

A frequency of common etiologies of erythroderma in patients visiting a tertiary care hospital in Karachi

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Abstract *Objective* To determine the frequency of common etiologies of erythroderma in patients visiting a tertiary care hospital in Karachi.

Methods In this cross-sectional study, in a period from May, 2015 to November, 2015, 190 patients attending the outpatient department or admitted in the dermatology ward of Civil Hospital, Karachi and fulfilling inclusion criteria (15 to 60 years of age, male/female, having erythroderma for 1 week or more), were enrolled in this study after taking written informed consent. History taking and physical examination were done to assess etiology. Skin biopsy was sent for histopathology.

Results The age range was from 15 to 60 years (mean age 48.6 + 16.9 years) while mean duration of disease was 17.9 + 9.1 days. Out of 190 patients, 116 (61%) were male and 74 (39%) were female. The most common etiology was eczema 73 (38.4%) followed by psoriasis 51 (26.8%), drugs 45 (23.7%) and lymphoma 21 (11.1%).

Conclusion Eczema was the commonest etiology seen in our study. The different etiologies of erythroderma in our patients were not similar to those reported from other parts of the world.

Keywords

Erythroderma, eczema, psoriasis, drug reaction, lymphoma.

Introduction

Erythroderma, also called exfoliative dermatitis, is a rare skin condition, sometimes presents as waxing and waning pattern. A number of etiologies can lead to erythroderma.¹ It presents as erythema and scaling that affects greater than 90% of cutaneous surface.² In most of the cases history-based diagnosis can easily be made but at times it poses a challenge to dermatologists to find out the underlying cause.³

Age of onset depends on etiology.⁴ In elderly, onset is usually insidious whereas in younger

age group it may be insidious or acute depending on the cause.

The etiological factors are mainly divided into dermatoses, drug reactions, malignancies, systemic diseases, infections and idiopathic.⁵ However, most of the idiopathic disorders are later on diagnosed as cutaneous T-cell lymphoma. The four more common etiologies of erythroderma are eczema, psoriasis, drugs and cutaneous lymphoma.³

The etiological factors show geographical variations.^{6,7} Some local studies^{8,9} are available on this subject but none from Sindh has addressed this topic. This study was planned to determine the frequency of common etiologies of erythroderma in patients visiting a tertiary care hospital in Karachi.

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Methods

This was a cross-sectional study conducted in the dermatology unit of Civil Hospital, Karachi, in a period from May 2015 to November 2015. Sample size of 190 was calculated taking prevalence of lymphoma in patients with erythroderma as 4%⁸ that is the least proportion, 95% confidence interval and 5% level of significance. Non-probability consecutive sampling was used to enrol study population. Patients of either sex, aged 15-60 year, having erythroderma for 1 or more weeks and willing to participate in the study were included. Terminally ill patients or those with chronic diseases like diabetes mellitus and renal failure were excluded.

Patients attending the out patient department or admitted in the Dermatology ward of Civil Hospital Karachi and fulfilling inclusion and exclusion criteria were registered in this study after taking written informed consent. History taking and cutaneous and systemic examination were done to assess for etiology. Skin biopsy was sent for histopathology and immunohistochemistry.

Data entry and analysis were done using SPSS version 19. Frequency and percentage were computed for categorical variable like sex and etiology (psoriasis, eczema, drugs or lymphoma). Mean and standard deviations were computed for continuous variables like age and duration of disease. Effect modifiers like age, sex and duration of disease were controlled through stratification by applying chi squared test and *p*-value <0.05 was considered significant.

Results

190 patients completed the study. Age range in this study was from 15 to 60 years with mean age of 48.6 ± 16.9 years with mean duration of disease 17.9 ± 9.1 days. Out of 190 patients, 116 (61%) were male and 74(39%) were female patients.

A higher prevalence of eczema 73 (38.4%), psoriasis 51 (26.8%), drugs 45 (23.7%) and lymphoma 21 (11.1%) were noticed as shown in **Table 1**. When etiologies were stratified with respect to age no significant difference was observed, when etiologies were stratified with respect to gender, eczema and drugs showed significant difference psoriasis and lymphoma showed no significant difference. Similarly, when etiologies were stratified with respect to duration of disease, all showed significant difference except drug reaction showed no significant difference (**Table 2, 3 and 4**).

Discussion

Erythroderma results from many different causes.⁸⁻¹⁷ Preexisting dermatoses are the most common cause as reported in the previous studies.⁸⁻¹⁷ There are several publications on this subject, largely from England, USA and the Scandinavian countries reporting different incidences of each etiologic factor. Lymphomas,¹⁷ any other malignancy¹⁴ and some drugs are implicated in the causation of erythroderma.¹⁶

Table 1 Frequency of common etiologies of erythroderma (n=190).

<i>Common etiologies</i>	<i>N (%)</i>
Psoriasis	51 (38.4)
Eczema	73 (26.8)
Drugs	45 (23.7)
Lymphoma	21 (11.1)

Table 2 Stratification of common etiologies with respect to age (n=190).

Common etiologies		Age (years)		P-value
		15-35	>35-60	
Psoriasis	Present	17	34	0.256
	Absent	59	80	
Eczema	Present	31	42	0.505
	Absent	44	73	
Drugs	Present	14	31	0.189
	Absent	61	84	
Lymphoma	Present	07	14	0.542
	Absent	68	101	

Table 3 Stratification of common etiologies with respect to gender (n=190).

Common etiologies		Sex		P-value
		Male	Female	
Psoriasis	Present	36	15	0.103
	Absent	80	59	
Eczema	Present	52	21	0.023
	Absent	64	53	
Drugs	Present	34	11	0.022
	Absent	82	63	
Lymphoma	Present	13	8	0.932
	Absent	103	66	

Table 4 Stratification of common etiologies with respect to duration of disease (n=190).

Common etiologies		Duration of disease		P-value
		>7-14 days	>14 days	
Psoriasis	Present	33	18	0.035
	Absent	66	73	
Eczema	Present	46	27	0.017
	Absent	53	64	
Drugs	Present	28	17	0.120
	Absent	71	74	
Lymphoma	Present	7	14	0.068
	Absent	92	77	

The incidence of erythroderma in Pakistan is not yet defined. The annual incidence of erythroderma in the Netherlands is 1-2 patients per 100,000¹³ and in Finland is 1-2 per 100,000¹¹ but Sehgal and Srivastava from India reported an incidence of 14 per 100, 000.⁶

This study was conducted primarily to determine the main etiological factors in erythroderma in our population. The mean age of our patients was 48.6 years that is almost similar to the study of Akhyani *et al.*⁶ from Tehran. However, Pal *et al.*⁹ reported a lower mean age of 41.6 years from Pakistan and Yuan *et al.*¹² reported a higher

mean age of 53.78±18 years from China. The male to female ratio in our study was 1.6, similar to the 1.85 reported by Akhyani *et al.*⁶ from Tehran. Some studies reported a higher male to female of 2.2¹⁰ and 2.8⁹.

Regarding the etiologies of erythroderma, preexisting dermatoses were the most common cause seen in 65.2% of our patients, different types of eczema in 38.4% and psoriasis in 26.8%. Drug reactions were the underlying cause in 23.7% followed by lymphoma in 11.1% patients. In all previous studies, preexisting dermatoses have been reported as the most common etiology of erythroderma.⁸⁻¹⁷ In a

clinical review of 97 patients diagnosed with erythroderma,⁶ the most common etiological factors were dermatoses (59.7%), then drug reactions (21.6%), malignancies (11.3%) and idiopathic causes (7.2%). Carbamazepine was the most common drug (57.1%). Other drugs like aspirin, beta blockers, captopril, diclofenac, cotrimoxazole and amoxicillin are reported to cause erythroderma. Apart from scaling and erythema that were present in all patients, pruritus was the most common finding (97.5%), followed by high grade fever (33.6%), lymphadenopathy (21.3%), edema (14.4%) and hyperkeratosis (7.2%).⁶

Another study⁷ that reviewed 30 consecutive cases of erythroderma, reported that among pre-existing dermatoses, psoriasis was the most common (33.3%) disease followed by eczema (20%), atopic dermatitis (6.6%), pityriasis rubra pilaris (3.3%) and drug induced erythroderma (16.6%). In 16.6% of cases, etiology could not be ascertained. Clinicopathological correlation could be established in 73.3% of cases.

In a study from Pakistan, 50 patients of erythroderma, 33 (66%) had some pre-existing dermatoses, psoriasis in 8 (16%), drug reactions in 6 (12%) patients. In 2 (4%) patients, erythroderma was due to cutaneous T cell lymphoma, and no underlying cause was found in 9 (18%) patients which were labelled as idiopathic.⁸ In this study they have included all important dermatoses in pre existing disease and chronic actinic dermatitis have larger numbers that is also not seen in our study.

The commonest dermatoses causing erythroderma in our study population were different forms of eczema (38.4% patients). In studies on erythroderma from Pakistan by Pal *et al.*,⁹ from India by Sehgal and Srivastava⁶ and Sudho *et al.*,¹⁴ psoriasis was the most common underlying cause of erythroderma. Drug

reactions were rarely the cause of erythroderma in 45 (23.7%) of patients in our series. This is also similar to previous reports that drugs are the second common cause of erythroderma following preexisting dermatoses.⁴⁻¹⁷

Malignancies especially cutaneous T cell lymphoma, occasionally systemic lymphoma and rarely, other malignancies⁴⁻¹⁵ are implicated in the causation of erythroderma. Different studies, done in different parts of the world quote different frequencies. In our patients, cutaneous T cell lymphoma was diagnosed in 21 (11.1%) cases. It is imperative to diagnose these cases early as prompt treatment can change the prognosis.¹⁶

The differences between our study and those from other parts of the world may be due to the different spectrum of diseases, early referral and diagnosis or other unknown factors.

Conclusion

Eczema was the commonest etiology seen in our study. The different etiologies of erythroderma in our patients were not similar to those reported from other parts of the world.

Erythroderma is a rare but severe and life-threatening disorder with many different underlying causes. Awareness of the most frequent causes can help us to develop an efficient strategy for diagnosis and appropriate management of the disease.

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