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Original Article

Erythroderma: A clinico-etiological study of 92 cases

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Abstract

Objective To determine frequency of various causes associated with erythroderma.

Methods This cross-sectional study was conducted in Dermatology Departments, JPMC and PNS Shifa Hospital. All the patients of erythroderma presenting fulfilling inclusion and exclusion criteria were enrolled. Complete history was taken and physical examination was done. Skin biopsy was performed and cause was established. Date were entered and analyzed in SPSS version 16.

Results A total of 92 cases fulfilling the inclusion/exclusion criteria were enrolled. 66 (72%) were males whereas 26 (28%) were females. Mean age was 43.48±7.25 years. 50 (54.6%) patients were between 21-40 years and 42 (45.4%) were between 41-60 years of age. Regarding causes of erythroderma, psoriasis was the most frequent cause of erythroderma seen in 38 (41.3%) patients followed by dermatitis in 16 (17.4%), ichthyosis in 6 (6.5%) and scabies in 4 (4.3%) patients.

Conclusion Psoriasis is the commonest disease associated with erythroderma followed by dermatitis and ichthyosis. Awareness of these frequent causes can help us to develop an efficient strategy for diagnosis and appropriate management of the disease.

Key words
Erythroderma, frequency, psoriasis, dermatitis, ichthyosis.

Introduction

Erythroderma is defined as generalized erythema of the skin which affects more than 90% of the body surface and accompanied by a variable degree of scaling.[1] It is a rare skin condition with an overall incidence of 35 per 100,000 dermatology patients.[2] The clinical features of erythroderma are nonspecific and certain clues such as scaling or pruritus cannot be related to any specific cause, as these are present in nearly all patients. The etiological factors may be previous dermatoses, drug reactions, malignancies, systemic diseases, infections and idiopathic disorders.[1,3] Laboratory findings add little in establishing the etiology of erythroderma. Skin biopsy is the most relevant investigation, as the histopathological features of the underlying disorder are recognizable in more than half of the cases.[4] Since erythroderma is a serious condition, due to its various complications, optimal therapy depends upon the establishment of the cause.[7] There have been very few studies conducted in Pakistan. Pal *et al*. conducted one study in Lahore in 1998.[8] In this study psoriasis was found as the most frequent cause (37.8%) followed by dermatitis (12%) and ichthyosis (7.8%). In another study, conducted in Military Hospital Rawalpindi in 2010,[9] dermatitis was found as the most frequent cause (38%) followed by psoriasis (16%) and drugs (12%).

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Therefore the aim of present study was to determine various causes of erythroderma so that appropriate strategies could be developed to reduce the morbidity.

Methods

This descriptive, cross-sectional study was conducted at Dermatology Department, JPMC Karachi and PNS Shifa Hospital, Karachi from January 2013 to December 2014 after approval from ethical research committee of hospital. Sample size (n) was 92. Sampling technique was nonprobability consecutive sampling. All male and female patients of 21 to 60 years of age with diagnosis of erythroderma for more than 3 months duration, coming to OPD and dermatology ward or referred from other departments were included. Those patients unwilling to undergo investigations or bleeding disorders (biopsy contraindicated) were excluded from study. Written informed consent was taken from all the participants of the study. After detailed history and complete physical examination like duration, itching, salmon-pink plaques, silvery scales, vesiculobullous eruption, oozing and thick lichenified plaques and fish like scaly lesions, skin biopsy was performed in all cases and the samples were sent to Pathology Department, PNS Shifa Hospital for histopathology.

Data were entered and analyzed using SPSS version 16. For quantitative variables (age and duration of disease) mean and standard deviation was calculated. For qualitative variables (gender, causes i.e. dermatitis, psoriasis, ichthyosis etc.) frequencies were measured, effect modifiers were controlled through stratification of age, gender, and duration of disease.

Results

A total of 92 cases fulfilling the inclusion/exclusion criteria were enrolled to determine frequency of various causes associated with erythroderma. Age distribution of the patients showed that 50 (54.6%) were between 21-40 years and 42 (45.4%) were between 41-60 years of age; mean age was calculated as 43.48±7.25 years **(Table 1)**.

Gender distribution of the study population showed 66 (72%) patients were males whereas 26 (28%) were females (**Table 1**). Duration of disease was recorded between 3-6 months in 48 (52.2%) patients and 44 (47.8%) had disease for >6 months of duration **(Table 1)**.

Table 1 Demographic and clinical characteristics of patients (n=92).

	N (%)
Age (years)	
20-40	50 (54.6)
41-60	45 (45.4)
Gender	
Male	66 (72.0)
Female	26 (28)
Duration of disease	
3-6 months	48 (51.5)
>6months	44 (48.5)
Clinical signs and symptoms	
Erythema	92 (100)
Scaling	56 (72.7)
Pruritus	47 (61.1)
Lymphadenopathy	34 (37%)
Nail changes	34 (37%)
Burning	24 (26.1)
Pedal edema	23 (25)
Weight loss	15 (16.3)
Palmoplantar hyperkeratosis	13 (14.1)
Fever	12 (13%)
Alopecia	8 (8.6)
Laboratory parameters	
Anemia	45 (48.9)
Eosinophilia	23 (25)
Hypoalbuminemia	34 (37)
Raised ESR	19 (20.6)
Hyperuricemia	18 (19.5)
Raised ALT	15 (16.3)
Raised blood urea	13 (14.1)

Table 2 Frequency of various causes associated with erythroderma (n=92).

	N (%)
Preexisting dermatoses	
Psoriasis	38 (41.3)
Dermatitis	16 (17.4)
Ichthyosis	06 (6.5)
Crusted scabies	04 (4.3)
Pityriasis rubra pilaris	03 (3.3)
Pemphigus foliaceus	02 (2.2)
Malignancy	
Sezary syndrome	4 (4.3)
Mycosis fungoides	3 (3.3)
Drugs	8 (8.7)
Idiopathic	8 (8.7)

Frequency of various causes associated with erythroderma showed that psoriasis was the most frequent cause of erythroderma seen in 38 (41.3%) patients followed by dermatitis in 16 (17.4%), ichthyosis in 5 (6.5%), scabies in 4 (4.3%) cases. Other causes of erythroderma are shown in **Table 2**.

Discussion

Erythroderma or exfoliative dermatitis is a rare skin disorder that may be the result of many different causes. It was first described in 1868 by Von Hebra.[7] It represents an extreme state of skin irritation involving the whole or most of the skin surface. Because most patients are elderly and skin involvement is widespread, the disease implies an important risk to the life of the patient. It affects psychosocial well-being of patients. It is important to identify the cause of erythroderma.[8] In some cases history of preexisting dermatosis may be found like in psoriasis or evidence of drug intake may be there but in majority of cases no such history is found. Others symptoms like pruritus, scaling, lymphadenopathy, hair and nail changes are nonspecific and do not specifically indicate a cause.[9] Clinicopathological correlation is also poor as in many cases only nonspecific changes are found.

The frequency of causes of the erythroderma is variable in the literature, therefore this study is planned to estimate the magnitude of various causes of erythroderma so that appropriate strategies could be developed to reduce the morbidity.[9]

In this study, we evaluated 92 cases of erythroderma. The mean age of onset was in fourth decade of life and it was more frequent in males with male to female ratio 2.5:1. A study by Cesar *et al*.[11] recorded that the male:female ratio of 1.5:1. This difference in gender may be due to more outdoor activities of males and higher risk of exposure to environmental factors or higher presentation to hospitals. The mean age of their patients was 54.4 years which is slightly higher than our study. In Indian and Pakistani studies mean age of erythroderma was fourth decade which is slightly lower than other parts of world in which mean age is fifth decade.[12]

Psoriasis was recorded in 38 (41.3%) of the cases, these findings are similar with the findings of the current study from different parts of world.[11,12,13] One study from Pakistan showed eczema to be the most frequent cause.[14] Our study revealed that the most frequent cause of erythroderma was psoriasis (41.3%) followed by dermatitis (17.4%). Other causes included drugs, pemphigus foliaceus, mycosis fungoides and Sezary syndrome. An interesting cause of erythroderma, which is not mentioned in previous studies, was scabies in four cases which cleared with adequate treatment of scabies. Previous studies reported scabies as a cause of erythroderma in <0.5% of patients.[15]

The findings of our study are in agreement with a study conducted in Pakistan by Pal *et al*.[8] who recorded that psoriasis was the most frequent cause (37.8%) followed by dermatitis 12% and ichthyosis 7.8%. These findings are in contrast

with a study conducted in Military Hospital, Rawalpindi in 2010[9] in which dermatitis was found as the most frequent cause 38% followed by psoriasis 16% and drugs 12%.

The causative factors of erythroderma can be grouped as previous dermatoses, drug reactions, malignancies, systemic diseases, infections and idiopathic disorders. The most common causative factors were preexisting dermatoses (75.0%), followed by drug reactions (8.7%), idiopathic causes (8.7%) and malignancies (7.6%). Among the preexisting dermatoses, psoriasis is the most common etiology (41.3%). Other common causes of idiopathic protracted erythroderma are probably atopic dermatitis of the elderly, intake of drugs overlooked by the patient, pre-lymphomatous eruptions and occult malignancies. Histopathology can help to identify the cause of erythroderma in up to 50% of cases, particularly by multiple skin biopsies. Many chronic dermatoses may be histologically indistinguishable in erythrodermic patients.[4]

Among laboratory abnormalities, anemia was quite frequent finding found in about half of patients. Eosinophila was found in one-fourth of patients which may be due to drug-related cause, scabies infection or unknown cause.[16,17] Cause of anemia and hypoalbuminemia may be multifactorial, decreased intestinal absorption because of diversion of blood to skin, increased skin turnover or anemia of chronic disease.[18]

Histopathology cannot always identify the cause of erythroderma. Differentiation between inflammatory and malignant causes may also be difficult by histopathology alone.[19] The etiology of erythroderma is determined by combined clinical and histopathological approach and knowledge of common causes is, therefore essential.[20]

Conclusion

Erythroderma is a rare but serious skin disorder. Awareness of the most frequent causes can help us to develop an efficient strategy for diagnosis and appropriate management of the disease. The results of this study may serve as a guide to identify the causes in new erythrodermic patients, at least in our setup.

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