ORIGINAL RESEARCH PAPER

Volume-8 | Issue-2 | February-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

HAND ECZEMA IN WESTERN RAJASTHAN: CORRELATION AND ASSESSMENT OF CLINICO-MORPHOLOGICAL PATTERN, SEVERITY, ATOPY, SERUM IgE LEVEL AND CONTACT SENSITIVITY

Dermatology

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ABSTRACT

INTRODUCTION: In hand eczema, the dermatitis is largely confined to the hands. Many morphological patterns have been described.This study was conducted to study the epidemiology and morphological patterns of hand eczema, and relation of disease severity with morphological patterns, contact sensitivity, atopy and serum IgE level.

METHOD AND MATERIAL: Hundred consecutive cases of hand eczema of either sex included in our study. After detailed history and clinical examination, patch testing was done using Indian Standard series of 20 allergens Severity was assessed using HECSI Score and serum IgE levels was done in all patients.

RESULT: Male female ratio was 1.3:1 with mean age of patients was 38.9 ± 25.6 years. Most women were housewives (81.8%) and among men, masonry (32.8%) was the most common occupation.42% of the patients had vesiculosquamous eczema. Serum IgE levels raised in 66.7% of atopics.

CONCLUSION: Vesiculosquamous hand eczema was the commonest, found to be associated with masons and seen more commonly among patients with positive patch tests.

KEYWORDS

Hand eczema, patch test, morphological pattern

INTRODUCTION -

Hand eczema has a considerable public health impact because it tends to run a chronic relapsing course, with the vast majority of patients experiencing negative psychosocial consequences. It's one year prevalence in the general population has been assessed to be 9.7%. [1] Epidemiology is helpful in trying to understand hand eczema. It is twice as common in women as in men, with the highest prevalence in young women. Patch testing is considered mandatory in all patients of hand eczema lasting for more than four weeks in order to identify a specific cause if present and counsel the patients accordingly.[2] The frequency of contact sensitization in hand eczema patients varies from 23% in mild cases to 62% in severe cases. [3],[4]

In the present study, we have studied the epidemiology and morphological patterns of hand eczema and, relation of disease severity with morphological patterns, contact sensitivity to common allergens in Western Rajasthan, and atopy.

METHODS AND MATERIALS

Hundred consecutive patients of hand eczema of either sex, who reported to Dermatology OPD, Dr SN Medical college, Jodhpur were randomly included in study. Patients on systemic steroids and those with acute eczema, psoriasis, lichen planus, scabies and dermatophytosis were excluded clinically. The study was approved by the Institute Thesis committee. A detailed demographic profile, history of present ailment, occupation, hobbies, aggravating factors, and the presence of atopy were recorded for each patient. Morphological classification was done into the different categories described previously. Further objective assessment of the severity of hand eczema was done using hand eczema severity index (HECSI). [5] All patients were patch tested using Indian standard series of 20 allergens and Serum IgE levels were also done in all patients. Finn chambers were used for patch testing which was done on the upper back of patients. Readings were taken after 48 and 72 hours and interpreted according to the International Contact Dermatitis Research Group criteria.[6] Statistical analysis was done using SPSS by chi square test.

RESULTS

Men outnumbered women with a ratio of 1.3:1. The mean age of patients was 38.9 ± 25.6 years and maximum patients were in the age group 21-40 years (54%). Most women were housewives (81.8%) and among men, masonry (32.8%) was the most common occupation. The mean duration of symptoms was 48.4 months (range - 1 month to 25 years). 42% of the patients had vesiculosquamous eczema, 19% had mixed eczema, 16% had hyperkeratotic eczema, 14% had pompholyx and 9% had other type of eczema. Association of pompholyx with atopy was found statistically significant (p=.01).

Serum IgE levels raised in 66.7% of atopics which was statistically significant. Most common site of involvement overall and in females was palmer 41% and 51.16% respectively, and in males was dorsal 38.59%(p<.05). No association of atopy & disease severity was found with site of involvement (p=0.9). Association of masons & vesiculosquamous type was statistically significant (p=0.01). Association of farmers and hyperkeratotic eczema was statistically significant (p=0.002)(Table-1). Contact sensitivity in males was 54.3 %(31/57) and in females was 30.23% (p=0.01). No association was seen between contact sensitivity to multiple antigens and disease severity (p=0.86).Contact sensitivity was seen in 50 %(12/24) atopics and 42.10 %(p=0.49) nonatopics. Association was found between lower HECSI Scores (<40) and housewives eczema (p=0.001). No association was found between raised serum IgE and disease severity (p=0.06). Association was found between high HECSI Score(>60) and hyperkeratotic eczema (p<0.05)(Table-2)

Table- 1 Occupation –wise Distribution Of Various Morphological Types Of Hand Eczema

Morphology Type	Masons (%) N=19	Farmers (%) N=14	Factoryworkers(%) N=10	Housewives (%) N=23	Students (%) N=10	Painters(%) N=5	Others (%) N=19	Total (%) N=100
Vesiculosquamous	68.42	14.28	70.0	26.08	60.0	60.0	36.84	42
Mixed	21.05	21.42	0	8.69	40.0	40.0	36.84	19
Hyperkeratotic	5.26	50.0	30	8.69	0	0	15.78	16
Pompholyx	5.26	7.14	0	21.73	0	0	10.52	14
Others	0	7.14	0	34.78	0	0	0	9
Total	100	100	100	100	100	100	100	100

Table-2 Disease Severity And Morphological Patterns In Patients Of Hand Eczema

HECSI Score	Vesiculosquamous (%)	Mixed (%)	Hyperkeratotic eczema (%)	Pompholyx (%)	Others (%)
<40	16.66	10.52	6.25	50.0	55.55
40-60	59.52	68.42	50.0	50.0	22.22
>60	23.80	21.05	43.75	0	22.22

DISCUSSION-

Recent years have seen an increase in the incidence of hand eczema in men, and a similar trend was seen in our study with M:F being 1.3:1.[7] Higher male preponderance was also noted in the study by Handa et al.[8] and M K Singhi et al.[9] The possible reason for this may be that males are more sensitized to allergen as compared to females. Another important reason may be duration of exposure which is more in males doing outdoor activities in occupational environment. In today's modern world intermingling of occupations by males and females have occurred where males are also taking up various occupation involving wet work like cooking, hair dressing. 55% of patients in our study were in the age group 21-40 years. Age of onset reduced up to one decade as compare to study conducted by M K Singhi et al.[9] Preponderance of this disease in young adults may be due to their more active lifestyles resulting in frequent exposure to various irritants and allergens in the environment.

In both men and women, hand eczema has been rarely observed earlier than 20 years and later than 60 years of age.[10]In our study only 14 were of less than 20 years and 2 were more than 60 years of age out of total 100 patients. Old individuals have various defects in induction and/or elicitation of allergic contact dermatitis which may explain this observation.[11] The apparent hypo responsiveness of children may be due to the limited exposure.[12]

Risk of the hand eczema is found to be higher in industrial workers, masons and housewives because of exposure to various chemicals.[7]In our study,23% were housewives followed by 19% masons,14% farmers,10% student,10% factory worker,5% painters and other occupations including mechanics, cleaners, carpenters comprising 19% of the patients. The average duration of disease in our study was 2.6 years, similar to that reported by other Indian authors but is much less than that reported from developed countries.[7]Duration of hand eczema varies depending upon the nature, frequency, mode of exposure and lack of awareness about allergens and irritants on part of patients.

It is generally considered that the patients with atopic diathesis are more prone to develop hand eczema probably because of lower threshold for irritation and slower healing.The most common site of atopic dermatitis in adults is hands.[13]In present study history of atopy was found in 24% of patients. Previous studies done on hand eczema showed higher incidence of atopy. Our studies were found history of atopy in 27% cases of hand eczema. Reason for our low incidence could be due to unreliable history given by the patients and lack of universal criteria for defining atopy. Variations may also be found due to geographical and ethinic variation in the subject studied.

The total or specific IgE level is generally elevated in patients with atopic dermatitis. There is a positive correlation with the extent and severity of the disease as well as respiratory atopic disease. However, apart from atopy IgE level may be raised in lot of other conditions. In the present study serum IgE level were found to be raise in 66.66% of patients with history of atopy which was significantly higher ($p<0.0001$) as compared to non atopics (14.47%). However, no positive correlation was found between raised serum IgE levels in atopic patients and hand eczema severity ($p=0.92$).This is in contrast to study by the Agner et al[2] who found statistically significant association between atopic dermatitis and disease severity. This could be due to higher cut off points set by the present study where sensitivity was defined as HECSI score >60.

In a large study it was found that involvement of dorsal hand surface and volar wrist may suggest atopy as contributing etiological factor.[14] However in present study palmer involvement was the most common form seen in atopics(45.83%) and palmer involvement was also the commonest site seen in 41% of patients which in accordance with the study by Cronin.[15]However, in males most common pattern was dorsal present in 38.59% and in females palmer was common present in 51.61%, difference in pattern being significant ($p=0.04$).This disparity may be explained by the fact that females being exposed to various irritants during household work like cleaning, cooking.

Patch test analysis of a total 100 patients of hand eczema revealed that 44 patients had one or more positive patch tests, which is much higher than that reported from previous studies.[16] The most common allergens yielding positive results were potassium dichromate(23.3%).All patients being males (figure-4). This can be attributed to high percentage of mason (19%) present in the study. Chromates are distributed widely in the environment and exposure to this metal can occur through use of cement, bleaching agents, matches, detergents, paints and polishes. Our results were similar to Kishore et al[17] where chromate was the commonest sensitizer testing positive in 36% of the patients followed by nickel.

Nickel was the second most common allergen (18.3%)(11/60) observed in our study. Among the female with positive patch test nickel sensitivity was seen in 46% (6/13)females which was comparable to those observed by Peltonen L[18], Menne et al[19],Schnuch[20]. Nickel has been reported to be the most common sensitizer in many studies. [21] Female sex and wet work are important risk factors for the development of nickel allergy. [22] Nickel sensitivity in atopics was not found to be statistically associated ($p=0.43$). This was in contrast to study where nickel sensitivity and atopy have found to be statistically associated.[23]

Next to nickel was PPD consisting of 10% of patch test positives followed by fragrance mix and mercaptobenzothiazole being 6.66% each. Fragrances have been reported to be causing hand eczema in many previous studies.[24] Detergents, soaps, and cosmetics have been attributed to be the cause of this sensitivity. Overall 66.6% of positive patch tests were clinically relevant. Potassium dichromate followed by nickel and fragrance were the commonest allergens showing a good relevance to the occupation of the patients as in other Indian study.[7]
In the present study most common morphological pattern seen was vesiculosquamous (figure-1) seen in 42% of patients. These patients were masons and factory workers. Mixed type(19%) was the second most common type followed by hyperkeratotic eczema (figure-2) observed in 16% of patients. A occupational association of masons with vesiculosquamous type of hand eczema and farmers with hyperkeratotic eczema was found to be statistically significant ($p=0.01$ and $p=0.002$ respectively). This association have not been reported earlier. Only 12.5% of atopics had hyperkeratotic eczema and statistically there was no association between atopy and hyperkeratotic eczema. This was in concordance to the observations made in an Indian study.[8] Pompholyx accounted for 14% of our cases which is in concordance with 5-20% found in earlier literature.[25]A statistically significant correlation was observed between atopy and pompholyx ($p=0.01$).

The Indian standered series proved to be very useful but we found it lacking in certain cases like hand eczema in housewives. It has been suggested that inclusion of extracts of common vegetables and fruits in the series would be immense value. Specific patch test series for hands like footwear series would be helpful. Fodders, danders, plant material should also be included in the series. An association between contact sensitization and increased eczema severity in patients of hand eczema has been reported previously.[2] Also atopy has been implicated as an important risk factor.[26] However in our studies no significant association was seen between hand eczema severity and contact sensitivity and, atopy and contact sensitivity. Among 44 patients showed positive patch test to more than one antigen .However no increase in HECSI score was seen in these patients with multiple patch test positivity($p=0.867$).These result were in contrast to study in Denmark where statistically significant association was seen between more than one positive patch test and HECSI score[26] but was similar to an Indian study.[8]

Most common morphological pattern seen among patch test positive patients was vesiculosquamous seen in 56.8%(25/44) of patients ($p=0.008$).In our study 37.5% of patients with hyperkeratotic patients showed positive patch test results that was lower than other study.

CONCLUSIONS:

Hand eczema was commonly seen in 21- 40 years age with slight male predominance. Vesiculosquamous type was the commonest, found to be associated with masons and seen more commonly among patients

with positive patch tests. Contact sensitivity higher among males, most common allergens being chromate, nickel & PPD. No association between contact sensitivity and atopy was seen.



Figure-1vesiculosquamous Eczema



Figure-2 Hyperkeratotic Eczema

REFERENCES –

1. Meding B, Jarvholm B. Hand eczema in Swedish adults: Changes in prevalence between 1983 and 1996. J Invest Dermatol 2002; 118:719-23.
2. Agner T, Andersen KE, Brandao FM, Bruynzeel DP, Bruze M, Frosch P, et al. Contact sensitisation in hand eczema patients-relation to subdiagnosis, severity and quality of life: A multi-centre study. Contact Dermatitis 2009; 61:291-6.
3. Lerbaek A, Kyvik KO, Ravn H, Menne T, Agner T. Clinical characteristics and consequences of hand eczema-an eight year follow-up study of a population-based twin cohort. Contact Dermatitis 2008; 58:210-6.
4. Diepgen TL, Andersen KE, Brandao FM, Bruze M, Bruynzeel DP, Frosch P, et al. Hand eczema classification: A cross-sectional, multicentre study of aetiology and morphology of hand eczema. Br J Dermatol 2009;160:353-8.
5. Held E, Skoet R, Johansen JD, Agner T. The hand eczema severity index (HECSI): A scoring system for clinical assessment of hand eczema. A study of inter- and intraobserver reliability. Br J Dermatol 2005; 152:302-7.
6. Wilkinson DS, Fregert S, Magnusson B, Bandmann HJ, Calnan CD, Cronin E, et al. Terminology of contact dermatitis. Acta Derm Venereol 1970;50:287-92.
7. Suman M, Reddy BS. Patterns of contact sensitivity in Indian patients with hand eczema. J Dermatol 2003; 30:649-54.
8. Handa S, Kaur I, Gupta T, Jindal R. Handa eczema: Correlation of morphological patterns, atopy,contact sensitization and disease severity. Indian J Dermatol Venereol Leprol 2012; 78:153-8.
9. Singhi M K, Menghani P R, Gupta L K, Kachhawa D, Bansal M. Occupational contact dermatitis among the traditional 'tie and dye' cottage industry in Western Rajasthan. Indian J Dermatol Venereol Leprol 2005;71:329-32.
10. Templet JT, Hall S, Belsito DV. Etiology of hand dermatitis among patients referred for patch testing. Dermatitis 2004; 15:25-32.
11. Holden CA, Jones-Berth J. Eczema, Lichenification, Prurigo and Erythroderma. In: Tony B, Stephen B, Neil C, Christopher G, editors. Rook's Textbook of Dermatology. 7 th ed. Oxford: Blackwell Publishing; 2004. p. 17.1-55.
12. Strauss HW. Artificial sensitization of infants to poison ivy. J Allergy 1931; 2:137-44.
13. Rystedt I.Hand eczema in patient with history of atopic dermatitis in childhood.Acta Derma Venereo 1985; 65:305.
14. Simpson EL, Thompson MM,Hanifin JM.Prevalence and morphology of hand eczema in patients with atopic dermatitis.Dermatitis 2006;17:123-127.
15. Cronin E. Clinical patterns of hand eczema in women. Contact Derm 1985; 13:153-161.
16. Jain VK, Aggarwal K, Passi S, Gupta S. Role of contact allergens in pompholyx. J Dermatol 2004; 31:188-93.
17. Kishore NB, Belliappa AD, Shetty NJ, Sukumar D, Ravi S. Hand eczema-Clinical patterns and role of patch testing. Indian J Dermatol Venereol Leprol 2005; 71:207-8.
18. Peltonen L.Nickel sensitivity in the general population.Contact Dermatitis 1979:5:27-32.
19. Menn'e T, Borgan O, Green A. Nickel allergy and hand dermatitis in a stratified sample of the Danish female population: an epidemiological study including a statistic appendix. Acta Derm Venereol 1982: 62:35-41.
20. Schnuch A, Geier J, Uter W et al. National rates and regional differences in sensitization to allergens of the standard series.Contact Dermatitis 1997:37:200.
21. Duarte I, Terumi Nakano J, Lazzarini R. Hand eczema: Evaluation of 250 patients. Am J Contact Dermat 1998;9:216-23.
22. Uter W, Pfahlberg A, Gefeller O, Geier J, Schnuch A. Risk factors for contact allergy to nickel-results of a multifactorial analysis. Contact Dermatitis 2003;48:33-8.
23. Juhlin L, Johanson SGO, Bennich H et al. Immunoglobulin E in dermatoses.Arch Dermatol 1969; 100:12-6.
24. Heydorn S, Johansen JD, Klaus EA, Bruze M, Svedman C, White IR, et al. Fragrance allergy in patients with hand eczema: A clinical study. Contact Dermatitis 2003; 48:317-23.
25. Meding B, Swanbeck G. Epidemiology of different types of hand eczema in an industrial city. Acta Derm Venereol 1989;69:227-33.
26. Hald M, Agner T, Blands J et al.Clinical severity and prognosis of hand eczema. Br J Derma 2009; 60:1229-1236.