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Research Article

EVALUATION OF AETIOLOGY OF HAND ECZEMA BY PATCH TEST

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ABSTRACT
Introduction: Hand eczema is common chronic multi factorial dermatoses. More than 2% of population is likely to develop hand eczema at some point of time during life. ***Aims & Objectives:*** To study the clinical pattern along with duration of hand eczema and to ascertain the etiology by performing patch test. ***Material and Method:*** 200 patients of suspected hand eczema were subjected for detailed history and clinical examination. Various antigens were tested via patch test to find out probable etiology for hand eczema. ***Observation and Discussion:*** The age range of patients varied from 11-70 years, Construction workers comprised the largest affected group, allergic contact dermatitis (35%) and irritant contact dermatitis were common cause of hand eczema. Potassium dichromate, nickel sulfate and soap were found as common allergens.

Keywords*: Hand Eczema; Patch Test*

INTRODUCTION
The eczema may be induced by a wide range of external and internal factors acting singly or in combination and it can involve any part of the body. The term hand eczema may not be precise but the condition is common. For the patient it is a misery which is often chronic and sometimes disabling, for the dermatologist it means application, time spent and trouble taken to elucidate its etiology.
Hand eczema is a common chronic multi factorial dermatoses More than 2% of population is likely to develop hand eczema at some point of time during life (Agroup, 1969). Various endogenous and exogenous factors are involved in the pathogenesis of hand eczema (Duartr *et al.*, 1998).
Contact dermatitis may be an important etiological factor for hand eczema, as large number of substances comes in contact with hands while working at home or at place of work. Knowledge of pattern of contact sensitivity in patients of hand eczema may give insight of various etiological agents responsible for it in a particular area, which can further help in management of these patients. In this study we tried to find out the factors responsible for hand eczema in our patients.

Aims and Objectives

1. To study the clinical pattern and duration of hand eczema along with its relation to atopy in patients.
2. To ascertain the etiology in patients of hand eczema by performing Patch tests.

MATERIALS AND METHODS
This study was carried out in the outpatient department of dermotology, venereology and leprology at S.M.S. Medical College & Hospital Jaipur. 200 patients clinically diagnosed as hand eczema attending the OPD's were registered. The exclusion criteria in the study was –
1Any associated systemic disease
2 Pregnant women and
3 Children < 10 years of age.
None of the patient was on any form of oral or topical medication for at least 2 weeks prior to study. A detailed and accurate history coupled with a thorough clinical examination was carried out for each selected patient. A note was made of all past and present medications taken. A thorough account of patients occupation, residence, cosmetics used was taken in account Patch test was carried out in all patients with different antigens.

Standard Patch Test

Eight layered gauze pieces measuring 2 cm x 2 cm size, impregnated with antigen were placed over a piece of hypoallergenic micropore adhesive tape and then applied on the dorsal aspect of hand of the patients taking all necessary precautions. Distilled water was taken as a control in all patients. The test was read 48-72 hour after the application. Results were interpreted as ICDRG guidelines. Antigens used were various chemicals, soaps, detergents, dyes and vegetables (as depicted in Table 2).

RESULTS AND DISCUSSION

Observations

Our study included 200 patients who exhibited enough clinical features to be diagnosed as having hand eczema following observations are reported-

The age range of patients was 11-70 years although most of them were in age group 21-30 years. Males outnumbered the females and construction workers comprised the largest group (25.21%) followed by agricultural and husbandry workers (20%). Eczema spread all over the hands was the most common pattern of hand eczema involving 26-50% of all cases. Most of the cases (48%) were not having any seasonal variation and duration of hand eczema was <2 years in maximum cases. History of atopy either personal or in family was present in 54% and 45% patients respectively.

Patch test reactivity was present in 29% cases in which Potassium dichromate (50%) was found as most common allergen among males. In females nickel sulfate (37%) and soaps/ detergents (48%) were found to be significantly associated with hand eczema (as depicted in Table 1 & 2).

Table 1: Proportional Patch Test Reactivity in Patients (n = 200)

Patch Test Reaction	Male		Female		Total	
	No.	**%**	**No.**	**%**	**No.**	**%**
Non- Reactive	89	74.79	53	65.43	142	71.00
Reactive to Single Antigen	25	21.01	27	33.3	52	26.00
Reactive to multiple antigens	5	4.20	1	1.23	6	3.00
Total/Percentage	**119**	**100.00**	**81**	**100.00**	**200**	**100.00**

Discussion

Hand eczema is such a common and distressing condition, and poses such difficult problems for the dermatologist that it deserves a separate consideration (Menne and Maibach, 2000). It is often a multifactorial disease. Many studies had been undertaken in Western World and in our country in last two decades.

The present study included patients between the age group 10-70 years as much as 39.5% of the patients were in age group 21-30 years and 23% were in age group 31-40 years. This observation has also been found in studies by Bajaj (1983), Goh (1988) and Agrup, (1969). This also co-relates well with this being the most active period in any person's life.

In the present study the average duration from which the patients were having the hand eczema was 3.3 years but the duration varied from 1 month to 16 years. This observation has also been found in studies by Bajaj (1983), Goh (1988) and Agrup (1969).

Distribution wise maximum number of patients had eczema involving the hands all over (26.5%) second most common pattern was palm and palmer surface of fingers involvement. This was somewhat unlike the results obtained by Cronin (1985), who found palm & palmer surface of fingers involvement to be the most common pattern.

Certain occupations are likely to provoke hand eczema and the problem of occupational eczema in farmers (Garcia-Perez *et al.*, 1984), animal husbandary workers (Burrows, 1975), construction workers, (Jaeger and Pelloni, 1950), metal workers (Foulds, 1990), housewives, hospital workers and caterer

(Cronin, 1987) has already been observed. In our study also Agricultural and Animal husbandry workers (20%) were the most common patients affected by hand eczema followed by construction workers (15%) mechanics (9%) and Jewellers (6.5%), among females housewives were more frequently affected (19%).

Table 2: Antigen Specific Patch Test Reactivity among Patients of Hand Eczema (n = 200)

Antigen	Male		Female		Total	
	No.	%	No.	%	No.	%
Potassium Dichromate 0.5%	20	50.00	1	3.44	21	30.43
Nickle sulfate 5%	4	10.00	11	37.93	15	21.73
Soaps and Detergents	-	-	14	48.27	14	20.28
Mercaptobenzothiazole 1%	2	5.00	-	-	2	2.88
Wool Alcohol (Lanoline) 30%	2	5.00	-	-	2	2.88
Epoxy resins 1%	1	2.50	1	3.44	2	2.88
Paraphenylenediamine 1%	2	5.00	-	-	2	2.88
Thiuram Mix 1.0%	2	5.00	-	-	2	2.88
Mercepto Mix 2%	2	5.00	-	-	2	2.88
Colophony 20%	1	2.50	-	-	1	1.44
Cobalt sulfate 5%	1	2.50	-	-	1	1.44
Neomycin sulfate 20%	-		1	3.44	1	1.44
Formaldehyde 2%	1	2.50	-	-	1	1.44
Thiomersol (Merthiolate) 0.1%	1	2.50	-	-	1	1.44
Chloro m cresol 0.5%	1	2.50	-	-	1	1.44
Garlic (Allium sativum)	-	-	1	3.44	1	1.44
Parabens mix 9%	-	-	-	-	-	-
Methylsalicylate 2%	-	-	-	-	-	-
Ethylenediamine 1%	-	-	-	-	-	-
Balsam of peru 10%	-	-	-	-	-	-
Turpentine 10 %	-	-	-	-	-	-
Vaseline 100%	-	-	-	--	-	-
Ammoniated mercury 1%	-	-	-	-	-	-
Tetramethyl thiomerdiulfide 1%	-	-	-	-	-	-
Quaternium 15 1.0%	-	-	-	-	-	-
Gentamicin 20%	-	-	-	-	-	-
4-tetra Butyl Phenol formaldehyde resin 1.0%	-	-	-	-	-	-
Black – rubber mix 0.6%	-	-	-	-	-	-
Onion (Allium cepa)	-	-	-	-	-	-
Ginger (Zanzibar officinale)	-	-	-	-	-	-
Total/Percentage	**40**	**100.0**	**29**	**100.0**	**69**	**100.0**

Allergic contact dermatitis was found as cause of hand eczema in 41.17% males and 25.92% females in our study. Similar results are observed by Agrup (1969).

Potassium dichromate was the most common allergen observed in males (50%) who had allergic contact dermatitis and associated with construction industry and cement. Sharma and Kaur (1987) also reported Chromate as most common cause of sensitivity. Nickel sulfate was the second most common allergen in males (10%) and females (37.93) similar observations were already reported by Menne & Maibach, (2000).

In housewives eczema is more commonly due to soaps and detergents (Cronin, 1985, 1987). In our study also high number of females (48.27%) had shown a strong positive patch test to commonly used detergents and soaps.

The present study shows that allergic contact dermatitis is the commonest cause of hand eczema in males (41.17%) followed by atopic dermatitis (19.32%) and then irritant contact dermatitis (9.27%), while in females irritant contact dermatitis (39.50%) is the commonest cause of hand eczema as compared to allergic contact dermatitis (25.92%). Similar findings are observed by Agrup (1969) in their study.

Summary and Conclusion

The management of hand eczema depends an cause and cause of hand eczema can usually be elucidated by proper history taking and patch test.

REFERENCES

Agrup G (1969). Hand eczema and other dermatoses in south Sweden. *Acta Dermato Venereologica* **4 9**1-91

Bajaj AK (1983). contact dermatitis of hands. *Indian Journal of Dematology, Venereology & Leprology* **49** 195-199.

Burrows D (1975). Contact dermatitis in animal feed mill workers. *British Journal of Dermatology* **92** 197.

Cronin E (1985). Clinical patterns of hand eczema in women. *Contact Dermatitis* **13** 153-161.

Cronin E (1987). Dermatitis of the hands in caterers. *Contact Dermatitis* **17** 265.

Duarte I, Nakano JT and Lazzarini R (1998). Hand eczema: evaluation of 250 patients. *American Journal of Contact Dermatitis* **9**(4) 2016- 23.

Foulds IS (1990). Dermatitis from metalworking fluids. *Journal of Clinical and Experimental Dermatology* **15** 157.

Garcia-Perez A, Garcia-Bravo B and Beneit JV (1984). Standard patch test in agricultural workers. *Contact Dermatitis* **10** 151

Goh CL (1988). An epidemiological comparison between hand eczema and non-hand eczema. *British Journal of Dermatology* **118** 797.

Jaeger H and Pelloni E (1950). Test epicutanees aux bichromates, positifs dans I'eczema au ciment. *Dermatologica* **100** 200.

Menne T & Maibach HI (2000). *Hand Eczema*, 2nd edition, (CRC Press, Boca Rotan, USA).

Menne T, Borgen O and Green A (1982). Nickel Allergy and hand dermatitis in a stratified sample of the Danish female population: An Epidemiological study including a statistic appendix. *Acta Dermato-Venereologica (Stockh)* **62** 35-41.

Sharma VK & Kaur S (1987). Contact dermatitis of hands in Chandigarh. *Indian Journal of Dematology, Venereology & Leprology* **l53** 103-107.