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A study of Clinico-Epidemiological Factors and Severity of hand Eczema

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I. Introduction:

Hand eczema is a descriptive diagnosis for dermatitis, largely confined to hands. Itis one of the most frequently encountered diseases in dermatological practice and often severely distressing condition giving rise to lot of social, emotional and physical disturbances and discomfort. Its1-year prevalence in the general population is 10% with a lifetime prevalence of 15%.[1] For one-third of the patients, the disease starts before 20 years of age and is often occupation related.[2]

Most of the cases of hand eczema are of multifactorial origin, wherein the eczema is caused and perpetuated by exogenous factors(such as contact allergens, irritants&infections), endogenous factors(atopy).Epidemiological studies have identified risk factors that include contact allergens, irritants, genetic factors and wet exposure which can induce the development of the disease process and influence the prognosis of disease.[3,4]Based on the perpetuating factors preventive measures can be taken.[5]

There are various morphological patterns of hand eczema described in literature,such as Pompholyx, Nummular eczema, Focal palmar peeling, Ring eczema, apron eczema, finger tip eczema, hyperkeratotic eczema and others (unspecified).As with eczematous dermatoses in general, classification is based partly on etiology and partly on morphology, and no single classification of hand eczema is completely satisfactory.Various morphological forms are observed clinically as fairly consistent entities, and some of them often have multiple causes, while a single etiological factor can produce different morphological patterns.[6]

Despite the presence of many studies on morphological patterns of Hand eczema, the results are quite variable and debated. We attempted to assess its various clinical patterns,common sites of involvement,clinical patterns,severity, relation with atopy, causative agents and predisposing factors.This will help in better comprehensive management of the patients.

II. Materials and Methods:

This prospective observational study was conducted in tertiary care referral setup in Andhra Pradesh state of South India withthe approval of institutional scientific andethical committee. One hundred consecutive patients who attended OPD of Dermatology department between January 2016 to January 2017, presenting with eczematous changes over hand and were willing to participate were included in the study. Patients who were on treatment with steroids, anti-fungals, anti-bacterials, anti-scabetics and immunosuppressant drugs were excluded from the study, as they might interfere both with the morphological patterns and severity of the disease.

Demographic data including name, age, sex, occupation and socioeconomic status, clinical patterns and severity scoring of hand eczema were recorded on a proforma. Scrapings for KOH mount, Grams Staining or culture of pus were performed whenever needed to identify other causes of dermatitis that can affect hands.

The severity of Hand eczema was assessed using the Hande Eczema Severity Index (HECSI)[7] score which comprises both extent and severity of hand eczema. Each hand is subdivided into five areas,fingers,finger tips,palms, dorsum and wrist.The severity of morphological pattern such as erythema, induration / papulation, edema,fissuring,scaling and lichenification are quantified from 0 (no skin changes) to 3 (severe). For each location (total of both hands) the affected area is given a score from 0-4 (0 :0 %; 1: 1-25%; 2: 26-50%; 3: 51-75%; 4: 76-100%) for the extent of clinical symptoms. Finally, the score given for the extent of each location is multiplied by the total sum of the intensity of each clinical feature, and the total sum called HECSI score, varies from 0 to a maximum score of 360.

III. Statistical Analysis:

All continuous variables were represented by mean with standard deviation, accompanied by the range. Categorical data was reported as absolute number of patients and percentage of the group studied. Pearson χ^2

test were used to compare categorical data. p-value < 0.05 was considered as statistically significant. The statistical analysis was performed using the SPSS software version 18.0 (SPSS Inc, Chicago, IL).

IV. Observations & Results:

The total of hundred patients were enrolled in the study out of which 53 were females and 47 males with female : male ratio 1.12:1.The prevalence of hand eczema during the period was found to be 0.29%.The age of the study population ranged from 5yrs to 80 yrs with mean age of 40.4 yrs. Most common age group involved in the study group was 51- 60 yrs(21%). In the present study, majority of patients were house wives (24%), followed by masonaryworkers (23%).Various occupational groups represented during the study period in **Table 1.**

Table 1: Occupation

Occupation	Number	Percentage
Masonary worker	23	23
House wife	24	24
Student	19	19
Agricultural labourer	14	14
Milk maid	3	3
Labourer	7	7
Hotel worker	2	2
Meat dresser	1	1
Police	1	1
Industrial worker	1	1
Driver	1	1
Painter	1	1
Tailor	2	2
Sweeper	1	1
Total	**100**	**100**

Table 1: showing occupations of patients included in the study.

Most common clinical finding was **Scaling**(76/100) accounting for majority, followed by**erythema**(69/100),induration(67/100), fissuring (62/100), Lichenification (61/100) and edema (35/100).

Fingers were the most common site of presentation (84%), followed by **Dorsum** of hand (59%), Palms (58%), Finger tips (44%) and wrist (26%). Localization of lesions involved either or in combination of subsites. Among fingers, index finger was most frequently encountered. In about 82% of study population two or more sub-sites of hand were involved.13% of patients had disseminated eczema with hand involvement.Among morphological patterns, Discoid eczema(29%)was most frequently encountered [Figure 1],followed by Pompholyx(25%) [Figure 2],Unspecified pattern(24%) with no definite morphologic picture [Figure 3], Wear and tear dermatitis (13%) [Figure 4], finger tip eczema (8%),Ring eczema (1%) were presented during the study period (**Table 2**).In atopic individuals,Pomphoyx was frequently encountered.

Infective aetiology wasnoted in 15% of study group with bilateral involvement of eczematous changes in hands, Scabies in 8% and distant dermatophyte infection noted in 7%.Mean HECSI score in the present study was found to be 41.06(SD ± 36.78), with HECSI scores ranging between 3 and176(minimum and maximum scores respectively).

Majority of the study population had low HECSI scoring (65%), followed by High scores (25%),very few had moderate scores (10%). Similar pattern was observed in male and female patient groups in this study. Gender and age did not show any statistically significant correlation with severity of Hand Eczema (HECSI) (p-values = 0.144 & 0.204respectively). 26.7% of employed ones reported loss of work days due to hand eczema.

Study subjects	Avg. age at presentation (yrs)	Clinical patterns (numbers represent absolute number of patients)						Mean HECSI score
		Discoid eczema	Pompholyx	Unspecified eczema	Ring eczema	Finger tip eczema	Wear &tear dermatitis	
Male	43.98	14	14	17	0	2	0	48.46(±41.84)
Female	38.24	15	11	7	1	6	13	34.49(±30.55)
Total	100	29	25	24	1	8	13	41.06(±36.78)

Table 1: Evaluation of mean age, clinical patterns & mean HECSI score in various groups of patients.

V. Discussion:

Hand eczema is the most common occupational skin disease and is regarded as a public health problem, with a tendency for the disease to become chronic and poor long term prognosis. Despite its importance in the dermatological practice, very few Indian studies have investigated the epidemiological trends, morphological patterns, & severity in patients with hand eczema.

The prevalence of self-reported hand eczema seeking medical attention in present study was 0.29%, which corresponds to point prevalence in single centre, in population seeking medical advice. This rate is comparable to previous reported prevalence rates reported by few indian studies.[8] While the largest reported study by Meding et al.[9] reported the prevalence to be in range of 2-10%, this was a population based prevalence rate. 1-year prevalencewas 9.7%and the crude incidence rate of self-reported hand eczema as 5.5 cases per 1000 person-years[2]. The exact prevalence of hand eczema is difficult to determine because it is not a reportable disease and many who are affected do not seek medical attention.

In present study, the age ranged from 5yr to 80 yrs with mean age of 40.4. Majority of patients were in group of 51- 60 yrs (21%). According to literature, in one-third of patients, the disease occurs before the age of 20years[2]. In contrast, in our study group only 18% had onset of disease before the age of 20 years. Majority of male patients were in the group of 51 to 60 yrs while majority of female patients were in the age group of 41-60 yrs in the study group. Thus in our study population mainly the middle aged and the elderly suffered from the ailment.

The present study showed a female preponderance with Female: Male ratio of 1.12:1, which correlates well with other studies.[9-11]However, very few studies showed male predominance.[8,12,13].Female preponderance is possibly due to the fact that Indian women, predominantly house wives, get exposed to various irritants and allergens early in life.

Largest proportion of hand eczema patients in present study were House wives closely followed by masonry workers and is comparable to that of majority of Indian studies ranging from 27% - 45.6% (24%).Hence, housewives and masonry workers are the two most common occupations at high risk for hand eczema. Frequent exposure of hands to water and various chemicals might have been an important factor for this result.

Among the endogenous factors for hand eczema, atopy is one of the most common factors and the prevalence of hand involvement in patients with active atopic dermatitis was 58.9% in one study.[14] In our study, 6% patients presented with a history of atopy, though none had active atopic dermatitis lesions.

In the present study, Scaling was predominant clinical finding followed by erythema, & the most frequently affected site was fingers followed by dorsum of hand. Wrist is the least commonly affected area. The pattern of involvement is similar to other studies but the prevalence of these findings is higher than that of various other studies.[15,16]

Among morphological patterns, discoid eczema is the most common pattern in our study group, closely followed by pompholyx and unspecified pattern.In few studies wear &tear pattern was most commonly encountered[15,17], in few studies unspecified pattern seen[12],very few studies noticed pompholyx as most common pattern of presentation[13].This variation of changing patterns are probably due to variations in exposure to allergens & irritants.Infective aetiology was observed in 15% of study group where the KOH mount showed fungal elements and so as for scabies. In all these patients, hand eczema resolved after treatment with anti-fungals & anti-scabetics respectively.

The mean HECSI in the present study was 41.06, which was higher than many previous studies.[13,17] Gender and age did not show any statistical correlation with severity of Hand Eczema (HECSI) (p-value =0.144 & 0.204 respectively). The features of hand eczema can often be severe with varying degrees of disabilities that often result in significant interference with daily activities, change of occupation, and in turn compromising the quality of life[5].

The limitations of the study were being an outpatient department based and smaller cohort study.Aetiology of hand eczema in exogenous causes was not identified since patch test could not be done, due to non-availability of standard battery of antigens.Subjective symptoms reported by many patients could not be accounted for in this study, since the HECSI for assessment of severity is an objective method. Inclusion of subjective symptoms or using the scoring systems that include subjective complaints might have increased the severity of Hand eczema in study population. Few clinical patterns like Apron eczema, chronic acral dermatitis and Gut eczema, did not present to our department during the study period.

VI. Conclusion

Dermatologists invariably have to manage a patient of Hand Eczema in daily practice. House wives and masonary workers are the two occupations at high risk for developing hand eczema. Endogenous factors like atopy also play a role in development of hand eczema, Pompholyx was most commonly observed pattern in atopic individuals, apart from exogenous factors. We observed dermatophyte infections mimicking hand

eczema, and so is scabies. Age, gender and atopy did not show significant association with Severity of hand eczema. Significant impairment in Quality of life was seen in patients with even low HECSI scores, as hand eczema results in varying degrees of disabilites (pruritis and painful fissuring) and social embarrassment (because of its location), and therefore causes significant interference with normal daily or job activities emphasizing that any extent of disease needs specialized care. An increased level of awareness of occupation exposure to allergens or irritants and generous application of barrier creams will help in control of this condition.

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