

A Retrospective Epidemiology Study of Contact Eczema Among the Elderly Attending a Tertiary Dermatology Referral Centre in Singapore

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ABSTRACT

Aim: The aim of this study was to examine the epidemiology of contact eczema in the elderly patients attending a skin clinic in Singapore.

Methodology: This is a retrospective study on patients attending our skin clinic at the National Skin Centre. All patients older than 49 years old attending our Contact and Occupational Dermatoses Clinic between 1990 and 1993 were included in the study. The prevalence of contact eczema among different age groups (50 – 59 years, 60 – 69 years, and 70 – 79 years) were compared. Diagnosis of contact dermatitis was based on the clinical history, physical examination and relevant patch test reactions. Demographic data of the patients were collected and analysed. Chi-square test was used for statistical analysis.

Results: Two hundred and one patients who were older than 49 years old, were included in the study. There was no significant difference in the prevalence of personal history of atopy among the 3 age groups. There was no significant difference in the racial distribution of the 3 age groups. The proportion of patients who were occupationally active decreased with age (50% vs 23% vs 0% respectively).

There was no significant difference in the proportion of patients with positive patch test reactions in the 3 age groups although the proportion appears to increase with age (68% vs 75% vs 75% respectively). Similarly, the proportion of patients with allergic contact dermatitis was slightly higher in the older age group although the difference was not statistically significant among the 3 age groups (32% vs 45% vs 39% respectively).

The face (54%) and hands (31%) were the commonest sites of eczema in the younger age group (50 – 59 years age group) whereas the lower limbs (41%) and the upper limbs (33.3%) were the commonest sites of eczema in the older patients (70 – 79 years age group).

Nickel allergy was significantly more common in the younger age group (23% vs 17% vs 14% respectively). Medicament allergy (clioquinol-mix) and medicament related allergens eg. balsam of Peru and fragrance-mix and para-phenylenediamine were slightly more prevalent in the older patients.

Conclusions: The findings appear to indicate that the prevalence of allergic contact dermatitis is higher in older patients and that contact dermatitis tends to occur on the extremities in older patients than younger patients.

Keywords: geriatrics, irritant contact dermatitis, allergic contact dermatitis, elderly, patch test

INTRODUCTION

Eczema is one of the commonest dermatological problems in elderly patients attending dermatological outpatient clinics. Previous reports indicated that elderly patients have a higher prevalence of contact allergy especially to topical medicaments and constituents of topical medication^(1,2). This probably resulted from the frequent use of topical medicaments for stasis and asteatotic eczema.

This is a retrospective study on the epidemiology of eczema among patients over 49 years old attending our Contact and Occupational Dermatoses Clinic. The findings in the study may be used to plan dermatological care for the elderly patients in the community. Identifying risk factors to eczema in the elderly may help us introduce relevant education and preventive measures to our patients before they grow old.

MATERIALS AND METHODS

This is a retrospective study on the epidemiology of patients over 49 years old, presenting to our Contact and Occupational Dermatoses Clinic with eczema, between 1990 and 1993.

As a routine, all patients attending our clinic were interviewed, examined and patch tested to our standard series and additional allergens where indicated. All information were recorded in standard protocols and data collated in our computer.

Patch test procedures and reactions were carried out and recorded in the standard way⁽³⁾. A1+ or greater reaction was considered a positive reaction. Table III shows our standard series.

We compared the demographic data of 3 age groups of patients namely those between 50 – 59

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years old, 60 – 69 years old, and 70 – 79 years old. There were relatively few patients who were > 79 years old and they were thus excluded from our study.

Statistical analysis were carried out using the Chi-square test; p-values of < 0.05 were considered statistically significant.

Results

Table I shows the demographic data of patients in the 3 age groups viz 50 – 59 years, 60 – 69 years and 70 – 79 years old. The proportion of patients with a personal history of atopy was almost similar in all the 3 age groups. There was no significant difference in the racial distribution among the 3 age groups. The proportion of patients who were gainfully employed decreased with increasing age.

There was no significant difference in the proportion of patients with positive patch test reactions in the 3 age groups. Similarly, the proportion of patients with allergic contact dermatitis were similar in the 3 age groups.

There was no significant difference in the proportions of males and females with atopy, working status and patch test reactions in all the age groups. However, there appeared to be more females with allergic contact dermatitis in the 70 – 79 years age group than the other groups.

Table II shows the frequency distribution of eczema according to sites, sex and age groups. The face and hands were the commonest sites of eczema in the younger age group (50 – 59 years age group) whereas the lower limbs and upper limbs were the commonest sites of eczema in the older patients (70 – 79 years age group).

There was no significant difference in the frequency distribution among the different sites of eczema presentation between male and female patients in the 3 age groups.

Table III shows the frequency distribution of positive patch test reactions to our standard battery in the 3 age groups according to sex. Metals allergy was more common in the younger age group and the older age group. Patch test reactions to topical

medicament or constituents of topical medicament eg. balsam of Peru and fragrance-mix together with para-phenylenediamine were more prevalent in the older age group than the younger age group. Occupational allergens reactions eg. epoxy resins were uncommon in the older age group.

Nickel allergy was more common in females than males except in the older age group (70 – 79 years) where the proportion was reversed.

DISCUSSION

With the increasing ageing population in many developed and developing countries, physicians, including dermatologists are beginning to handle more geriatric patients. The subspecialty of geriatrics has been established in many hospitals to cater to the ageing population.

Our previous study has indicated that the prevalence of allergic contact dermatitis and contact allergy were higher in the older patients than those in the younger ones⁽¹⁾. Our present study provides a more detailed epidemiology on the presentation and characteristics of contact eczema in the elderly (> 59 years old) in Singapore.

Our findings showed that the demographic data of patients presenting to our clinic were almost identical in all the 3 age groups. The proportion of patients with a personal history of atopy was similar in all the 3 age groups. There was no significant difference in the sex and racial distribution among the 3 groups. As expected, the proportion that remained gainfully employed decreased with age.

The proportion of older patients with positive patch test and the proportion with allergic contact dermatitis appeared to be slightly higher in the older age group (not statistically significant). This was similar to our earlier findings^(1,4). We suspect that older patients are more likely to self-medicate with topical medications for their stasis eczema and asteatotic eczema. They are also more likely to seek treatment for their stasis and xerosis. They are therefore more likely to become sensitized to topical medicament and constituents of emollients.

Table II – Frequency distribution of site of eczema according to age group

Distribution	50 – 59 Total n = 104 (%)	60 – 69 Total n = 150 (%)	70 – 79 Total n = 51 (%)
Hands	32 (30.8)	33 (22.0)	7 (13.7)
Forearms/Arms	21 (20.2)	42 (28.0)	17 (33.3)
Feet	11 (10.6)	17 (11.3)	6 (11.8)
Thighs/Legs	19 (18.3)	50 (33.3)	21 (41.2)
Trunk	10 (9.6)	25 (16.7)	13 (25.5)
Face	56 (53.8)	40 (26.7)	17 (33.3)
Genitalis	4 (3.8)	3 (2.0)	2 (3.9)
Generalized	2 (1.9)	5 (3.3)	3 (5.9)

There was no statistically significant differences in the frequency distribution in different sites of eczema among the 3 age groups.

Table 1 – Epidemiology of contact allergy according to age in patients > 9 years old

	50 – 59 (n = 104)		60 – 69 (n = 150)		70 – 79 (n = 51)	
	Male n = 45 (%)	Female n = 59 (%)	Male n = 85 (%)	Female n = 65 (%)	Male n = 28 (%)	Female n = 23 (%)
	Total n = 104 (%)		Total n = 150 (%)		Total n = 51 (%)	
Age (mean)	54.1(SD = 2.7)		63.8(SD = 3.0)		74.1(SD = 2.9)	
Atopy	52.8(SD = 2.5)		63.7(SD = 3.0)		73.7(SD = 3.0)	
No	39 (89.7)	50 (84.7)	75 (88.2)	59 (90.8)	21 (75.0)	20 (87.0)
Yes	6 (13.3)	9 (15.3)	10 (11.8)	6 (9.2)	7 (25.0)	3 (13.0)
Race	53.4(SD = 2.7)		63.8(SD = 2.9)		73.9(SD = 2.9)	
Chinese	35 (77.8)	48 (81.4)	56 (65.9)	49 (75.4)	22 (78.6)	17 (73.9)
Indian	4 (8.9)	6 (10.2)	13 (15.3)	8 (12.3)	1 (3.6)	3 (13.0)
Malay	3 (6.7)	3 (5.1)	12 (14.1)	7 (10.8)	5 (17.9)	3 (13.0)
Others	3 (6.7)	2 (3.4)	4 (4.7)	1 (1.5)	0 (0.0)	0 (0.0)
Occupation	53.4(SD = 2.7)		63.8(SD = 2.9)		73.9(SD = 2.9)	
No	11 (24.4)	35 (59.3)	56 (65.9)	59 (90.8)	24 (85.7)	23 (100.0)
Yes	34 (75.6)	24 (40.7)	29 (34.1)	6 (9.2)	4 (14.3)	0 (0.0)
Positive Patch test Reactions	53.4(SD = 2.7)		63.8(SD = 2.9)		73.9(SD = 2.9)	
No	14 (31.1)	19 (32.2)	26 (30.6)	11 (16.9)	8 (28.6)	5 (21.7)
Yes	31 (68.9)	40 (67.8)	59 (69.4)	54 (83.1)	20 (71.4)	18 (78.3)
Final diagnosis	53.4(SD = 2.7)		63.8(SD = 2.9)		73.9(SD = 2.9)	
ACD	16 (35.6)	17 (28.8)	40 (47.1)	28 (43.1)	10 (35.7)	10 (43.5)
ICD	2 (4.4)	4 (6.8)	4 (4.7)	3 (4.6)	1 (3.6)	1 (4.3)
NCD	2 (4.4)	7 (11.9)	12 (14.1)	10 (15.4)	3 (10.7)	1 (4.3)
End	25 (55.6)	30 (50.8)	29 (34.1)	24 (36.9)	14 (50.0)	11 (47.8)
ACD	: allergic contact dermatitis					
ICD	: non-eczematous disease					
NCD	: irritant contact dermatitis					
End	: endogenous eczema					

There was no statistically significant difference in the rate of history of atopy, positive patch test reaction and diagnosis in all 3 age groups.

Table III – Patch test

Standard allergens	50 – 59 (n = 104)			60 – 69 (n = 150)			70 – 79 (n = 51)		
	Male n = 45 (%)	Female n = 59 (%)	Total n = 104 (%)	Male n = 85 (%)	Female n = 65 (%)	Total n = 150 (%)	Male n = 28 (%)	Female n = 23 (%)	Total n = 51 (%)
1. Butylphenol Form Resin I	0	1 (1.7)	1 (1.0)	2 (2.4)	0	2 (1.3)	0	0	0
2. Balsam of Peru 25%	2 (4.4)	8 (13.6)	10 (9.6)	16 (18.8)	11 (16.9)	27 (18.0)	3 (10.7)	1 (4.3)	4 (7.8)
3. Chlorocresol 2%	1 (2.2)	0	1 (1.0)	3 (3.5)	0	3 (2.0)	0	0	0
4. Colophony 20%	2 (4.4)	5 (8.5)	7 (6.7)	13 (15.3)	3 (4.6)	16 (10.7)	2 (7.1)	2 (8.7)	4 (7.8)
5. Formalin 2%	0	0	0	0	1 (1.5)	1 (0.7)	0	0	0
6. Amerchol	6 (13.3)	7 (11.9)	13 (12.5)	11 (12.9)	5 (7.7)	16 (10.7)	1 (3.6)	2 (8.7)	3 (5.9)
7. Neomycin 20%	6 (13.3)	8 (13.6)	14 (13.5)	8 (9.4)	14 (21.5)	22 (14.7)	3 (10.7)	2 (8.7)	5 (9.8)
8. Nickel Sulphate 5%	8 (17.8)	16 (27.1)	24 (23.1)	9 (10.6)	17 (26.2)	26 (17.3)	5 (17.9)	2 (8.7)	7 (13.7)
9. Parabens 15%	1 (2.2)	4 (6.8)	5 (4.8)	7 (8.2)	2 (3.1)	9 (6.0)	0	0	0
10. P.P.D 1%	6 (13.3)	2 (3.4)	8 (7.7)	15 (17.6)	3 (4.6)	18 (12.0)	3 (10.7)	2 (8.7)	5 (9.8)
11. Pot. Dichromate 0.5%	3 (6.7)	5 (8.5)	8 (7.7)	5 (5.9)	1 (1.5)	6 (4.0)	1 (3.6)	0	1 (2.0)
12. Mercapto-Mix 1%	0	1 (1.7)	1 (1.0)	0	2 (3.1)	2 (1.3)	0	0	0
13. Ethylene Diamine 1%	1 (2.2)	4 (6.8)	5 (4.8)	0	0	0	0	0	0
14. PPD-MIX 0.6%	0	2 (3.4)	2 (1.9)	1 (1.2)	0	1 (0.7)	1 (3.6)	0	1 (2.0)
15. Quinoline Mix 6%	6 (13.3)	3 (5.1)	9 (8.7)	9 (10.6)	8 (12.3)	17 (11.3)	2 (7.1)	4 (17.4)	6 (11.8)
16. Cobalt Chloride 1%	5 (11.1)	7 (11.9)	12 (11.5)	10 (11.8)	4 (6.2)	14 (9.3)	4 (14.3)	1 (4.3)	5 (9.8)
17. Wool Alcohol 30%	3 (6.7)	2 (3.4)	5 (4.8)	5 (5.9)	1 (1.5)	6 (4.0)	0	1 (4.3)	1 (2.0)
18. Thiuram-Mix 1%	2 (4.4)	1 (1.7)	3 (2.9)	1 (1.2)	3 (4.6)	4 (2.7)	0	0	0
19. Flavine 0.5%	6 (13.3)	6 (10.2)	12 (11.5)	15 (17.6)	4 (6.2)	19 (12.7)	2 (7.1)	3 (13.0)	5 (9.8)
20. Turpentine 0.5%	0	1 (1.7)	1 (1.0)	0	1 (1.5)	1 (0.7)	2 (7.1)	0	2 (3.9)
21. Caine-Mix 7%	2 (4.4)	4 (6.8)	6 (5.8)	4 (4.7)	2 (3.1)	6 (4.0)	0	0	0
22. Epoxy Resin 1%	0	2 (3.4)	2 (1.9)	2 (2.4)	0	2 (1.3)	0	0	0
23. Fragrance Mix 8%	4 (8.9)	9 (15.3)	13 (12.5)	16 (18.8)	15 (23.1)	31 (20.7)	7 (25.0)	3 (13.0)	10 (19.6)
24. Mercaptobenzothiazole 2	1 (2.2)	0	1 (1.0)	1 (1.2)	2 (3.1)	3 (2.0)	0	0	0
Extra allergen	7 (15.6)	12 (20.3)	19 (18.3)	17 (20.0)	15 (23.1)	32 (21.3)	9 (13.2)	5 (21.7)	14 (27.5)

The prevalence of Nickel allergy was slightly higher in patients < 60 years than those > 59 years (ns)
 The prevalence of balsam of Peru fragrance mix & PPD were slightly higher in those > 59 years (ns)

Our findings also showed that while the face and hands were the common sites of eczema in the younger age group (50 – 59 years age group), the limbs (especially the lower limbs), were the commonest sites of eczema presentation in the older patients (70 – 79 years age group). This difference is probably due to the higher prevalence of occupational dermatitis (which tends to affect the hands) and the higher prevalence of cosmetic dermatitis among the younger patients. The older patients tend to suffer from stasis eczema and asteatotic eczema (which tend to affect the limbs predominantly). There was no significant difference in the frequency distribution in the different sites of eczema presentation between male and female patients in the 3 age groups. Our findings confirmed our earlier observations that stasis eczema and asteatosis were probably the cause of eczema in the elderly.

Our findings showed that the prevalence of allergy to allergens in the standard battery in the 3 age groups differed slightly between males and females. It would appear that the elderly are just as capable of developing contact allergy to contact allergens like the younger patients. Metals allergy was more common in the younger age group than the elderly. This can be explained by a higher prevalence of the younger patients exposed to metals eg. in ear-piercing and costume jewellery⁽⁶⁾. In the elderly, contact allergy to paraphenylenediamine, and allergens found in over-the-counter medications (eg. balsam of Peru, constituents of fragrance-mix) were more common than paraphenylenediamine contact allergy could be due to a higher proportion of older patients dyeing their hair⁽⁷⁾.

Similar observations where contact allergies to metals are more predominant in young adults than the elderly and where contact allergies to paraphenylenediamine and ingredients of medicaments are more predominant in the elderly than the young adults have been reported in Germany⁽⁸⁾. In 12,026 patients who were given patch tests with a standard series of substances, 4,494 (37.4%) had positive patch-test reactions to one or more allergens; the average number of positive reactions was 1.85. The most frequent reactions were due to nickel sulphate (positive reactions in 9.2% of those tested),

fragrance mix (8.9%), balsam of Peru (6.3%), cobalt chloride (4.7%), potassium dichromate (4.3%) and wool alcohols (4.3%). Younger patients showed significantly more positive reactions to nickel sulphate and cobalt chloride; middle-aged patients reacted more to potassium dichromate, paraphenylenediamine, formaldehyde and thiuram mix; elderly patients reacted to balsam of Peru, wool alcohols, caine mix, neomycin sulfate, benzocaine, colophony, clioquinol, mafenide, parabens, and gentamycin sulfate.

Our findings appear to show differences in the characteristics of eczema between the middle age and elderly patients attending our clinic. Older patients are just as predisposed to develop allergic contact dermatitis when exposed to contact allergens. Often, the contact allergens are caused by medicaments or constituents of medicament used for treating skin disorders seen in the elderly. Most probably they resulted from self-medication for stasis eczema and asteatosis. There is a need to educate the elderly and family members on the avoidance of these contact allergens. Elderly patients should be educated on skin care and avoidance of self-medication.

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