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A prospective study on causes and clinical manifestations of erythroderma

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Abstract
Introduction: Erythroderma is a skin illness characterized by widespread inflammation, resulting in the development of erythema and scaling on more than 90% of the body's skin. Different from secondary erythroderma, which develops on top of preexisting dermatoses, primary erythroderma appears on otherwise healthy skin as a result of a systemic illness or a reaction to a medication.
Materials and Methods: Participants were patients and outpatients at the dermatological clinic and ward of Department of Dermatology, Venereology & Leprosy, Shri Rama Krishna Institute of Medical Sciences & Sanaka Hospitals, Durgapur, West Bengal, India, between June 2018 to May 2019. All patients of either sex and any age who presented with a new instance of erythroderma to the dermatology clinic throughout the specified time frame were included in the analysis.
Results: The study found that patients aged 50–59 had the highest prevalence of erythroderma, followed by those aged 60–69 and those aged 40–49. This is consistent with previous research that found the highest prevalence in people aged 50 to 59. Participants' mean ages were 40.25 years old. The male to female ratio has been demonstrated to be higher in previous investigations.
Conclusion: The following were noted after reviewing 50 cases with erythroderma admitted to our hospital over a period of two years. The annualized frequency with which our hospital's skin clinic saw new cases of erythroderma.

Keywords: Etiology, clinicopathology, erythroderma, health

Introduction
Erythroderma is a skin illness characterised by widespread inflammation, resulting in the development of erythema and scaling on more than 90% of the body's skin. Different from secondary erythroderma, which develops on top of preexisting dermatoses, primary erythroderma appears on otherwise healthy skin as a result of a systemic illness or a reaction to a medication [1-3].
Erythroderma is a skin reaction pattern that can have a wide variety of reasons, such as an underlying skin disorder. Sometimes, the root causes can't be found, even after a comprehensive clinical evaluation and inquiry [4]. Hebra first described erythroderma in 1868. Rarely does this condition arise for no apparent reason (idiopathic). This sickness is frequently linked to an underlying cutaneous or systemic problem or drug use [5]. Erythroderma causes a wide range of cutaneous and extracutaneous symptoms, including hemodynamic abnormalities, metabolic derangement, fever, tachycardia, hypoalbuminemia, and pedal edoema [6-8].
In order to treat a patient effectively, it is necessary to attend to both their symptoms and the underlying cause of their condition. Even though it's uncommon, the morbidity associated with it is considerable because it's frequently a chronic condition marked by disabling symptoms including extreme itching and scaling [9-11]. For this reason, histopathology plays a vital role in determining the cause of a disease or condition, allowing for timely and effective treatment. The current study aims to examine the etiopathology, clinical characteristics, course, progression, and related systemic derangement of erythroderma.

Materials and Methods
Participants were patients and outpatients at the dermatological clinic and ward of Department of Dermatology, Venereology & Leprosy, Shri Rama Krishna Institute of Medical Sciences & Sanaka Hospitals, Durgapur, West Bengal, India, between June 2018 to

May 2019. All patients of either sex and any age who presented with a new instance of erythroderma to the dermatology clinic throughout the specified time frame were included in the analysis.

Fifty erythroderma sufferers were chosen for this study. The research is prospective because it follows participants throughout time. Here is a rundown of how we dissected each case. In accordance with the definition of erythroderma, all patients with erythema and scaling involving more than 90% of the body surface area as estimated by Wallace's rule of nine were enrolled in the study. Each patient had a comprehensive history taken and a thorough physical examination. Basic information like age, sex, occupation, etc. was recorded first. Then, information was recorded about the patient's background, including any preexisting skin conditions or medications. The use of any medications, topical applications, or infectious episodes in the lead-up to disease commencement was also noted, as was the occurrence of any recurrences.

Results

Fifty patients were diagnosed with erythroderma over the research period of two years. Here are a number of separate observations that were made. 10000 patients attended the OPD department. Among them, 20 patients were diagnosed as erythroderma and the incidence of erythroderma.

Table 1: Incidence of erythroderma

Study period	Total patients	Cases of erythroderma
	10000	50

Age Distribution

Patients' ages ranged from 50 days to 71 years old, with 40.25 being the median. The majority of patients were in the 50-59 age bracket.

Table 2: Age distribution of erythroderma

Sr. No.	Patient's age	Number (n=50)
1.	0-9	10
2.	10-19	5
3.	20-29	4
4.	30-39	4
5.	40-49	5
6.	50-59	10
7.	60-69	10
8.	70-79	2

There were 50 total patients, with a male to female ratio of 2:1 (33 males to 17 females).

Table 3: Sex distribution of erythroderma

Sex	No. of cases (50)	Percentage
Male	33	66.00
Female	17	34.00

Eighty percent of individuals with erythroderma had a gradual beginning, while twenty percent of patients had a rapid onset.

Table 4: Onset of the illness

Onset	No. of cases (n=50)	Percentage
Sudden	40	80.00
Gradual	10	20.00

More than 90% of the patients' bodies were covered in erythema, and there was some degree of scaling in all of them. The majority of patients (32) reported itching as their primary complaint. There were complaints of malaise from 1 patient, chills from 3, and fever from 3. In the entire trial, oliguria only affected one patient. No one who was tested for dermatogenic enteropathy reported having diarrhea.

Table 5: Frequency of presenting complaints

Symptoms	No. of cases
Itching	32
Scaling	08
Redness	02
Chills	03
Malaise	01
Fever	03
Oliguria	01

Physical Examination Finding

Cases with psoriatic erythroderma were the most typical setting for their appearance. Eye symptoms such as conjunctival congestion, ectropion, and icterus were reported by 29 patients. The mucosa was involved in 6 patients. The scalp exfoliated in the majority of cases. Diffuse alopecia affected 15 people. Tinea amiantaci was found in one patient, while psoriatic corona was found in five. Twenty-six people reported affected palms and soles. There were six cases of palmoplantar keratoderma. Two had psoriasis, two had idiopathic erythroderma, one had malignancy-induced erythroderma, and two had pityriasis rubra pilaris. In four cases, the affected area was the instep. A patient with Norwegian scabies had crusting on their palms and soles.

Discussion

Skin morphology and extent of involvement were used to establish the diagnosis of erythroderma. Based on our research, we found that 0.029 percent of patients with skin problems who visited our OPD experienced erythroderma each year. In 1986, Sehgal and Srivastava conducted a research in which they found that erythroderma occurred in 0.035% of patients [12, 13].

Patients aged 50–59 (21.53%) and 60–69 (16.92%) were most likely to have erythroderma in the study, followed by those aged 40–49 (13.84%). This is consistent with previous research that found the highest prevalence in people aged 50 to 59. Participants' mean ages were 40.25 years old. The male to female ratio has been demonstrated to be higher in previous investigations. According to our data, males outnumber females by a ratio of 2.1 to 1 [14-16]. Acute erythroderma was found to have occurred in 27 cases (41.53%) in our study. Specifically, 17 individuals had erythroderma brought on by medications, 5 had psoriasis, 2 had phytophotodermatitis, and 1 had idiopathic, seborrheic, or foliaceous pemphigus. The remaining 38 patients (58.46%) had a more subtle beginning and a slower-moving course. The majority of patients (69%) in the study by Pal S *et al*. had an acute onset, but only 32% did in the study by Rafael BE *et al*. The clinical characteristics of erythroderma were remarkably consistent regardless of the underlying cause. When erythroderma has progressed to this point, it is impossible to determine what first triggered it. All of the patients displayed both scaling and erythema, with the erythema typically appearing first and the scaling following

four to five days later. Scales were large in acute cases and small in chronic ones [17-20].

Our research found that widespread scaling and redness were the most common symptoms, with itching coming in at 64.62 percent, malaise at 61.54 percent, chills at 47.69 percent, fever at 27.69 percent, and oliguria at 3.07 percent [21, 22]. Dermatogenic enteropathy did not manifest in any of the study participants. Studies by Hafeez *et al*., Akhyani M. *et al*., Yuan X. *et al*., and Bandyopathyay D. *et al*. have also demonstrated up to one hundred percent prevalence of global scaling and erythema. 27.69% of patients exhibited signs of hyperthermia. No one was suffering from hypothermia. Approximately 40% of patients had hyperthermia and 5.5% experienced hypothermia, according to the research conducted by Pal and colleagues [23-25].

Some 32.30 percent of patients also had lymphadenopathy. The inguinal lymph nodes were the most prevalent site of involvement, followed by the axillary lymph nodes. Three patients underwent lymph node biopsies; one had NHL-like symptoms, while the other two had dermatopathic lymphadenopathy-like features [26]. Lymphadenopathy was detected in 55.50 percent of cases in a research by Pal and coworkers; dermatopathic lymphadenopathy was the only type seen in this group with the exception of one instance of Hodgkin's lymphoma. Pitting type pedal edoema was seen in 40% of patients. The prevalence of pedal edoema ranges from 14.6 percent to 78.67 percent. In 9.23% of patients, erosions and congestion of the oral mucosa were present. Researchers have shown that anywhere from 1% to 36.6% of cases had mucosal involvement [27, 28].

There were 2 cases of hepatomegaly. In one case, the patient was diagnosed with NHL, and in the other, dapsone syndrome. A study by Yuan XY and coworkers came to a similar conclusion. Pavithran noted a 'nose indication' of erythroderma. Only 31 out of 100 cases met the criteria in our analysis. Greater exposure of the nose to sunlight, with its presumed anti mitotic activity, or the habit of often scratching the nose, leading to elimination of scales, have both been proposed as possible explanations for this phenomena. There were 7 patients (10.76%) who displayed the deck chair sign [28, 29]. 5.5% of patients showed this symptom, according to Pal S and coworkers. In our study, hair loss was present in 24.07% of participants. Another study by Sudho and coworkers found it in 24% of instances, while another by Pal and coworkers found it in 30% of cases. In 69.23% of cases, we noticed a difference in the nails. Nail ridging was the most prevalent type of nail alteration, followed by subungual hyperkeratosis. Research by Sudho and colleagues found that pitting and onycholysis, both caused by trauma, were the most common types of nail alterations [29, 30]. According to the study's findings, erythroderma is a distressing condition but does not pose a serious threat to the patient's life. The biggest difficulty is tracking down the source and fixing the problem at its source.

Conclusion

Our hospital examined 50 erythroderma cases over two years and made the following observations. Our skin department patients had a 0.029% yearly incidence of erythroderma. The age range 50-59 had the most patients and a male-to-female ratio of 2.1:1. 41were intense and 58.46% gradual. Malaise, chills, pedal edoema, palms & soles involvement, and fever were the most prevalent symptoms. 32.30% had lymphadenopathy. Hyperthermia was 27.69%, pallor 26.15%, generalized hair loss 23.07%, and hepatosplenomegaly 3.07%. Psoriasis led pre-existing dermatosis, followed by eczema, ichthyosis, and pemphigus foliaceous, Pityriasis rubra pilaris, and crusted scabies. Most patients had similar symptoms. 43.49% of skin biopsies yielded positive histopathology. Drug-induced erythroderma was better than Non-lymphoma-induced. Hodgkin's several cases had no aetiology. Idiopathic erythroderma can develop into cutaneous lymphoma, thus it's important to monitor the situation.

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None

Conflict of interest

None

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