

## “A Retrospective Study of Correlation Between Clinical And Histopathological Diagnosis In Erythroderma.”

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### I. Introduction

Erythroderma, first described by Hebra in 1868, is a reaction pattern characterized by generalized and confluent erythema with desquamation affecting more than 90% of body surface area. It is usually accompanied by other systemic manifestations resulting in hemodynamic and metabolic derangements.<sup>1</sup> In erythroderma, there is an increase in the rate of epidermal cell turnover.<sup>2</sup> The number of germinative cells and their mitotic rate are increased. Transit time of the cells through the epidermis is shortened thereby leading to loss of cell components from the skin surface in the form of scales, estimated to be 20–30 g/day. The amount of protein loss is so large that the systemic metabolism is affected.<sup>3</sup> The main causes of erythroderma are psoriasis, eczema, drugs, pityriasis rubra pilaris, pemphigus foliaceus, lymphoma and others. Males are affected two to three times more frequently than females.<sup>1</sup> Histopathology helps in identifying the cause of erythroderma in upto 50% of cases. The histological appearance varies depending upon the severity and duration of the inflammatory process.<sup>4</sup>

The aim of this study was to observe the correlation between clinical and histopathological diagnosis and the role of histopathology in confirmation of the diagnosis.

### II. Materials And Methods

This was a retrospective time bound study of erythroderma patients who attended the Outpatient Department of Dermatology of Father Muller Medical College, Mangalore, Karnataka between January 2007 to December 2016. Medical records of all patients with a clinical diagnosis of erythroderma were collected after obtaining institutional ethical committee clearance. Cases in which skin biopsy was not done were excluded from the study. From the medical records, demographic data of patients such as age, sex, clinical diagnosis and histopathological diagnosis were collected. In all patients, excision biopsy from the lesional skin was obtained for histopathological study.

#### Inclusion Criteria

All patients with erythroderma who had undergone skin biopsy for histopathological study.

#### Exclusion Criteria

Patients who did not undergo skin biopsy for histopathological study.

### III. Results

Out of 111 cases of erythroderma only 71 cases underwent skin biopsy for histopathological study. Most of the erythroderma patients were in the age group of 4<sup>th</sup> and 5<sup>th</sup> decade with mean age being 53.33 years. There were 63 males and 8 females with a male to female ratio of 7.8:1, showing a very high male predominance. Of the 71 cases, 31 cases (43.66%) were of psoriasis and eczema each, 3 (4.22%) cases of drug induced erythroderma, 2 (2.81%) cases of bullous ichthyosiform erythroderma, 1 case (1.40%) each of Lichen planus pigmentosus, Pemphigus foliaceus, Pityriasis rubra pilaris, Non bullous ichthyosiform erythroderma. Eczema included Atopic dermatitis, Seborrhoeic dermatitis, Phytophotodermatitis, Allergic contact dermatitis.

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Psoriatic erythroderma was most common in 5<sup>th</sup> to 6<sup>th</sup> decade of life. Eczema was most commonly seen in the 6<sup>th</sup> decade of life.

The majority (69.01%,  $n = 49$ ) of erythroderma cases had chronic onset whereas 30.98% ( $n = 22$ ) cases had an acute onset of the disease. All 3 cases with drug-induced erythroderma presented with acute onset of generalised scaling and erythema of less than 6 weeks duration. Out of 71 cases of erythroderma, 54 cases (76.05%) had a pre-existing dermatoses. Histopathological diagnosis of erythroderma was possible in 57 cases out of 71 cases (80.28%). Remaining 14 cases (19.71%) were diagnosed as non specific dermatitis.

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About 40.84% of total cases and 93.54% of clinically diagnosed erythrodermic psoriasis cases were histopathologically diagnosed as psoriasis.

About 33.80% of total cases and 77.41% of clinically diagnosed erythroderma cases secondary to eczema were histopathologically diagnosed as eczema.

Two cases of clinically diagnosed erythroderma secondary to bullous ichthyosiform erythroderma were histopathologically confirmed.

All the three cases clinically diagnosed as drug induced erythroderma showed non specific dermatitis on histopathology.

One case of clinically diagnosed pityriasis rubra pilaris was histopathologically confirmed.

One case each of pemphigus foliaceus and non bullous ichthyosiform erythroderma showed non specific dermatitis on histopathology.

Etiology	10-19	20-29	30-39	40-49	50-59	>60	Total
Psoriasis	-	-	4	7	10	10	31
Eczema	-	1	3	2	9	16	31
PRP	-	-	-	-	1	-	1
P. foliaceus	-	-	-	-	1	-	1
Lichen planus pigmentosus	-	-	-	1	-	-	1
Non bullous ichthyosiform	-	1	-	-	-	-	1
Drug induced	1	1				1	3
Bullous ichthyosiform	1	1					2

Table 1: Age wise distribution of erythroderma cases with different clinical etiologies

Clinical diagnosis	No. of cases	Histopathological diagnosis	No. of cases
Psoriasis	31 (43.66%)	Psoriasis	29 (93.54%)
		Non specific dermatitis	2 (6.45%)
Eczema	31 (43.66%)	Chronic spongiotic dermatitis	24 (77.41%)
		Non specific	7 (22.58%)
Drug induced	3 (4.22%)	Non specific	3 (100%)
Lichen planus pigmentosus	1 (1.40%)	Lichen planus pigmentosus	1 (100%)
PRP	1 (1.40%)	PRP	1 (100%)
P. foliaceus	1 (1.40%)	Non specific	1 (100%)
Bullous ichthyosiform erythroderma	2 (2.81%)	Bullous ichthyosiform erythroderma	2 (100%)
Non bullous ichthyosiform erythroderma	1 (1.40%)	Non specific dermatitis	1 (100%)

Table 2: Comparison between clinical and histopathological diagnosis



Fig 1: Psoriatic erythroderma

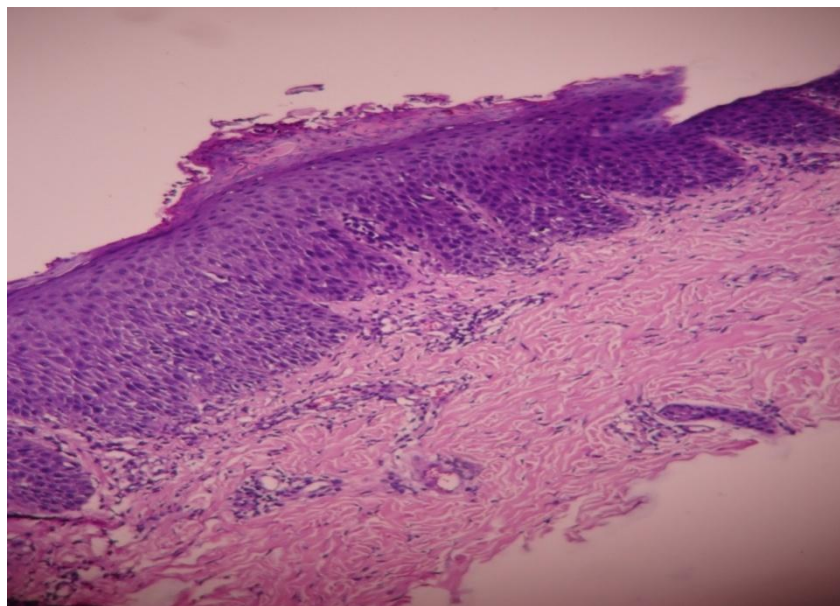


Fig 2: Psoriatic erythroderma

#### **IV. Discussion**

Erythroderma can develop from a pre-existing dermatoses, following drug intake or as a manifestation of malignancy or systemic diseases. In few cases where etiology is not found, these are diagnosed as idiopathic erythroderma.<sup>5</sup> There are some congenital causes of erythroderma as well such as bullous congenital ichthyosiform erythroderma (autosomal dominant) and congenital ichthyosiform erythroderma (autosomal recessive).<sup>6</sup> In daily practice, diagnosis of erythroderma depends mainly on the history of pre-existing dermatosis but on many occasions there is no such history, then it becomes a diagnostic challenge to find out the cause. Irrespective of the etiology, clinical features of erythroderma are almost identical. It is difficult to differentiate between various causes of erythroderma once it is fully established. In acute cases, scales are large and easily detachable and in chronic cases, they are of smaller size. So a comprehensive clinicopathological correlation is of substantial importance to render the diagnosis of the cause for erythroderma.<sup>7</sup>

The present study was done for histopathological categorization of clinically diagnosed erythroderma. The present study was done for histopathological categorization of clinically diagnosed cases of erythroderma and to observe correlation between clinical and histopathological diagnosis.

Chi square test was used to find the clinical and histological correlation. The p-value was 0.001 which was statistically significant.

The mean age of the patients with erythroderma was found to be 53.33 years in this study group, with a range of minimum 15 years to maximum 84 years. The mean age of the study group corroborates with the previous published studies.<sup>8,9</sup> The male to female ratio in our study was 7.8:1. This ratio was much high in our study when compared to other studies.<sup>10</sup>

In our study 54 (76.05%) out of 71 cases developed erythroderma from a pre existing dermatoses. A study by Pal and Haroon also found similar association.<sup>11</sup> Among the preexisting dermatoses, we found psoriasis to be the most common (43.66%,  $n = 31$ ) etiology in our study corroborating previous studies.<sup>8,11</sup> We found that majority (69.01%,  $n = 49$ ) of erythroderma cases had chronic onset, whereas 30.98% ( $n = 22$ ) cases had acute onset. All the three cases of drug induced erythroderma had an acute onset which is in accordance with previous studies.<sup>12,13</sup> Drugs which caused erythroderma in our study were phenytoin, allopurinol and carbamazepine. These drugs are notorious to cause erythroderma according to many studies.<sup>8,14</sup> In our study we did not find any case of erythroderma having an underlying malignancy as a cause. Studies by Mittal et al and Sehgal et al also did not find any case of malignancy associated erythroderma.<sup>15,13</sup> In our study, histopathological diagnosis was most consistent with clinical diagnosis of psoriasis (93.54%) cases. It had a sensitivity of 100% and specificity of 85.11%. Histopathological findings were consistent in 77.41% of eczema cases.

A study conducted by Akhyani et al showed that histopathology was helpful to correlate clinical diagnosis in 50% of cases. They found psoriasis to be the predominant etiologic agent causing erythroderma.<sup>8</sup> In our study histopathological correlation with that of clinical diagnosis was possible in 57 cases out of 71 cases (80.28%). A study done by Hulmani et al also found similar observation. This suggests that histopathology helps the clinicians greatly in identifying the etiology of erythroderma.<sup>16</sup>

Etiology	Pal et al <sup>11</sup>	Chaudhari et al <sup>17</sup>	Rym et al <sup>18</sup>	Sudho et al <sup>14</sup>	Present study
Psoriasis	37.8	40	51.25	32	43.66
Eczema	12.2	20	7.5	12	43.66
PRP	2.2	0	1.25	0	1.40
P. foliaceus	5.6	0	6.25	4	1.40
Ichthyosis	7.8	0	0	0	4.21
Lichen planus	0	0	1.25	0	1.40
Malignancy	5.5	6.66	8.75	4	0
Drug induced	5.5	10	11.25	24	4.22
Idiopathic	14.6	16.66	7.5	8	0

Table 3: Comparison of earlier studies with present study on etiology of erythroderma

### V. Conclusion

In our study, psoriasis and eczema outnumbered the other causes of erythroderma. Histopathological categorization was possible in 80.28% cases and the remaining cases showed non specific dermatitis. Most common histopathologic diagnosis seen in our study was psoriasis.

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