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Original Research Article

A clinico-epidemiological study of eczematous dermatoses in the geriatric population in a tertiary care hospital

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ABSTRACT

Background: Eczema being widespread in India, not much research has been done on the clinico-epidemiological profile of eczemas or their potential association with other comorbidities. The study's objective was to determine the clinico-epidemiological profile of eczematous dermatoses in the elderly population and any potential relationships to risk factors and comorbidities.
Methods: It was an observational cross-sectional analytical time bound clinico-epidemiological study which was conducted in the dermatology out-patient department of Topiwala National Medical College and B.Y.L. Nair hospital in Mumbai, Maharashtra, between March 2019 and September 2020. Parameters recorded were age, gender, occupation, onset, duration, and progression of diseases, aggravating and relieving factors, associated chronic medical, surgical, and skin conditions. Also, history of atopy, sun exposure and irritant application were taken.
Results: Of the patients receiving out-patient care, 1.67% had eczema. Among 50 study patients, mean age was 70.02 years in males and 69.78 years among females. With 27.03% of patients, asteatotic and chronic eczema were the most prevalent kinds of eczema. In our study, we found a significant association (p=0.016) between hypertension and different forms of eczema, with chronic eczema being more common in hypertensive patients (80%). Most common comorbidity was diabetes, seen in 58% of patients with significant association (p=0.024) and asteatotic eczema being the most common form. There was a significant correlation (p=0.036) observed between eczema and various nail findings associated with eczema.
Conclusions: Appropriate management of eczema is important in alleviating problems faced by the geriatric populations.

Keywords: Geriatric, Eczema, Hypertension, Diabetes

INTRODUCTION

Geriatric age group is defined as the population over 65 years of age.[1] Elderly population faces more socio-economic and health related problems affecting their quality of life. Ageing of the skin can be both physiological and intrinsic, resulting in a reduction in epidermal cells replacement and collagen production, making the skin fragile and prone to several eczematous dermatoses. Additionally, as we age, the stratum corneum's lipid reserves diminish, which lowers the production of the body's own moisturizing component. All of these alterations cause the skin's outermost layer's barrier function to be compromised, which leads to water loss and, in the end, dry, scaly skin.

Certain diseases like atherosclerosis, diabetes mellitus, HIV, congestive heart failure, and other conditions that

are known to impair vascular insufficiency and lower immunological responses have a direct impact on the body's capacity to heal. While epidemiological research is scarce, a small number of studies on the numerous dermatological conditions that are connected with co-morbidities in the elderly population have been conducted. There is a very small body of research on the prevalence of eczematous dermatoses in India's geriatric population.

Aim

Overall aim was to study the clinico-epidemiological profile of eczematous dermatoses in the geriatric population and possible correlation with the comorbidities and risk factors.

METHODS

With ethics committee approval, 50 patients participated in this observational cross-sectional analytical time-bound clinic-epidemiological study in the dermatology out-patient department of Topiwala National Medical College and B.Y.L. Nair hospital in Mumbai, Maharashtra, between March 2019 and September 2020. With the exception of those who refused to give consent, all consultation patients over 65 who had eczema detected on biopsy at the Department of Dermatology OPD were included.

Data was collected for the parameters age, gender, occupation, onset, duration and progression of disease, detailed information about aggravating and relieving factors, history of addiction, associated chronic medical, surgical, and skin conditions, family, personal and diet history. Also, history of atopy, sun exposure and the use of any irritant application were recorded. The patients underwent a comprehensive examination to determine the presence of eczema, it's type, it's sites, and any secondary changes like pigmentation, scaling, fissuring and hyperkeratosis.

Clinical photographs at the time of presentation and biopsy were taken of all the patients with eczematous dermatoses. Data was entered using Microsoft excel office 2013 and analyzed using SPSS 20 software. The Chi square test was utilized to analyze the association between eczematous dermatoses and possible risk factors.

RESULTS

The study comprised of 50 patients diagnosed with eczematous dermatoses presenting at the Dermatology OPD of Topiwala National Medical College and B.Y.L. Nair hospital, Mumbai, Maharashtra between March 2019 and September 2020. The demographic profile of the patients is shown in Table 1.

According to the study, patients between the ages of 65 and 70 were the most affected (74%) and had the highest rates of asteatotic and chronic eczema (27.03% each). There was no statistically significant association between the types of eczemas and gender (p=0.63).

Table 1: Demographic profile of the study population.

	Males (n=32, 64%)	Females (n=18, 36%)	Overall study population (n=50)
Age (years)	70.02	69.78	69.92
Prevalence (%)	1.70	1.61	1.67

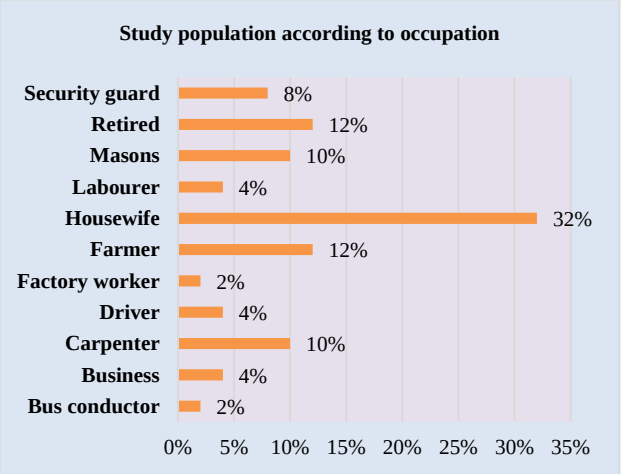

Figure 1: Distribution of study population according to occupation.

In the present study, no significant association was found between the types of eczemas and occupations (p>0.05) (Figure 1); however, individuals who reported prolonged standing were more likely to have stasis dermatitis (83.33%). Surprisingly, we have not found a single patient with positive family history having eczematous dermatoses.

In our study, we found that 3 patients (60%) suffered from asteatotic eczema after being exposed to cement, 4 patients (57.14%) had chronic eczema after being exposed to detergents, and 3 patients (33.33%) out of 9 who were exposed to soaps had both chronic and hyperkeratotic palmoplantar dermatitis. There was no discernible correlation between the various forms of chemical contact and different types of eczemas.

In a sample size of 50 patients, we found that clinically, most common type was chronic eczema seen in 29 cases (58%) followed by asteatotic eczema in 9 cases (18%), 4 cases had stasis dermatitis (8%), 3 cases each had atopic dermatitis (6%) and hyperkeratotic palmoplantar eczema (6%) and 2 cases had chronic nummular eczema (4%) as shown in Table 2 (Figure 2 and 3).

In order to validate our clinical diagnosis, we performed biopsies in each case. The predominant histological pattern observed in 22 instances (44%) was chronic

spongiotic-like LSC alterations, which was followed by subacute spongiotic dermatitis in 16 cases (32%), acute spongiotic changes in 16 cases (18%), and chronic spongiotic-like prurigo-like changes in 3 cases (6%). (Figure 4).

Table 2: Distribution of study population according to clinical diagnosis of Eczema.

Clinical diagnosis	Present in	Percentage (%)
Asteatotic eczema	9	18.0
Atopic dermatitis	3	6.0
Chronic eczema	29	58.0
Chronic nummular eczema	2	4.0
Hyperkeratotic palmoplantar eczema	3	6.0
Stasis dermatitis	4	8.0
Total	50	100.0

Figure 2: (A) Asteatotic eczema- dry, rough scaly skin with superficial cracking on both legs, (B) lichen simplex chronicus- bilaterally symmetrical hyperpigmented plaques with central depigmention on feet, (C) hyperkeratotic palmar eczema- multiple hyperpigmented hyperkeratotic scaly plaques with fissuring on both palms, (D) hyperkeratotic plantar eczema- hyperkeratotic scaly plaques on soles.

Figure 3: (A) Allergic contact dermatitis- well defined erythematous plaque with fine scaling corresponding to metal chain and pendant, (B) stasis dermatitis- hyperpigmented plaque with scaling and lichenification on anterior aspect of left leg and right leg showing changes of early lipodermatosclerosis.

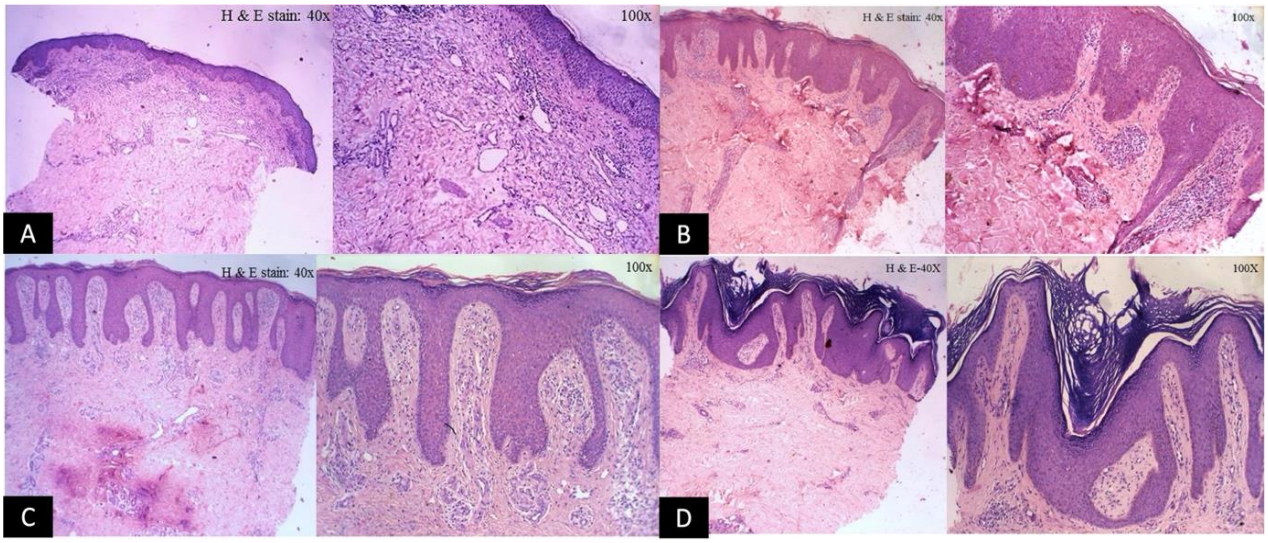

Figure 4: (A) Acute spongiotic dermatitis: epidermis shows mild spongiosis without parakeratosis. Mild epidermal hyperplasia with moderately dense superficial perivascular infiltrate of lymphocytes; (B) subacute spongiotic dermatitis: Psoriasiform epidermal hyperplasia with mild spongiosis. Dermis shows moderately dense superficial perivascular infiltrate of lymphocytes; (C) chronic spongiotic dermatitis- LSC like changes: Stratum corneum shows compact orthohyperkeratosis. Psoriasiform epidermal hyperplasia with mild superficial perivascular infiltrates of lymphocytes with thick and vertically oriented collagen fibres in papillary dermis; (D) chronic spongiotic dermatitis- prurigo nodularis: Stratum corneum showing marked hyperkeratosis. Marked epidermal hyperplasia with papillomatosis and thickening of the dermis.

Figure 5: (A) Nail ridging, (B) subungual hyperkeratosiss, (C) nail pitting- irregular, shallow pits, (D) nail dystrophy.

Table 3: Percentage of comorbidities seen with patients of eczematous dermatoses.

Medical history	Present in	Percentage (%)
Diabetes mellitus	29	58.0
Hypertension	27	54.0
Hypothyroidism	3	6.0
Tuberculosis	2	4.0
Bronchial asthma	2	4.0
Vitiligo	1	2.0
Inflammatory bowel disease	1	2.0

Therefore, clinico- histopathological correlation was used to make the final diagnoses for the various eczemas. We discovered that 15 patients (30%) had chronic eczema, followed by asteatotic eczema seen in 14(28%) cases, 6 cases each had hyperkeratotic palmoplantar eczema (12%) and stasis dermatitis (12%), additionally 5 cases exhibited chronic nummular eczema (10%), 3 cases had atopic dermatitis (6%) and allergic contact dermatitis occurred in just one case. This highlights the significance of performing a histological study to establish the diagnosis, especially in mundane cases of eczema.

In our study, two most common comorbidities were diabetes seen in 29 (58%) patients and hypertension seen in 27 (54%) patients (Table 3).

Table 4: Association between hypertension and types of eczemas.

Types of Eczema	Non-hypertensive	Hypertensive	Total
Allergic contact dermatitis	1	0	1
Asteatotic eczema	6	8	14
Atopic dermatitis	3	0	3
Chronic eczema	3	12	15
Chronic nummular eczema	3	2	5
Hyperkeratotic palmoplantar eczema	3	3	6
Stasis dermatitis	4	2	6
Total	23	27	50

Table 5: Association between nail involvement and types of eczemas.

Types of Eczemas	No nail involvement	Nail involvement	Total
Allergic contact dermatitis	0	1	1
Asteatotic eczema	4	10	14
Atopic dermatitis	0	3	3
Chronic eczema	5	10	15
Chronic nummular eczema	4	1	5
Hyperkeratotic palmoplantar eczema	1	5	6
Stasis dermatitis	4	2	6
Total	18	32	50

A noteworthy correlation (p=0.016) was seen in our study between hypertension and different forms of eczema; among the 15 patients, 12 (80%) had chronic eczema, whereas 8 (57.14%) had asteatotic eczema (Table 4).

Additionally, we found significant association between diabetes and types of eczemas (p=0.024) in which where asteatotic eczema was most common seen in 9 out of 14 (64.29%) patients. Surprisingly, all patients in our study with atopic dermatitis had diabetes (100%).

Also, we found that asteatotic eczema was present in 6 (35.29%) of the total 17 individuals with both hypertension and diabetes, and chronic eczema in 5 instances (29.51%).

Out of 50 patients, nail involvement was seen in 64% in which nail ridging (60%) was most common finding followed by subungual hyperkeratosis and nail dystrophy (24% each), pitting (22%) and chronic paronychia (46%) (Figure 5).

Significant association was seen between the nail involvement and types of eczema (p=0.036). Nail involvement was present in 71.43% cases of asteatotic eczema and 66.67% of chronic eczema though they did not have hyperkeratotic palmoplantar eczema. 5 out of 6 cases of hyperkeratotic palmoplantar eczema showed nail involvement (83.33%) (Table 5).

There was significant association of diabetes mellitus with asteatotic eczema seen in 64.29% and we found significant association of hypertension with chronic eczema where it was seen in 80% of the cases. More than one comorbidity can coexist in the same individual.

DISCUSSION

Eczema, a term derived from the Greek word where ek means “out” and zema means “boiling”.[2] It is a clinical and histological pattern of inflammation of the skin seen in a variety of dermatoses.

Clinically, itching is one of the signs that define eczematous dermatoses. Dryness, erythema, excoriation, exudation, fissuring, hyperkeratosis, lichenification, papulation, scaling and vesiculation are some of the possible symptoms.

The overall study population prevalence of eczema at our institute was 1.67% and the p value was 0.251, which was not significant. Ellis et al found that prevalence of eczema was about 2.4% in the private insurance population and ranged from 2.6% to 4.1% in the population with government aided healthcare in a geriatric age group.[3]

Mean age of the patients in our study was 69.92 with the standard deviation 5.24 years.

The mean age among males was 70.02 years which was comparable with 69.78 years among females and difference was not significant. Majority of the patients, 37 (74%) belonged to age group of 65 to 70 years, followed by 8 (16%) in the 71 to 75 years of age group, 2 (4%) in the 76 to 80 years and rest 3 (6%) in more than 80 years of age. Males were 32 (64%) and females were

18 (36%) in our study. The male to female ratio was 1.77. Males outnumbered females. The reason could be lack of accessibility to healthcare services among females. Gender wise prevalence of eczema was comparable, and the difference was not statistically significant.

In our study, 37 (74%) cases were in the age group of 65 to 70 years where 10 (27.03%) cases each had asteatotic eczema and chronic eczema (27.03%), 6 (16.22%) cases had hyperkeratotic palmoplantar eczema, 5 (13.51%) cases had chronic nummular eczema and 4 (10.81%) cases had stasis dermatitis while one had allergic contact dermatitis (2.70%). There were totally 8 cases in the age group of 71 to 75 years where 3 (37.5%) cases had asteatotic eczema, 2 (25%) cases each had atopic dermatitis and chronic eczema and stasis dermatitis was seen in one (12.5%) case. In 2 cases of age group 76 to 80 years, chronic eczema and stasis dermatitis was seen in 1(50%) case each. No significant association was seen between the age group and types of eczema (p=0.63).

In our study, 32% were housewives, 12% were farmers, 10% each were carpenters and masons, 8% were security guards and 12% were retired.Among housewives, 5 each had chronic eczema (31.25%) and hyperkeratotic palmoplantar eczema (31.25%).

History of chemical contact was present in 31 patients (62%). Out of 31 patients, 9 had contact with soaps (29.03%), 7 had contact with detergents (22.58%), 5 had contact with cement (16.13%), 4 had contact with polishing paints (12.90%), 3 had contact with pesticides (9.68%), 2 with solvents (6.45%) and one with anthralin ointment (3.23%). In a study of Klauder et al, 13.1% were attributed to wet work consisting of exposures to soaps and alkaline detergents causing hand dermatitis.[4] In our study, we found that housewives were the most affected group which can be possible because soaps and detergents are the most common attributable factors to contact sensitization.

In our study, the prevalence of asteatotic eczema was 60% in 3 out of 5 patients exposed to cement, 57.14% in 4 out of 7 patients exposed to detergents, and 3 out of 9 patients (33.33%) exposed to soaps had both hyperkeratotic palmoplantar eczema and chronic eczema. Also, all 3 patients with pesticides exposure had chronic eczema (100%). There was no significant association between different types of chemical contact and eczemas.

Out of 50 patients, 45 (90%) gave history of itching associated with disturbed sleep in 33 patients (66%). This led to regular hypersomnia which in turn increased the risk of vascular events, further increasing the risk of cardiovascular diseases.

In our study, out of 50 patients, 11 (22%) patients complained of worsening of symptoms in winter, 8 (16%) complained of worsening symptoms in summer, 1 (2%) gave history of worsening symptoms in monsoon while 30 (60%) patients had no change of symptoms with the season. In Chopra et al study, hyperkeratotic eczema showed improvement in summers.[5]

In a study by Yalçın et al, prevalence of stasis dermatitis was seen in 6.2% of 4099 patients aged more than 65 years.[6] Out of total 50 patients, 15 (30%) had history of prolonged standing. Risk factors for stasis dermatitis include older age, prolonged sitting or standing, female sex, pregnancy, obesity, deep venous thrombosis, and heredity.[7] In our study there was no significant association between types of eczemas and occupations; nevertheless 5 out of 6 cases (security guard, farmer, bus conductor and masons) with history of extended standing had stasis dermatitis.

In our study, 12 had personal/family history of atopy (24%). Baer et al found that patients with atopic dermatitis have low blood pressure.[8] Weber et al, did similar study in adult where he found not much difference in the blood pressure of a patient with skin disease when compared with controls.[9] In our study patients with atopic dermatitis had blood pressure on the lower side which is comparable with Baer et al.[8] One possibility is that some substances with a potential for decreasing blood pressure like histamine generated from the mast cells in the involved skin of atopic dermatitis may play a role.[10] In our study, none of the patient with atopic dermatitis had hypertension.

Ivanov and Fedotov et al study have shown that 24.8% of eczema patients had hypertension in geriatric age group, which was comparable with our study where 54% had eczema with hypertension.[11]

Hyperlipidemia and hypertension cause abnormalities in the skin microcirculatory bed which in turn decreases blood flow to skin decreasing the ability of the elderly to fight infections, increases dryness and allows pathogens to enter the broken skin.[12]

In our study, significant association was seen between hypertension and types of eczemas (p=0.016). Chronic eczema was seen in 12 (80%) out of 15 hypertensive patients, followed by asteatotic eczema seen in 8 (57.14%) out of 14 cases.

In our study the most common comorbidity was diabetes which was seen in 29 (58%) out of 50 patients. Diabetes is one of the most common metabolic disorders predisposing to skin diseases. Significant association was seen in diabetes and types of eczemas (p=0.024) where asteatotic eczema was seen in 9 (64.29%) out of 14 cases. We also reported 4 (66.67%) out of 6 cases of stasis dermatitis in diabetic patients. All patients with atopic dermatitis had diabetes (100%).

In our study, most common type of eczema affecting lower legs was asteatotic eczema seen in 12 (37.5%) cases followed by chronic eczema seen in 10 (2.26%)

cases. The most common site of involvement in asteatotic eczema was extensor aspect of LE, (12 cases, 37.5%), followed by flexor aspect of LE (11 cases, 44%). Asteatotic eczema was observed on the shin of elderly in 12 cases (37.5%) in our study which is similar to the results observed by Kimball et al.[13]

In our study, out of 50 cases, nail involvement was seen in 32 cases (64%) where the commonest finding was nail ridging seen in 30 (60%) cases followed by subungual hyperkeratosis and nail dystrophy seen in 12(24%) cases each, chronic paronychia seen in 23 cases (46%) and pitting seen in 11 cases (22%). A variety of onychodystrophies are caused by aberrant nail formation brought on by eczematous alterations in the nail matrix. Additionally, patients may experience secondary nail alterations if they use harsh soaps and detergents or other topical irritants excessively. For instance, repeated exposure to hydrofluoric acid, sodium hypochlorite, and enzyme detergents can cause nail dystrophy.[14]

Allevato et al stated that in atopic dermatitis, nail matrix involvement causes periungual tissue inflammation which leads to both acute and chronic onychodystrophy.[15] This was comparable to our study where all three patients of atopic dermatitis had nail involvement.

There was significant association of diabetes mellitus with asteatotic eczema seen in 64.29% and we found significant association of hypertension with chronic eczema where it was seen in 80% of the cases. More than one comorbidity can coexist in the same individual.

Our study is the first of its kind, which included geriatric patients of more than 65 years of age, relating different eczematous patterns, their associations to underlying comorbidities and predisposing risk factors.

Limitations

A larger sample size would have given results with greater validity.

CONCLUSION

Eczema adds to the burden of disease in the elderly patients, this must be recognized by the treating physician and elderly patients must be encouraged to report and seek appropriate management for their problems and not to self-medicate.

We have found an association between eczema, diabetes, hypertension, and nail involvement. Leading a sedentary lifestyle predisposes geriatric population to an increased risk of metabolic disorders which includes obesity, hypertension, diabetes, and high cholesterol.

As xerosis is more likely with advancing age, the education to use moisturizing soaps and emollients must be given to elderly in order to reduce the chances of eczema.

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