



Clinical pattern and patch test profile of hand eczema in hospital employees in a tertiary care hospital of south India

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Abstract

Objective: This study's goal was to look into the clinical trends and patch test results of hand eczema among hospital staff at a tertiary care facility in South India.

Methods: The study involved 200 hospital personnel who had hand eczema. Results from patch tests, clinical patterns, and demographic information were all documented. To ascertain the prevalence of clinical patterns and particular allergens related to hand eczema, data were analysed.

Results: The most frequent clinical pattern seen was irritant contact dermatitis (ICD), followed by allergic contact dermatitis (ACD). The main presenting feature was dry fissured hand eczema. Patch testing showed positive reactions in 47% of subjects; the main sensitizers were nickel sulphate, potassium dichromate, and scent mixture. Hand eczema was also strongly influenced by occupational allergens including formaldehyde and latex.

Conclusion: The study's findings show that hospital staff members with hand eczema frequently develop allergic and irritating contact dermatitis. Patch testing allowed for the identification of the main sensitizers, which were nickel sulphate, potassium dichromate, and fragrance mixture. Hand eczema in this population was significantly influenced by occupational allergies. The prevalence of hand eczema among hospital staff must be decreased, and these findings highlight the need for preventive strategies and therapies that target occupational and non-occupational allergens.

Keywords: hand eczema, hospital employees, clinical pattern, patch test, allergens.

Introduction

A common dermatological ailment that affects people in numerous professional situations is hand eczema. Due to their frequent contact with allergens, irritants, and wet work, hospital staff members, including healthcare professionals and support staff, are especially prone to acquiring hand eczema. In addition to causing severe morbidity and quality of life impairment, hand eczema can also induce occupational handicap, which increases absenteeism, lowers productivity, and raises healthcare expenses [1,2].

Studies from India have found greater rates of hand eczema, especially among healthcare professionals, despite the fact that the prevalence of the condition varies greatly over the world, from 2% to 10% [3,4]. The intricate interactions between genetic predisposition, individual vulnerability, and different environmental factors, including occupational exposures, make up the multifactorial aetiology of hand eczema [5-10].

The two most typical forms of hand eczema's clinical appearance are irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD). Irritating substances including soaps, detergents, and chemicals are frequently linked to ICD, whereas allergen-specific delayed hypersensitivity reactions cause ACD. To create effective prevention measures and improve treatment outcomes, it is essential to pinpoint the clinical pattern and particular allergens that cause hand eczema.

Despite the fact that hand eczema in healthcare workers has been the subject of numerous studies, only a small amount of study has explicitly targeted hospital staff in South India. It is crucial to comprehend the clinical pattern and patch test profile in this population in order to customise preventive interventions, put into practise efficient management techniques, and lessen the financial burden brought on by hand eczema.

In order to evaluate the clinical pattern and patch test profile of hand eczema among hospital staff in a tertiary care hospital in South India, this study would look at hospital personnel. This study can provide useful information for the creation of focused preventative and intervention programmes by identifying the predominate clinical patterns and particular allergens responsible for hand eczema. The development of evidence-based occupational health policies and guidelines will also benefit from a better understanding of the prevalence and features of hand eczema in this particular population.

Material and methods

Study Design: Over the course of a year, this cross-sectional study was carried out at a tertiary care hospital in South India. The Institutional Review Board granted its ethical approval.

Study Participants: Hospital staff members who presented with hand eczema during the study period and were 18 years of age or older were included in the study. Participants who had a history of atopic dermatitis or other hand-specific dermatological diseases were not allowed to participate.

Data collection: A standardised questionnaire with questions on demographics, hand eczema clinical characteristics, prospective risk factors, and work history was created. Eligible participants were given the questionnaire, and pertinent clinical data were documented.

Clinical Exam: A dermatologist performed a complete clinical examination on each participant to determine the type and severity of their hand eczema. Based on predetermined criteria, clinical patterns were categorised as irritant contact dermatitis (ICD), allergic contact dermatitis (ACD), or mixed pattern.

Patch testing: Based on the individuals' past employment, additional occupational allergens were added to the Indian Standard Series for the patch test. Finn Chambers were used to apply patch testing to the participant's upper back, and hypoallergenic tape was used to fix them. Readings were obtained at 72 and 96 hours after the patches were removed after 48 hours. The International Contact Dermatitis Research Group (ICDRG) criteria were used to rate positive reactions.

Statistical Analysis: Appropriate statistical techniques were used to analyse the data. The results of patch tests, clinical trends, and demographic data were all summarised using descriptive statistics. The connection between variables was evaluated using the Fisher's exact test and the chi-square test.

Results

The study involved 200 hospital staff members who had hand eczema. Table 1 provides an overview of the participants' demographic characteristics. Participants' mean age was 35 years, and 62% of them were female.

Table 2 displays the clinical pattern of hand eczema among hospital staff members. The most prevalent clinical pattern was irritant contact dermatitis (ICD), which accounted for 58% of cases. With 38% of patients, allergic contact dermatitis (ACD) was the second most common pattern. In 4% of cases, mixed patterns—characterized by the coexistence of irritating and allergic features—were seen.

Table 3 illustrates the various clinical manifestations of hand eczema. With 45% of patients, dry fissured hand eczema was the most prevalent manifestation. Vesicular hand eczema (28%), hyperkeratotic hand eczema (20%), and erythematous hand eczema were some of the other manifestations.

All subjects underwent patch testing to identify certain allergens linked to hand eczema. Table 4 provides a summary of the findings. Out of the 200 subjects, 94 (47%) experienced an allergic reaction to at least one allergen during a patch test. The most frequent allergen, nickel sulphate, caused positive reactions in 46 subjects (23%). The second and third most prevalent allergens were potassium dichromate and scent mix, which caused positive reactions in 34 (17%) and 26 (13%) subjects, respectively.

22% of the positive patch test results were due to occupational allergies. The most often reported occupational allergy was latex, which 14 participants (7%) reported having a positive reaction to. The second most frequent occupational allergen, formaldehyde, caused positive reactions in 12 subjects (6%). In a tertiary care hospital in South India, these findings offer insightful information about the clinical patterns and patch test profile of hand eczema among hospital staff. The most frequent clinical pattern was irritant contact dermatitis, with dry fissured hand eczema being the most common presentation. Patch testing allowed for the identification of the main sensitizers, which were nickel sulphate, potassium dichromate, and fragrance mixture. These workers' hand eczema was significantly influenced by occupational allergens like formaldehyde and latex.

Table 1: Demographic characteristics of study participants

Characteristic	Frequency	Percentage
Gender		
- Male	76	38%
- Female	124	62%
Age (years)		
- Mean	35.2	
- Std Dev	6.7	

Table 2: Clinical pattern of hand eczema among hospital employees

Clinical Pattern	Frequency	Percentage
Irritant Contact Dermatitis (ICD)	116	58%
Allergic Contact Dermatitis (ACD)	76	38%
Mixed Pattern	8	4%

Table 3: Clinical presentations of hand eczema among hospital employees

Clinical Presentation	Frequency	Percentage
Dry fissured hand eczema	90	45%
Vesicular hand eczema	56	28%

Hyperkeratotic hand eczema	40	20%
Erythematous hand eczema	14	7%

Table 4: Patch test results and allergen profile

Allergen	Positive Reactions	Percentage
Nickel Sulfate	46	23%
Potassium Dichromate	34	17%
Fragrance Mix	26	13%

Table 5: Occupational allergens

Occupational Allergen	Positive Reactions	Percentage
Latex	14	7%
Formaldehyde	12	6%

Discussion

Understanding the clinical pattern and patch test profile of hand eczema, a frequent occupational dermatological disorder among hospital staff, is crucial for developing effective preventative and management measures. In this study, which was carried out in a tertiary care hospital in South India, this study looked at the clinical traits and the outcomes of a patch test for hand eczema in hospital staff members. Current research adds to the body of knowledge on hand eczema in work environments and offers policymakers and medical professionals important new information.

Current research found that irritant contact dermatitis (ICD), which accounted for 58% of cases, was the most common clinical pattern among hospital staff with hand eczema. This result is in line with other research done in various geographical regions [1, 2]. The constant exposure of healthcare personnel to irritants including detergents, disinfectants, and repetitive hand washing can be blamed for the high frequency of ICD [3]. These irritants cause dryness, fissures, and inflammation by rupturing the skin's protective layer.

In current analysis, allergic contact dermatitis (ACD), which accounted for 38% of cases, was the second most frequent clinical pattern. ACD happens when a person's immune system reacts adversely to a particular allergen they come into contact with [4]. Current findings are in line with research done in other healthcare settings, where hospital staff members have been found to exhibit ACD as a significant clinical pattern [5, 6]. Understanding the aetiology of ACD and providing direction for preventive interventions depends on the identification of certain allergens using patch testing.

Patch testing is an effective diagnostic method for determining the allergens that cause ACD. In current study, 47% of participants with hand eczema had positive patch test results. The most frequent allergen discovered, nickel sulphate, caused a positive reaction in 23% of subjects. This result is consistent with earlier studies that consistently shown nickel to be a prevalent sensitizer in occupational contexts [7, 8]. Exposure to metal from jewellery, medical gadgets, and tools in healthcare contexts is thought to be a contributing factor in the high prevalence of nickel sensitivity [9].

In current investigation, fragrance mix and potassium dichromate were both significant allergens linked to hand eczema. It has been determined that the widely used chemical potassium dichromate is a strong sensitizer [10]. Through repeated exposure, scent mix, which combines common fragrance allergens, can lead to sensitization [11]. These results underline the significance of taking both occupational and non-occupational allergens into account when assessing and treating hand eczema in hospital staff members.

The clinical patterns and patch test profiles of hand eczema among hospital staff show both parallels and variances when compared to the body of previous literature. Numerous research have found that ICD and ACD are the most common clinical patterns, similar to what was found in current study [2, 6]. However, depending on where you live and what you do for a living, there may be different allergens that cause hand eczema.

The high incidence of dry fissured hand eczema compared to other clinical presentations was one striking distinction found in current investigation. It might be difficult to treat dry fissured hand eczema since it frequently causes severe discomfort and functional impairment. This conclusion emphasises the significance of putting preventive measures and interventions designed to protect the skin barrier and reduce irritating exposure into practise.

It is essential to take into account comparative research from various healthcare settings in order to design efficient preventative and management strategies for hand eczema among hospital staff. The incidence of particular allergens and the clinical patterns of hand eczema have been found to vary between geographic locations, according to studies [5, 12]. These variances could be attributable to disparities in occupational procedures, cultural considerations, and regional differences in allergen exposure.

Conclusion

The clinical pattern and patch test profile of hand eczema among hospital staff in a tertiary care hospital in South India are useful insights from current study, which concludes. The main clinical patterns were irritant and allergic contact dermatitis, with nickel sulphate, potassium dichromate, and fragrance mix being the main sensitizers discovered by patch testing. These workers' hand eczema was significantly influenced by occupational allergens like formaldehyde and latex. These results highlight the significance of putting preventive measures and interventions aimed at lessening the impact of hand eczema among hospital staff into practise. It is necessary to do more study to examine additional risk variables and assess the effectiveness of preventive measures in this occupational group.

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