International Journal of Research in Dermatology
Snigdha O et al. Int J Res Dermatol. 2017 Sep;3(3):384-388
http://www.ijord.com

DOI: http://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20173919

Original Research Article

Clinical profile, etiology and histopathology of patients with erythroderma in South India

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Received: 02 July 2017
Accepted: 21 July 2017

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ABSTRACT

Background: Erythroderma is a generalised inflammatory disorder of skin manifesting with erythema and scaling affecting more than 90% of the skin surface. Several studies have highlighted the importance of biopsy in the diagnosis and management of erythroderma, while some others have found it to be of limited use.
Methods: Thirty-six patients with erythroderma were enrolled in the study and a detailed history, clinical examination and relevant investigations including skin biopsy was done to find out the etiology.
Results: Pre-existing dermatoses were the predominant cause (84%) contributed equally by psoriasis (42%) and eczemas (42%) and clinicopathologic correlation could be obtained in 30.55% of cases.
Conclusions: Our study showed that skin biopsy remains a valuable tool in the diagnosis of erythroderma.

Keywords: Erythema, Scaling, Inflammation, Skin biopsy

INTRODUCTION

Erythroderma also known as exfoliative dermatitis is defined clinically by the presence of erythema and scaling involving more than 90% of the skin surface. Based upon its natural history, erythroderma can be classified into primary or secondary types. Secondary erythroderma may be caused by any pre-existing dermatoses, drug reaction or malignancy or other systemic illnesses. Determining etiology has direct bearing on planning treatment of these patients. Histopathology can help identify the cause of erythroderma in up to 50% of cases, particularly if multiple skin biopsies are examined.[1]

We studied the clinical profile, aetiology and histopathology of patients with erythroderma from a tertiary care center in South India.

METHODS

Consecutive patients admitted with a clinical diagnosis of erythroderma under the department of dermatology, venereology and leprosy of the Government Medical College Hospital, Kozhikode, during a period of 1 year, from December 2010 to November 2011 were included in this cross-sectional study after taking written informed consent. Ethical clearance was obtained from the Institutional Research & Ethics Committees.

A comprehensive history was recorded in all cases with attention to mode of onset, site of primary lesion, time taken for generalised spread of the disease, constitutional symptoms, history of pre-existing dermatoses and atopy, treatment taken, response to treatment, aggravating factors and history of any drug intake, personal habits including smoking and alcoholism.

Detailed dermatological evaluation was made in all cases, noting the degree of erythema, nature of scaling, presence of infiltration and sites of predominant involvement. All cases were examined for tell-tale evidence of possible primary skin diseases like psoriasis, seborrhoeic dermatitis, lichen planus, atopic dermatitis, and chronic eczema.

General condition of the patient was assessed. Pulse rate, blood pressure and body temperature were recorded. Pallor, jaundice and pedal edema were noted if present. The extent, consistency and periadenitis of the associated lymphadenopathy, if any were noted. Abdomen was examined for any hepatosplenomegaly. Attempts were made to detect the presence of any internal malignancy in relevant cases. Evidence of high output cardiac failure was looked for.

Urinalysis, total and differential count, haemoglobin estimation, erythrocyte sedimentation rate, peripheral smear, estimation of blood urea, blood sugar, serum proteins, liver function tests, chest x-ray and electrocardiogram were carried out in all patients. Skin biopsy was done in all patients, serial sections were taken and stained with hematoxylin and eosin. Lymph node biopsy was done in selected cases.

These parameters were collected in a pre-determined proforma and entered into Microsoft excel for analysis. Descriptive statistics were used to summarize the data. The Chi-square test was used to compare categorical variables between groups, and a p value of 0.05 or less was taken as significant.

RESULTS

Thirty six patients were included in the study. Baseline characteristics are summarized in Table 1.

Table 1: Patient characteristics.

Characteristic	Number/value (Total n=36)	Percentage (%)
Sex		
Male	29	80
Female	7	20
Male: female ratio	4:1	-
Mean age (years)	54 (14-76)	-
Duration		
1 month or less	30	83
>1 month	6	17
Pre-existing dermatoses	30	84
Psoriasis	15	42
Eczema	15	42
Spontaneous	6	16
Previous episode		
Single	9	25
Two	3	8
>2	4	11

Majority of patients belonged to the 50-70 years age group (69%). There was only one patient below 15 years.

In 75% of patients, the disease first started over the extremities. In 75% of patients in whom the primary site was the trunk, 75% had psoriatic erythroderma (Figure 1).

Progression of the disease was in weeks in majority (92%), with a single patient showing sudden progression within 1 day, and 2 patients had disease >1 month. Sudden progression within a day was seen in drug induced erythroderma and in a single patient with psoriasis.

Clinical signs and laboratory abnormalities are summarized in Table 2.

Table 2: Clinical features and laboratory abnormalities.

Feature/abnormality	Number	Percentage (%)
Pruritus	32	89
Lymphadenopathy	29	81
Localized	19	53
Generalized	10	28
Sparing of nose	12	33
Sparing of flexures	7	19
Scalp scaling	34	94
Alopecia	22	61
Nail changes	30	83
Subungual hyperkeratosis	19	53
Pitting	18	50
Discoloration	8	22
Dystrophy	7	19
Gynaecomastia	1	
Hepatomegaly	3	8
Eosinophilia	12	33
Hyponatremia	6	17
Hyopokalemia	5	14
Hyperkalemia	1	3
Hypoalbuminemia	24	67
Elevated SGOT	9	25
Elevated SGPT	11	31
Elevated ALP	5	14

69% of patients with severe pruritus had eczemas which is statistically significant (p value- 0.010, chi-squared test). Of the psoriasis patients, 83% had pruritus.

Generalised lymphadenopathy was present in malignancy induced erythroderma, 22% of psoriatic erythroderma and 36% of eczema erythrodermas.

Among those with nail pitting, 67% had psoriasis, 28% had eczemas and 6% had drug induced erythroderma.

Among those with nail dystrophy, 71% had psoriasis and 29% had eczemas.

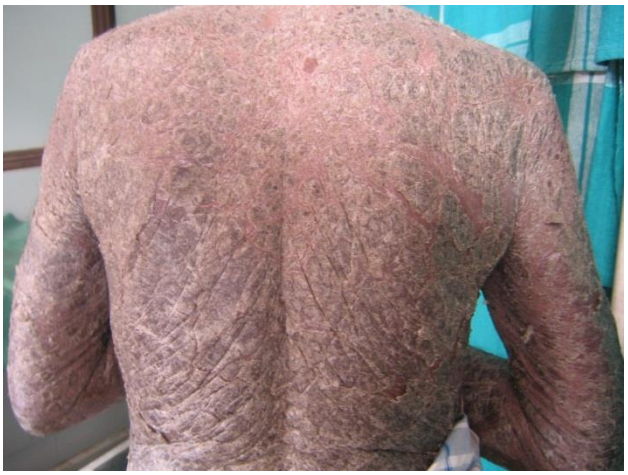

Figure 1: Truncal involvement in psoriatic erythroderma.

Eosinophilia was seen in 33% of patients. This constituted 33% of the psoriatics, 28% of eczemas and 66% of drug induced cases.

Among patients with hypo albuminemia, 46% were psoriatics, 50% were eczema patients and 4% had drug induced erythroderma.

Etiology

Causes of erythroderma in the present study are listed in Table 3.

Table 3: Causes of erythroderma in the present study.

Causes	Number of patients	Percentage (%)
Psoriasis	18	50
Photo allergic contact dermatitis	2	5.55
Air borne contact dermatitis	1	2.8
Seborrhoeic dermatitis	1	2.8
Atopic dermatitis	2	5.55
Allergic contact dermatitis	8	22
Drug induced	3	8
Malignancy associated	1	3
Total	36	100

Of the 36 patients with erythroderma, psoriasis constituted 50%, and eczemas 39%. 8% were drug induced erythroderma and 3% secondary to cutaneous lymphoma. Of the eczemas, allergic contact dermatitis constituted 22% of cases, photoallergic contact dermatitis 5.5%, air borne contact dermatitis 3%, seborrhoeic dermatitis 3%, and atopic dermatitis 5.5%. Of the three drug induced erythroderma cases, one each was due to carbamazepine, dapsone and indigenous medication.

In patients with >2 episodes of erythroderma, 3 patients had erythroderma secondary to eczemas and 1 patient had psoriasis.

Clinicopathological correlation

Histopathological diagnosis could be made in 11 of the 36 patients (30.5%).

Of the 18 patients with psoriasis, histopathology was consistent in 44.4%, diagnosed as eczema in 5.5% and histopathology was non-specific in 50%.

Of the 14 patients with eczema, histopathology was consistent in 7%, diagnosed as psoriasis in 7% and non-specific in 85%.

Of the drug induced and malignancy associated erythrodermas with single patient each, histopathology was nonspecific in both.

Histopathology was consistent with clinical diagnosis in 9 patients (25%).

DISCUSSION

The mean age of patients in this study was 54, age ranging from 14 years to 76 years. Majority were in the age group of 50-70 years (25/36, 69%). In the study conducted by Sigurdsson and Toonstra, the mean age of patients was 61±17 (range from birth to 86 years), while study by Sigurdsson, Steegmans and Von Vloten found the average age to be 59 ± 17 (range 23-86).[2,3]

In our study, 80% of patients were males and 20% females with a male female ratio of 4:1. This was in accordance with the study done by Botella- Estrada, Martin which found the ratio to be 4:1.[4]

In our study, 83% of patients (30/36) presented within 1 month of onset of disease, whereas 17% (6/36) presented after 1 month. All the patients with drug induced erythroderma and malignancy presented within 1 month of onset In the study by Sigurdsson and Toonstra, the mean duration of the erythroderma before admission was 8 months (range, up to 96 months).[2]

In this study, pruritus was complained by 89% of the patients. Rothe, Bernstein and Kells found pruritus to be more severe in those with dermatitis and sezary syndrome.[5] In our study 69% of patients with severe pruritus had eczema which was found to be statistically significant, while the single patient with erythroderma secondary to lymphoma had no pruritus. Pruritus in erythroderma is thought to be of local origin caused by several proinflammatory cytokines and neuro

inflammatory mediators. Pruritus has been reported as a predominant symptom in many of the studies including those by Khaled, Sellami and Fazaa (56%), Jowker, Aslani and Shafiee (64.7%), Akhyani and Ghodsi (97.5%).[6-8]

Sudden progression within a day was seen in drug induced erythroderma as observed in other studies. In patient with erythroderma secondary to lymphoma, it took more than 1 month for generalised spread of the disease.

In various studies, edema was found in approximately 50% of patients.[9-11] Sigurdsson and Toonstra found edema in 54% of patients, Khaled, Sellami and Fazaa in 23%, Akhyani and Ghodsi in 14%.[2,6,8] In our study 92% of the patients had edema which is much higher compared to other studies. Malnutrition, which is prevalent in our population, might have contributed to the edema in such large number, since hypoalbuminemia was also seen in 67%.

Nail involvement was seen in 39% of cases in the study by Sigurdsson and Toonstra, whereas, in this study, nails were involved in 83% of cases.[2] The most frequent nail change observed was subungual hyperkeratosis. Alopecia was reported in 22% of cases by Sigurdsson, Toonstra and in 10% of cases by Jowkar, Aslani and Shafiee.[2,7] In the present study, alopecia was seen in 61% of the patients which is much higher than the other studies.

In our study, hepatomegaly was seen in 8% cases and splenomegaly in 3% cases which is similar to the observation by Sigurdsson, Toonstra who found hepatomegaly in 7% and splenomegaly in 3%.

In the study conducted by Sigurdsson, Steegmans and Vloten 20% of the patients had eosinophilia and was non-specific.[3] In the present study, 33% had eosinophilia, 19% had leucocytosis and 56% had anemia. Except that eosinophilia was found in 66% of drug induced erythroderma cases, the use of laboratory evaluation to differentiate the various causes of erythroderma has generally not been helpful in this study as in various other series.[8,9,12,13]

In this study, 84% (30/36) of the patients had pre-existing dermatoses, 42% constituted by psoriasis and 42% by eczemas. Among these, 90% (27/30) had aggravation of their disease prior to exfoliation. Thus, previous dermatoses were the most common cause of erythroderma in this study.

As compared to other similar studies, primary dermatoses were the most common cause constituting 89% of the cases, which was much higher than other studies. Also, in our study, idiopathic erythroderma was rare.

Skin biopsy was helpful in establishing the cause of erythroderma in 45–65% of reported cases.[14,15] Excluding lymphoma, King et al found that skin biopsies revealed the diagnosis in still fewer patients (22%).[13] In the study done by Jowkar, Aslani and Shafiee, clinicopathological correlation was obtained in 66.4%.[7] In the present study clinicopathological correlation was obtained in 30.55% which is slightly lower compared to other similar studies. This may be because the specific features of dermatosis are masked by the non-specific features of erythroderma.[4,9]

Table 4: Causes of erythroderma in previous publications compared with the present Series.

Author(s) (year)	No. of patients	Dermatoses (%)	Drug reactions (%)	CTCL (%)	Paraneoplastic (%)	Miscellaneous (%)	Idiopathic (%)
Wilson[16]	50	46	8	4	0	4	38
Gentele, Lodin, Skog[17]	135	45	8	11	0	4	32
Abrahams, McCarthy, Sanders[18]	101	35	11	2	0	6	46
Nicolis and Helwig[19]	135	27	40	8	3	10	12
Ndiaya et al.[20]	77	51	14	4	0	0	31
Hasan and Jansen[21]	50	54	10	4	0	0	32
King et al[13]	82	31	34	18	0	1	16
Sehgal and Srivastava[11]	80	58	20	0	0	0	22
Botella-Estrada et al[4]	56	66	12.5	12.5	0	0	9
Present series	36	89	8	3	0	0	0

Causes of erythroderma in other studies in comparison to the present study are listed in Table 4.

Limitations

The major limitation of this study was the small sample size. Also since this is a cross sectional study, follow up was not done and so the long-term complications of the disease couldn't be assessed.

CONCLUSION

Even in this era of sophisticated investigations, skin biopsy remains a simple, valuable and effective tool for the diagnosis of erythroderma. And this investigation should be resorted to in all cases of erythroderma since finding out the cause is a major step in the management of such a disease with a high chance of mortality.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee, Government Medical College, Kozhikode

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Cite this article as: Snigdha O, George M, Binitha MP, Balakrishnan S. Clinical profile, etiology and histopathology of patients with erythroderma in South India. Int J Res Dermatol 2017;3:384-8.