt in European detergents [9]. In contrast, in America, where cobalt is not found in detergents, the level of cobalt sensitivity is low [9]. Perhaps the same explanation is applicable in the Malaysian situation.

PPD

This again is rare in comparison with the European series. PPD is often found in hair dyes. Perhaps lower exposure to hair dyes in Malaysians account for the difference.

In addition to the standard patch test battery, supplementary allergens were used in some patients. Sixteen % of the group had possitive tests to these allergens. This is comparable to the finding in an English study [3] where 12.5% of patients were found to give positive tests to additional substances.

It is important to mention at this stage that the relevance of positive patch tests to the hand eczema need to be interpreted with care. A positive patch test only means that a patient is sensitive to a certain allergen. It remains for the clinician to make a careful assessment based mainly on careful history taking as to whether the allergy is directly related to the hand eczema or whether it is only of past or unknown significance.

In the case of the supplementary allergens there is no problem in interpretation as the allergens chosen are based on what the patient actually handles, and is thus considered relevant to the hand eczema. With respect to the standard battery, after careful review it was found that in 65% of cases the positive tests could be considered relevant to the hand eczema. This is comparable to the finding in a combined European study [5] where the patch test reactions were considered relevant in two-thirds of the cases.

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