Erythroderma: A clinicopathological study of 370 cases from a tertiary care center in Kerala

Sir,

Erythroderma or exfoliative dermatitis is an inflammatory disorder in which erythema and scaling occur in a generalized distribution involving more than 90% of the body surface.[1] We conducted a retrospective study to delineate the clinical features and etiological pattern of erythroderma and to note its clinicopathological correlation. Case records of 370 erythroderma patients who attended the Department of Dermatology, Government T D Medical College, Alappuzha, Kerala, during the past 10 years (April 2005–March 2015) were analyzed to study the clinical, laboratory and histopathological data.

Mean age of onset of erythroderma was 55.38 ± 16.67 (range 3-91 years) years. Majority of the patients belonged to the age group of 60–69 years (n = 119, 32%) followed by 50–59 years (n = 81, 22%). Idiopathic cases of erythroderma were mostly observed in 70–79 years' age group. Male patients (289;78%) outnumbered females (81;(22%) in a ratio of 3.6:1. Age and sex ratio data in our study agree with the previous reports.[1-4]

Pruritus was the most common symptom which was noted in all patients followed by chills in 333 (90%) patients. The other clinical features observed are shown in Table 1.

Lymphadenopathy was observed in 138 (37.3%) of patients with the most common site being inguinal and axillary nodes. Fine-needle aspiration cytology from enlarged lymph nodes was done in 120 patients, of which 118 (98.3%) showed features of dermatopathic lymphadenopathy, one showed lymphomatous infiltration and one case was inconclusive.

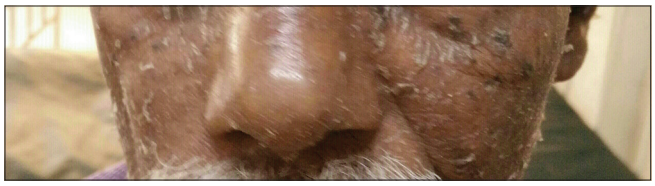

Figure 1: Nose sign

Nose sign [Figure 1] was observed in 58 (15.7%) cases, but was not specific to any etiology. Pal *et al*. observed it in 13 (14.4%) cases while Hulmani *et al*. noted it in 16 (53.3%) patients.[1,2] Deck chair sign [Figure 2] was seen in 17 (4.6%) patients which included mycosis fungoides and chronic actinic dermatitis. This suggests the role of photosensitivity in this phenomenon as majority of our patients were outdoor workers. Pal *et al*. also observed similar findings.[2] Common nail changes were shiny nails, subungual hyperkeratosis, longitudinal ridging, pitting, onycholysis and nail dystrophy. Nail changes were most frequently seen in psoriatic erythroderma. Islands of normal skin were observed in two cases of mycosis fungoides, in addition to pityriasis rubra pilaris. Although considered a diagnostic feature of pityriasis rubra pilaris [Figure 3], it is also reported in other conditions such as sarcoidosis, cutaneous T-cell lymphoma, psoriasis and pemphigus foliaceus.[2] Laboratory investigations revealed anemia in 99 (26.8%) patients, leukocytosis in 18 (4.9%), eosinophilia in 56 (15%), elevated erythrocyte sedimentation rate in 98 (26.5%), hypoproteinemia in 32 (8.6%) and

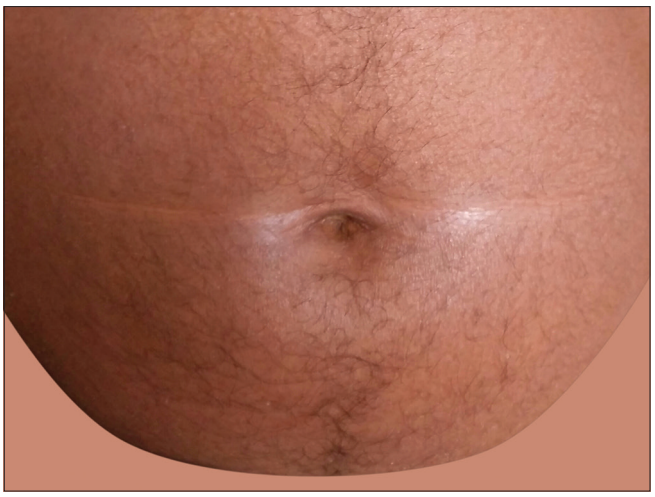

Figure 2: Deck chair sign

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elevated liver enzymes in 10 (2.7%) patients. Three-fourth of the cases of drug-induced erythroderma showed eosinophilia.

Table 2 summarizes the causes of erythroderma in our study.

As in previous studies, pre-existing skin diseases contributed the highest percentage of erythroderma; in our series (n = 276, 74.6%) psoriasis was the most common underlying disease.[1-4] A comparison of etiology of erythroderma in various studies is shown in Table 3.

Chronic actinic dermatitis was noted in 30 (8.1%) patients which is high in comparison with other reports.[1-4] The study area is a coastal district with white sandy soil. Albedo (percentage of light reflected from any surface) for sand is 15–30% which is higher than that of most ground substances (<10%).[5] This might have contributed to the high incidence of actinic dermatitis. Furthermore, most of our patients are engaged in outdoor occupations such as fishing and construction work.

Contact dermatitis was the most common type of eczema which was noted in 59 (15.9%) patients, followed by atopic eczema in 24 (6.5%), stasis dermatitis in 5 (1.4%) and seborrheic dermatitis in 4 (1.1%) patients (n = 370). The most common agent which caused contact dermatitis was cement followed by topical indigenous medicines. The high incidence of contact dermatitis in comparison with previous studies could be explained by the nature of occupation of people in our area.[2-4]

Drugs contributed 24 (6.5%) cases, of which phenytoin accounted for eleven. Other drugs observed to cause erythroderma were

Table 1: Common clinical findings (n=370)

Signs	Number of cases (%)
Erythema and scaling	370 (100)
Pedal edema	182 (49.2)
Edema face	47 (12.7)
Lymphadenopathy	138 (37.3)
Ectropion	30 (8)
Keratoderma palms/soles	30 (8)
Nose sign	58 (15.7)
Deck chair sign	17 (4.6)
Fever	27 (7.3)
Nail changes	250 (67.6)

Table 2: Final etiology of erythroderma (n=370)

Etiology	Number of cases (%)
Pre-existing skin diseases	276 (74.6)
Psoriasis	121 (32.7)
Eczemas	92 (24.9)
Chronic actinic dermatitis	30 (8.1)
Pityriasis rubra pilaris	12 (3.2)
Pityriasis rosea	10 (2.7)
Pemphigus foliaceus	5 (1.4)
Lichen planus	3 (0.8)
Congenital ichthyosiform erythroderma	2 (0.5)
Scabies	1 (0.3)
Drugs	24 (6.5)
Mycosis fungoides	12 (3.2)
Idiopathic	58 (15.7)

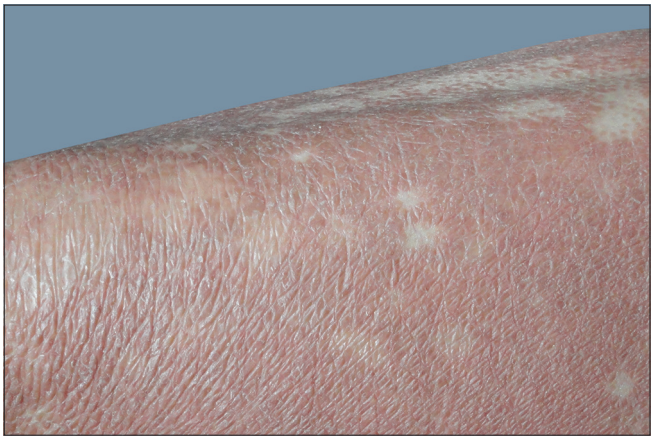

Figure 3: Islands of normal skin in pityriasis rubra pilaris

Table 3: Comparison of etiology in various studies

Name of disease	Hulmani *et al.* (n=30) (%)[1]	Pal *et al.* (n=90) (%)[2]	Akhyani *et al.* (n=97) (%)[3]	Rym *et al.* (n=80) (%)[4]	Present series (n=370) (%)
Pre-existing skin diseases	63	74.4	59.8	72.5	74.6
Psoriasis	33.3	37.8	27.8	51.25	32.7
Atopic dermatitis	6.6	3.3	13.4	0	6.5
Contact dermatitis	20	3.3	3.1	2.5	15.9
Pityriasis rubra pilaris	3.3	2.2	8.2	1.25	3.2
Crusted scabies	0	2.2	1	1.25	0.3
Pemphigus foliaceus	0	5.6	1	6.25	1.4
Chronic actinic dermatitis	0	1.1	1	0	8.1
Congenital ichthyosiform erythroderma	0	7.8	1	0	0.5
Drugs	16.6	5.5	21.6	11.25	6.5
Malignancy	3.3	5.5	11.3	8.75	3.2
Idiopathic	16.6	14.6	7.2	7.5	15.7

diclofenac, ibuprofen, allopurinol, carbamazepine, gemifloxacin, ciprofloxacin, INH, clonazepam and homeopathic drugs.

Skin biopsy was performed in 315 (85%) patients, details of which are shown in Table 4 and Figure 4. Biopsy was avoided in patients where the cause was clinically obvious (pre-existing skin diseases and drugs). We obtained clinicopathological correlation in 180 (57.1%) cases. Best correlation was obtained in erythrodermic mycosis fungoides [Figures 5 and 6]. Hulmani *et al*. and Rym *et al*. observed a higher rate of correlation.[1,4]

Psoriasis patients were treated with emollients, phototherapy and methotrexate. A short course of systemic steroids was beneficial in many of our patients as contact dermatitis and actinic dermatitis were the common causes of erythroderma.

Our study highlights the role of various geographic and occupational factors in the etiology of erythroderma in a particular

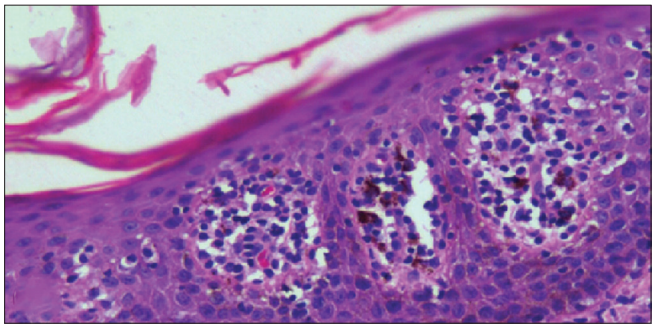

Figure 4a: Histopathology – erythroderma due to mycosis fungoides (H and E, ×400)

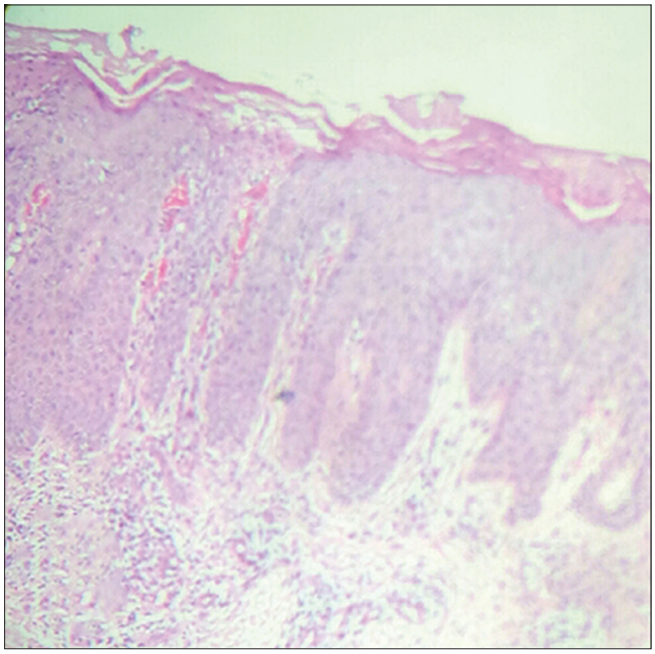

Figure 4c: Histopathology – erythroderma due to psoriasis (H and E ×100)

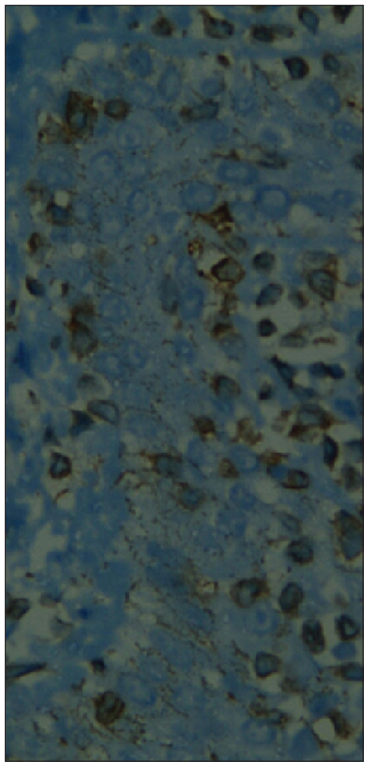

Figure 4b: Histopathology – erythroderma due to mycosis fungoides immunohistochemistry using CD3 antibody (Dako) showing positivity ×400

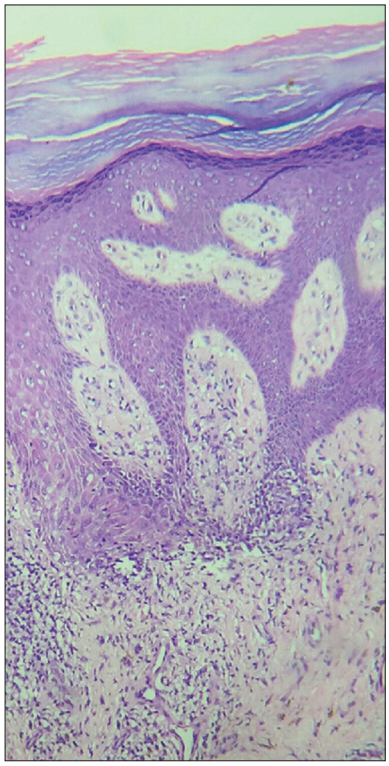

Figure 4d: Histopathology – erythroderma due to lichen planus (H and E ×100)

Table 4: Comparison between clinical and histopathological diagnosis

Clinical diagnosis	Number of cases (biopsy taken)	Histopathological diagnosis	Number of cases (%)
Psoriasis	110	Psoriasis	70 (63.6)
		Spongiotic dermatitis	15 (13.6)
		Nonspecific dermatitis	25 (22.7)
Eczemas	85	Spongiotic dermatitis	63 (74)
		Psoriasiform dermatitis	4 (4.7)
		Nonspecific dermatitis	18 (21)
Chronic actinic dermatitis	20	Spongiotic dermatitis	16 (80)
		Nonspecific dermatitis	4 (20)
Mycosis fungoides	14	Mycosis fungoides	12 (86)
		Psoriasis	2 (14)
Pemphigus foliaceus	5	Pemphigus foliaceus	4 (80)
		Spongiotic dermatitis	1 (20)
Pityriasis rubra pilaris	11	Pityriasis rubra pilaris	9 (81.8)
		Nonspecific dermatitis	2 (18.2)
Drug	4	Lichenoid dermatitis	1 (25)
		Nonspecific dermatitis	3 (75)
Lichen planus	2	Lichen planus	2 (100)
Pityriasis rosea	6	Pityriasis rosea	3 (50)
		Spongiotic dermatitis	3 (50)
Idiopathic	58	Nonspecific dermatitis	50 (86)
		Spongiotic dermatitis	8 (14)

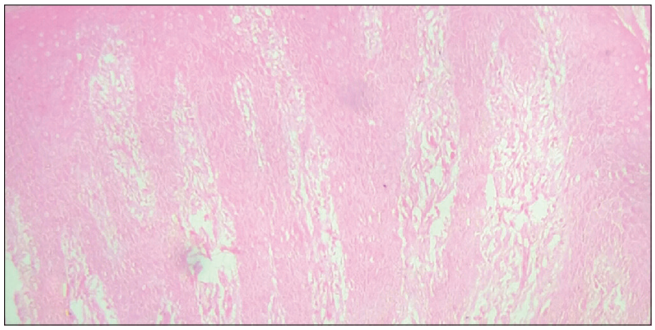

Figure 4e: Histopathology – erythroderma due to eczemas (spongiotic dermatitis) (H and E, ×100)

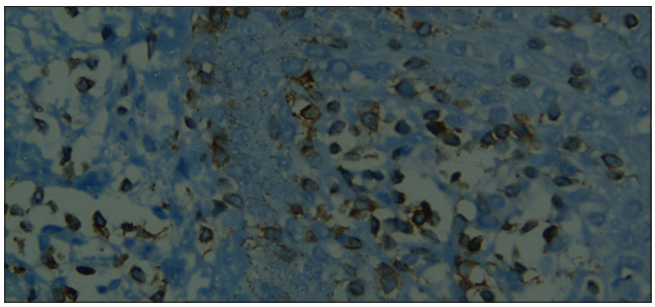

Figure 6: Immunohistochemistry – CD3+ T-lymphocytes in mycosis fungoides ×400

area. Knowledge about common causes in an area helps in better management of patients which, in turn, helps to reduce the morbidity and mortality associated with this disease.

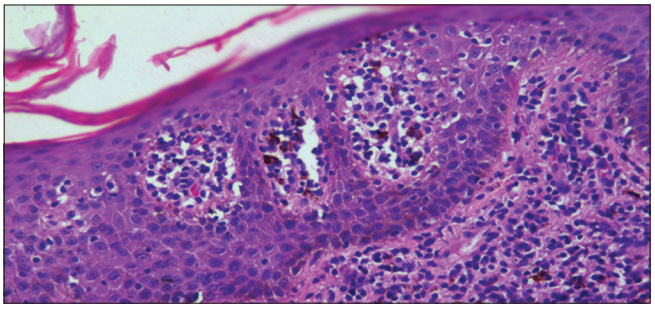

Figure 5: Histopathology of erythrodermic mycosis fungoides – epidermis showing Pautrier's microabscesses (H and E, ×400)

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Conflicts of interest
There are no conflicts of interest.

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