

RESEARCH PAPER

Spectrum and clinical patterns of hand dermatoses: a hospital-based observational study

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Abstract

Background: Hand dermatoses are common conditions in clinical practice due to the hands' constant exposure to physical, chemical, biological, and mechanical factors. They often cause functional impairment, cosmetic concerns, and occupational disability. Understanding their clinical and epidemiological patterns aids in early diagnosis, effective management, and prevention of recurrence.

Methods: A hospital-based observational descriptive study was conducted in the Dermatology Outpatient Department of a tertiary care teaching hospital. A total of 100 consecutive patients presenting with dermatoses involving the hands were included in the study. Detailed history regarding occupation, duration of disease, aggravating factors, and associated systemic illnesses was recorded. Clinical examination was performed in all cases, and relevant investigations such as KOH mount, dermoscopy, patch testing, and skin biopsy were performed whenever indicated.

Results: A total of 100 patients with hand dermatoses were evaluated, ranging in age from 3 to 70 years, with most in the 20–40-year group and a slight female predominance. The most common conditions were hand eczema and contact dermatitis, followed by psoriasis, scabies, viral warts, and tinea manuum. Other less frequent conditions included lichen planus, vitiligo, systemic sclerosis, pemphigus vulgaris, paronychia, palmar hyperhidrosis, pitted keratolysis, onycholysis, neurofibromatosis type 1, hand-foot-mouth disease, and psoriasis with secondary infection. Inflammatory dermatoses formed the majority of cases, followed by infectious conditions, with occupational exposure and repeated contact with irritants identified as key contributing factors.

Conclusions: Hand dermatoses represent a heterogeneous spectrum of dermatological conditions, with inflammatory dermatoses forming the majority. Early recognition of etiological factors and appropriate diagnostic evaluation are essential for accurate diagnosis, targeted therapy, and prevention of chronicity and recurrence.

Keywords: Hand dermatoses, Hand eczema, Contact dermatitis, Palmar psoriasis, Clinical spectrum.

Introduction

The hand is one of the most functionally important regions of the body. As the primary organ of manual labour and social interaction, the hands are subjected to constant exposure to environmental, chemical, biological, and mechanical stimuli. Consequently, hand dermatoses constitute one of the most frequently encountered presentations in outpatient dermatology practice across all clinical settings.

Hand dermatoses encompass an extraordinarily diverse spectrum of conditions ranging from common inflammatory disorders such as eczema, psoriasis, and lichen planus to infectious conditions including tinea manuum, viral warts, and scabies, and systemic diseases such as systemic sclerosis and pemphigus vulgaris manifesting prominently in the hands. The impact on quality of life is disproportionate to apparent clinical severity; chronic conditions such as contact dermatitis and hand eczema are associated with significant occupational disability, loss of workdays, and psychological distress.

Occupational exposure plays a particularly prominent role in the pathogenesis of hand dermatoses in developing countries like India, where a large proportion of the working population engages in manual labour, construction, agriculture, and domestic work without adequate protective equipment. Homemakers exposed to detergents, masons handling wet cement, and farmers applying pesticides are all at heightened risk of chronic irritant and allergic contact dermatoses.

Despite the high prevalence, comprehensive hospital-based epidemiological data from tertiary care centres in South India remain limited. The present study was undertaken to determine the clinical spectrum, frequency distribution, and etiological classification of hand dermatoses in patients attending the dermatology outpatient department.

Materials & Methods

A hospital-based observational descriptive study was conducted over three months in the Dermatology Outpatient Department of Meenakshi Medical College, Hospital and Research Institute, Kanchipuram, Tamil Nadu. The study included 100 consecutive patients of all age groups and both sexes presenting with hand dermatoses, while those unwilling to participate or with incomplete data were excluded.

Detailed history regarding age, sex, occupation, duration, and symptoms was obtained, followed by thorough cutaneous examination noting lesion morphology, distribution, and secondary changes, along with examination of nails, hair, and oral mucosa. Investigations were performed as clinically indicated, including KOH mount (10% and 20%) for fungal infections, dermoscopy for selected lesions, patch testing with the Indian Standard Battery for suspected contact dermatitis, complete blood count, random blood sugar, ANA and ENA profile, and punch skin biopsy with H&E staining. Data were entered into Microsoft Excel 2019 and analyzed as frequency counts and percentage distributions.

Results

Table 1: Age and sex distribution of patients with hand dermatoses (n=100).

Age group (years)	Male	Female	Total	Percentage (%)
0–10	2	1	3	3.0
11–20	6	3	9	9.0
21–30	10	6	16	16.0
31–40	14	9	23	23.0
41–50	12	10	22	22.0
51–60	7	8	15	15.0
61–70	7	5	12	12.0
Total	58	42	100	100.0

Most commonly affected age group: 31–40 years (23%). Male:female ratio = 1.38:1.

A total of 100 patients with hand dermatoses were included in the study. The age of the patients ranged from 3 to 68 years, with a mean age of 38.6 ± 12.4 years. The majority of patients belonged to the 31–40 year age group, followed by 41–50 years and 21–30 years. Pediatric patients (<18 years) constituted a smaller proportion of the study population. There was a slight female predominance with 58 females (58%) and 42 males (42%), giving a female:male ratio of 1.38:1. Age and sex distribution is summarised in Table 1.

Table 2: Frequency distribution of diagnoses in hand dermatoses (n=100).

Diagnosis	No. of cases	Percentage (%)
Hand eczema	15	15.0
Allergic contact dermatitis	14	14.0
Palmoplantar psoriasis	10	10.0
Viral warts	8	8.0
Scabies	8	8.0
Tinea manuum	6	6.0
Vitiligo vulgaris	3	3.0
Lichen planus	3	3.0
Systemic sclerosis	3	3.0
Pemphigus vulgaris	3	3.0
Bullous pemphigoid	2	2.0
Paronychia	2	2.0
Palmar hyperhidrosis	2	2.0

Hand foot mouth disease	3	3.0
Pyogenic granuloma	2	2.0
Pitted keratolysis	2	2.0
Onycholysis	1	1.0
Neurofibromatosis type 1	1	1.0
Hand-foot syndrome	1	1.0
Psoriasis with secondary infection	1	1.0
Total	100	100.0

Hand eczema (15%) was the single most frequent diagnosis.

Hand eczema was the most frequent diagnosis (15 cases, 15.0%), followed by allergic contact dermatitis (14 cases, 14.0%) and palmoplantar psoriasis (10 cases, 10.0%). Infectious conditions together accounted for 19 cases. Viral warts (8%) and scabies (8%) were the most common infectious/infestation diagnoses. The complete diagnosis distribution is shown in Table 2.

Table 3: Etiological classification of hand dermatoses (n=100).

Etiological category	Conditions included	Cases	%
Inflammatory dermatoses	Hand eczema, contact dermatitis, psoriasis, lichen planus	43	43.0
Infectious dermatoses	Tinea manuum, viral warts, HFMD, pitted keratolysis	19	19.0
Infestation	Scabies	8	8.0
Autoimmune blistering disorders	Pemphigus vulgaris, bullous pemphigoid	5	5.0
Pigmentary disorders	Vitiligo vulgaris	3	3.0
Connective tissue disorders	Systemic sclerosis	3	3.0
Appendageal disorders	Paronychia, onycholysis	3	3.0
Sweat gland disorders	Palmar hyperhidrosis	2	2.0
Vascular lesions	Pyogenic granuloma	2	2.0
Genetic disorders	Neurofibromatosis type 1	1	1.0
Drug-induced dermatoses	Hand-foot syndrome	1	1.0
Total		100	100.0

Inflammatory dermatoses constituted the largest category (43%).

Inflammatory dermatoses constituted the largest etiological category (43 cases, 43%), comprising hand eczema, contact dermatitis, psoriasis, and lichen planus. Infectious dermatoses formed the second largest group (19%), followed by infestations (8%).

Autoimmune blistering disorders accounted for 5% and connective tissue disorders for 3%. The complete etiological classification is presented in Table 3.



Figure 1: Irritant contact dermatitis



Figure 2: Allergic contact dermatitis to cement



Figure 3: Palmoplantar psoriasis



Figure 4: Psoriasis with secondary infection



Figure 5 A and B: Lichen planus

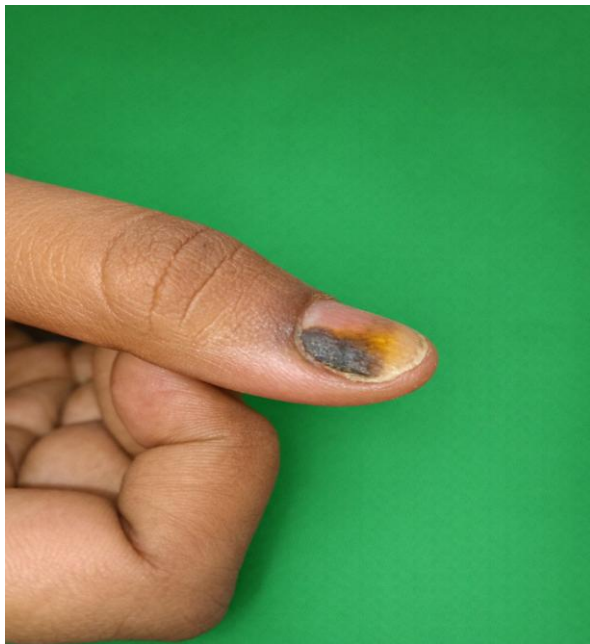


Figure 6: Green nail syndrome



Figure 7: Verruca vulgaris



Figure 8: Pitted keratolysis



Figure 9: Scabies



Figure 10: Sclerodactyly (systemic sclerosis)





Figure 11: Vitisigo vulgaris



Figure 12: Pyogenic granuloma



Figure 13 A and B: Neurofibromatosis



Figure 14: Palmar-plantar erythrodysesthesia (hand-foot syndrome)

Discussion

Hand dermatoses represent one of the most common and clinically challenging presentations in dermatology outpatient practice due to the hands' constant exposure to environmental, occupational, infectious, and systemic factors. In this hospital-based study conducted over three months in a tertiary care centre in Kanchipuram, 100 patients were evaluated, revealing a wide clinical spectrum of 20 distinct diagnoses grouped into 11 etiological categories. This diversity highlights the unique vulnerability of the hands as both a functional and exposed anatomical site.

Inflammatory dermatoses formed the largest category in this study. Hand eczema (15%) was the most common diagnosis, resulting from a combination of epidermal barrier dysfunction, immune dysregulation, and repeated exposure to irritants such as detergents, soaps, and wet work. Clinically, it presented with erythema, vesiculation, scaling, and lichenification, predominantly affecting the palms and interdigital spaces. Allergic contact dermatitis (14%), a type IV hypersensitivity reaction mediated by T lymphocytes, was frequently linked to occupational allergens such as potassium dichromate in cement, rubber chemicals, and cosmetic products. Patch testing proved essential in identifying causative allergens and guiding avoidance strategies. Palmoplantar psoriasis (10%) presented as well-demarcated hyperkeratotic plaques with fissuring and was often difficult to differentiate from eczema. Lichen planus (3%), an autoimmune condition targeting basal keratinocytes, manifested as violaceous, flat-topped papules with occasional nail involvement.

Infectious dermatoses constituted another significant group. Tinea manuum (6%), caused predominantly by dermatophytes such as *Trichophyton* species, often exhibited the classical “two feet, one hand” pattern, reflecting autoinoculation from tinea pedis. Many cases showed

steroid-modified presentations due to prior misuse of topical corticosteroids. Viral warts (8%), caused by human papillomavirus, presented as hyperkeratotic papules with characteristic thrombosed capillary dots and were more common in younger individuals. Other infections included pitted keratolysis (2%), a superficial bacterial infection associated with hyperhidrosis, and hand, foot, and mouth disease (3%), a self-limiting viral illness presenting with vesicular eruptions on the palms and oral mucosa.

Infestations were represented by scabies (8%), a highly pruritic condition caused by *Sarcoptes scabiei*. The interdigital spaces and wrists were commonly involved, and dermoscopy aided in rapid, non-invasive diagnosis through characteristic findings. Prompt treatment of patients and close contacts was essential to prevent reinfection.

Autoimmune blistering disorders included pemphigus vulgaris (3%) and bullous pemphigoid (2%). Pemphigus vulgaris presented with flaccid bullae and erosions due to intraepidermal acantholysis, while bullous pemphigoid manifested as tense subepidermal blisters. Both conditions required systemic immunosuppressive therapy and careful monitoring.

Connective tissue disorders were represented by systemic sclerosis (3%), characterized by sclerodactyly, Raynaud's phenomenon, and progressive skin tightening. All affected patients were female and showed positive autoantibodies, indicating diffuse disease with potential systemic involvement. Among pigmentary disorders, vitiligo (3%) presented as well-defined depigmented macules over the hands, reflecting autoimmune destruction of melanocytes.

Appendageal and nail disorders included paronychia (2%), often associated with chronic wet work and secondary infection, and onycholysis (1%), typically resulting from trauma, fungal infection, or systemic causes such as thyroid disease. Sweat gland disorders were represented by palmar hyperhidrosis (2%), which caused significant functional and psychosocial impairment and responded to topical aluminium chloride and, in resistant cases, botulinum toxin injections.

Vascular tumours such as pyogenic granuloma (2%) were observed, usually arising after minor trauma and characterized by rapid growth and a tendency to bleed. Rare conditions in this study included neurofibromatosis type 1 (1%), a genetic disorder with characteristic cutaneous features such as café-au-lait macules and neurofibromas, and hand-foot syndrome (1%), a drug-induced condition associated with chemotherapeutic agents like capecitabine, presenting with erythema, pain, and desquamation of the palms.

Overall, inflammatory dermatoses constituted the majority of cases, consistent with other Indian studies. The coexistence of infectious, autoimmune, genetic, and drug-induced conditions underscores the need for comprehensive clinical evaluation, appropriate investigations, and individualized management. The slight female predominance observed in this study may be attributed to increased exposure to wet work among homemakers in the region. This study highlights the wide clinical spectrum of hand dermatoses and reinforces the importance of a systematic approach for accurate diagnosis and effective treatment.

Conclusion

Hand dermatoses constitute a clinically heterogeneous group of conditions requiring thorough history-taking, meticulous clinical examination, and appropriately targeted investigations. In this hospital-based study, inflammatory dermatoses emerged as the predominant etiological category, with hand eczema, allergic contact dermatitis, and palmoplantar psoriasis accounting for the most cases. The diverse case mix spanning infectious, autoimmune, connective tissue, drug-induced, and genetic disorders highlights the necessity of a comprehensive clinical approach. Early and accurate diagnosis facilitates timely intervention, reduces occupational disability, and prevents complications. Systematic data collection at tertiary care centres is essential for building a contemporary evidence base to inform clinical practice guidelines and occupational health policy.

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