

# Etiology of erythroderma: An observational study in a teaching hospital

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## Abstract

**Introduction:** Erythroderma is an intense exfoliative disease with generalized redness appearing all over the skin. Even when managed well, it is capable of causing many deaths. As a result a proper etiopathology of the disease has to be properly established to facilitate a timely and appropriate treatment.

**Materials and methods:** 203 patients who were clinically diagnosed for erythroderma were included in this study. Detailed demographic data, the time of onset, a history if any cutaneous diseases and the medications, comorbidities, history of weight loss, history of pruritis, ungueal alterations, palmo-plantar keratoderma, ectropion was taken.

**Results:** 55.17% of the patients were males and 44.83% were females. The most common age group was 30- 50 years. The most common cause was psoriasis in nearly 50%, followed by drug reactions in 26.6% and idiopathic causes in 4.93%.

**Conclusion:** In our study, a large number of patients with erythroderma had psoriasis, proving that condition to be the most common cause, followed by drug reactions and idiopathic reasons.

**Keywords:** Erythroderma, psoriasis, etiology

## Introduction

First described by Von Hebra in 1868, erythroderma is an intense exfoliative disease with generalized redness appearing all over the skin. This extensive erythema and scaling is due to the extreme skin dysmetabolism and involves more than 90% of the body's surface, with severe itching <sup>[1, 2]</sup>. There is a high rate of epidermal cell turnover with a shortened transit of the cells through the epidermis. Thus, there is a great loss of the cell components through the skin surface in the form of scales. There is a severe affect in the systemic metabolism as the protein loss is also in large numbers <sup>[3]</sup>. There is a high rate of morbidity and mortality among these cases and therefore is of great concern.

It is estimated that 1% of all dermatological admissions in hospitals is exfoliative dermatitis <sup>[4]</sup>. 1 to 2 out of every 10000 individuals is said to suffer from this disease globally, while in

India, the incidence is around 35 in every 10000 people <sup>[5, 6]</sup>.

Erythroderma can be acute (with a duration for a few days) or chronic (of longer duration). It is non-specific and one of the causes is said to be induced by different medications or skin infections as atopic dermatitis, psoriasis, contact dermatitis, malignancies <sup>[7, 8]</sup>. Even when managed well, it is capable of causing many deaths. As a result a proper etiopathology of the disease has to be properly established to facilitate a timely and appropriate treatment.

Its presentation is very similar to several cutaneous and systemic diseases, thus, making its diagnosis very difficult. Even when it is properly managed erythroderma is associated with high metabolic burden as well as its complications. Therefore to identify the etiology with a thorough workup is important <sup>[9, 10]</sup>.

This study was undertaken to identify the underlying causes for erythroderma in our geographical area.

### Materials and Methods

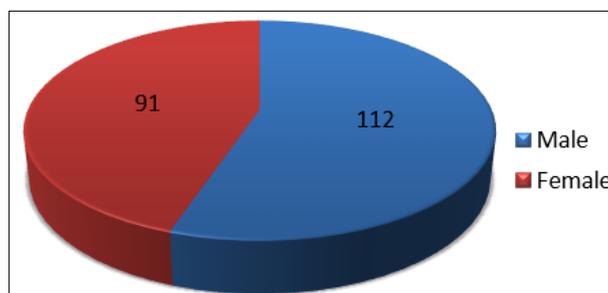
203 patients who were clinically diagnosed for erythroderma were included in this hospital based observational study. This study was conducted by the Department of dermatology at Guntur Medical college, Andhra Pradesh for a period of April 2019 to July 2022. This study was cleared by the Institutional Ethical Committee. All the 203 patients were explained the nature of the study and informed consent was collected from all of them. Patients having congenital erythroderma and those with generalized poikiloderma were excluded from the study.

Detailed demographic data was collected from all the patients and they were all subjected to a thorough clinical examination. The time of onset of erythroderma was taken for all the patients. They were asked if there was a history if any cutaneous diseases and the medications that was being taken, the comorbidities, history of weight loss was noted. History of pruritis, ungueal alterations, palmo-plantar keratoderma, and ectropion was also taken into consideration.

Blood was collected from the patients in the study for complete hematological parameters, Total IgE, ESR, electrolytes, viral markers such as HIV, HBV and HCV, urine was collected for microscopic examination and stool was collected for occult blood. All the patients underwent Chest X rays and ECG as a routine. 3 of skin biopsies were taken and sent to the central laboratory for histological examination.

### Results

Out of the 203 patients, 112 patients were males (55.17%) and 91(44.83%) were females (Fig: 1).



**Fig 1:** Sex wise distribution of the patients

The most common age group to be affected were between 30-50 years age group. 39 (19.70%) of the patients were between 30-39 years and 40 (19.7%) of the patients were

between 40-49 years. 33 (16.26%) of the patients were between 60-69 years and 27 (13.30%) were between 50-59 years. Only 2 patients were more than 87 years and 3 (1.48%) were <10 years (Table: 1)

**Table 1:** Age wise distribution of patients

Patient Age	Number	Percentage
0-9 years	3	1.48
10-19 years	17	8.37
20-29 years	35	17.24
30-39 years	39	19.21
40-49 years	40	19.70
50-59 years	27	13.30
60-69 years	33	16.26
70-79 years	7	3.45
>80 years	2	0.99
Total	203	100

The most common cause of erythroderma in our study was Psoriasis 96 (47.3%) of the patients. In 54 (26.6%) of the patients, the inflammation was due to drugs, 4 (1.97%) had eczema, 12 (5.91%) had Chronic Actinic dermatitis, in 10 (4.93%) the reasons were idiopathic. In 11 (5.42%), the reason were inconclusive (Table: 2).

**Table 2:** Causes of erythroderma

Cause	Number	Percentage
Psoriasis	96	47.3
Eczema	4	1.97
Ichthyosis	1	0.49
Pemphigus foliaceus	1	0.49
Chronic Actinic dermatitis	12	5.91
Drugs	54	26.6
Malignancy	1	0.49
ABCD	6	2.96
Irritant dermatitis	5	2.46
Connective Tissue disorders (SLE)	2	0.99
Idiopathic	10	4.93
Inconclusive	11	5.42

## Discussion

A previous dermatological history will be useful to easily diagnose the presence of erythroderma as such patients are highly uncooperative to therapy and develop erythroderma. However, other clinical features such as pruritis or scaling are non-specific, making the diagnosis more difficult. Other non-specific symptoms such as hairloss or dystrophic nails may be observed during the longer duration of the condition <sup>[11]</sup>.

In the present study, the number of males were slightly more than the number of females, but this difference was not significant. A very high male dominance was observed in a study by Hulmani *et al*, where a male: female ration was 14:1 <sup>[12]</sup>. A 2: 1 ratio was found in a study by Vasconcellos *et al*. <sup>[2]</sup>, 2.75: 1 by Chaudhary and Gupta <sup>[13]</sup>. The predominance of males in these studies was attributed to the heavier intake of alcohol and more amount of outdoor work by the male. A study by Hawilo *et al*. observed a male to female ration of 3:1 <sup>[14]</sup>. A lower male to female ration of 0.85:1 was observed in a study by Sarkar *et al*. <sup>[15]</sup>

More number of people affected belonged to 30 - 50 year age group. The mean age of 53.7

years was observed in a study by Hawilo *et al.* [14]. A study by Akhyani *et al* revealed the mean age to be 46.2 years, which was similar to our study [11].

The most common cause was psoriasis, as seen in around 50% of the patients in the present study, followed by reactions to drugs in 21.6% of the cases, idiopathic causes in 4.93% of the cases. In a study by Hawilo *et al*, 78% of the patients had psoriasis [14]. Akhyani *et al.* also observed dermatoses to be the most common cause in 59% of patients [11]. Drug reactions were the cause in 21.6% and malignancies in 11.3% followed by idiopathic causes in 7.2% of the cases similar to our study [11].

Erythroderma is commonly seen in patients with HIV. A study by Morar *et al* reported a large population of HIV positive persons to have erythroderma [16]. But in our study, we saw no such correlation. None of our patients were HIV positive. A similar result was observed in a study by Akhyani *et al*, who also found no HIV patients among their patients with erythroderma [11].

### Conclusion

In our study, a large number of patients with erythroderma had psoriasis, proving that condition to be the most common cause, followed by drug reactions and idiopathic reasons. Since this condition is attached with a high rate of morbidity and mortality, an early detection is necessary so that early treatment can be started.

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