

A Clinico-Epidemiological Study of Erythroderma in a Tertiary Care Center in Jharkhand

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Abstract: Erythroderma is an inflammatory skin condition which presents with extensive erythema and scaling of skin. It may be complicated by various metabolic abnormalities and is a life threatening condition. We conducted a prospective study to evaluate the epidemiology, clinical features and etiology of erythroderma in patients attending the dermatology clinic in Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, between December 2015 and April 2017. A total of 34 cases were included in the study. The male to female ratio was 2.4 :1 and the age group most affected was 21- 30 years. The most common cause of erythroderma was psoriasis(38.23%) followed by drug induced erythroderma(20.59%), atopic dermatitis, pityriasis rubra pilaris, scabies, congenital ichthyosiform erythroderma and others.

Keywords : erythroderma, exfoliative dermatitis, etiology, epidemiology

I. Introduction

Erythroderma is an inflammatory skin condition characterized by erythema and scaling involving more than 90% of body surface area. It can occur at any age and is a potentially life threatening condition. It can lead to various complications like electrolyte imbalances, thermoregulatory disturbance, fever, tachycardia, high output cardiac failure, hypoalbuminemia etc[1]. Prognosis of erythroderma depends on the underlying etiology and proper management. Thus, it is important to find out the cause of erythroderma to initiate specific treatment as early as possible.

II. Aims And Objectives

To evaluate the epidemiology, clinical features and etiology of erythroderma patients in a tertiary care center in Jharkhand.

III. Materials And Methods

Clinically diagnosed cases of erythroderma attending our dermatology out patient department from December 2015 to April 2017 were included in the study. As erythroderma is a severe condition, these patients were admitted for proper management. Patients having erythema and scaling of skin more than 90% of their body surface area were diagnosed as having erythroderma.

Detailed history was taken from all the patients regarding onset, pre-existing skin conditions, aggravating factors, previous episodes of erythroderma, drug intake, application of topical irritants, any systemic illness, pregnancy, emotional stress etc., followed by thorough clinical examination. Routine blood and urine investigations were done in all the patients. Other investigations like KOH mount, gram staining, bacterial culture, and fine needle aspiration cytology were done when required. Skin biopsy was taken from a patient whose etiology could not be found clinically and a case of psoriatic erythroderma not responding to treatment.

Even though the final clinical picture of erythroderma looks the same in all patients, in early and remitting stages, it may give clues for making a diagnosis. Psoriatic erythroderma can be identified by the presence of classic erythematous plaques with silvery scales, typical distribution, past history, presence of psoriatic nail changes and arthritis. Follicular keratotic papules with scaling, islands of normal skin (nappes claires) and palmoplantar keratoderma with an orange hue are the features of pityriasis rubra pilaris[1]. In erythroderma due to pemphigus foliaceus, we may find few flaccid bullae, superficial erosions and crusted lesions, and a positive nikolskiy sign[2]. Photosensitivity, past history, malar and discoid rashes, arthritis and positive serology will help in diagnosing patients with systemic lupus erythematosus. Drug induced erythroderma has a sudden onset, gives history of intake of the offending drug, and is mostly associated with

fever. In children with erythroderma, history of collodion membrane at birth, family history of ichthyosis, and type of scales will help in diagnosing erythroderma due to ichthyosis. While, irritability, fever, increased skin tenderness and a positive nikolsky sign points to infectious cause like staphylococcal scalded skin syndrome[3].

IV. Results

During the study period from December 2015 to April 2017, we had 34 cases of erythroderma. Out of these, 24 were males and 10 were females, making the male to female ratio 2.4:1. The age of patients ranged from a one day old baby to a 63 year old man. The age distribution of our patients is given in fig.1. The age group most affected was from 21-30 years (n=9; 26.5%). Children constituted 8.8% (n=3) of the total cases.

Acute onset of erythroderma was seen in nine patients (26.5%). Preexisting skin condition was seen in 76.5% patients (n=26). Previous episodes of erythroderma was found in two patients. The most common aggravating factor was winter season (38.2%) followed by application of topical irritants (14.7%). Improper treatment, systemic illness and stress were the other aggravating factors found.

The most common clinical features seen were erythema (100%), scaling (100%), pruritus (94.1%), pedal edema (73.5%) and fever (55.8%). Diffuse hair loss was seen in 29.4%. Nail changes like ridging, pitting, discoloration, onycholysis and subungual hyperkeratosis were seen in 55.8% of patients. Palmoplantar involvement in the form of erythema, scaling, thickening and fissures were found in 61%. Lymphadenopathy was seen in 11 patients (32%). Fine needle aspiration cytology was done in all these patients and it revealed only reactive lymphadenitis. Important laboratory findings were anemia (47.4%), hypoproteinemia (67%) and eosinophilia (35.2%).

The causes of erythroderma in our study is given in TABLE 1. The most common cause was psoriasis (38.2%). There were ten cases of chronic plaque psoriasis and three cases of pustular psoriasis. The second most common cause was drug induced erythroderma (20.59%). The drugs implicated were phenytoin in four cases and carbamazepine in three cases. Atopic dermatitis, irritant dermatitis and pityriasis rubra pilaris (fig 2) were found in two patients each (5.88% each). There was one case each of systemic lupus erythematosus, pemphigus foliaceus, scabies and generalized tinea corporis(fig 3). Among the three pediatric cases of erythroderma, there were each a case of staphylococcal scalded skin syndrome, collodion baby(fig 4) and congenital ichthyosiform erythroderma. In one patient, etiology could not be found by history and clinical features. So, histopathology was done but it was non -specific. Histopathological examination was not required in majority of cases since an etiology could be established by history, clinical features and other laboratory tests and most patients responded to treatment. In one case of psoriatic erythroderma who did not respond to treatment, biopsy was taken and it showed dilated and tortuous capillaries in papillary dermis, superficial perivascular infiltrate, epidermal hyperplasia with orthohyperkeratosis and focal parakeratosis, consistent with psoriasis. (fig 5).

V. Figures And Tables

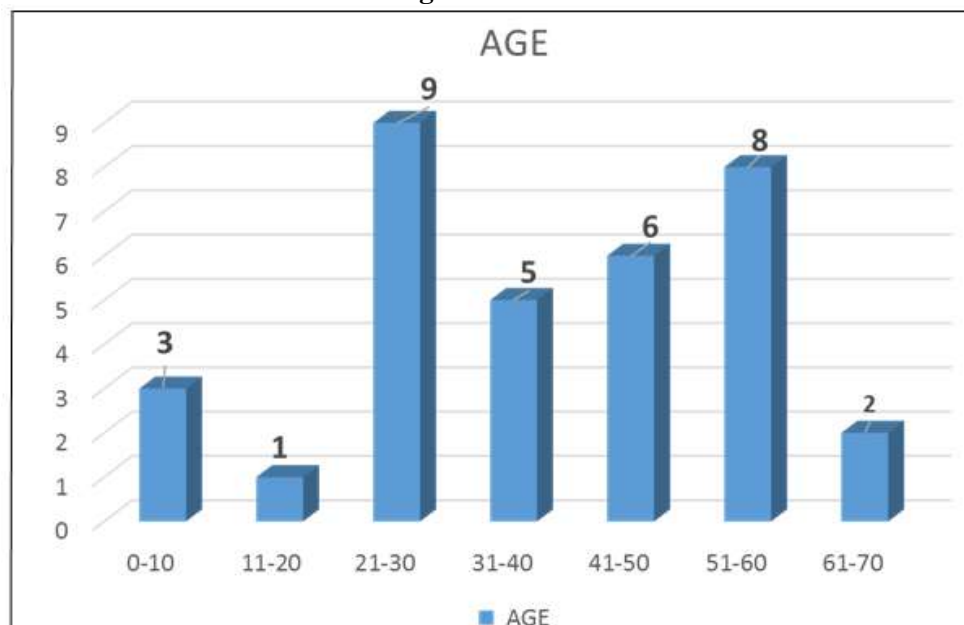


Figure 1

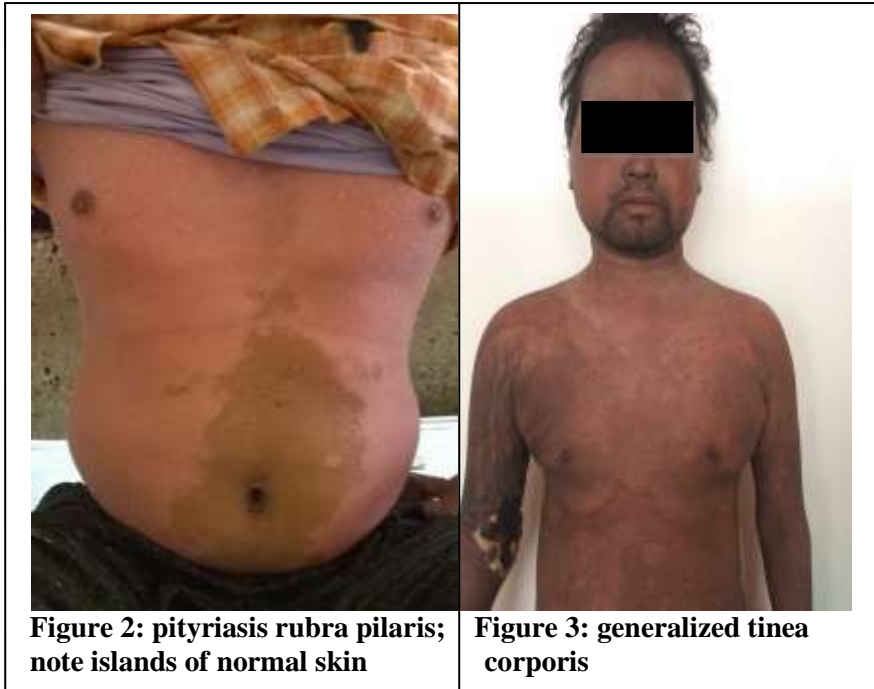


Figure 2: pityriasis rubra pilaris; note islands of normal skin

Figure 3: generalized tinea corporis



Figure 4: collodion baby

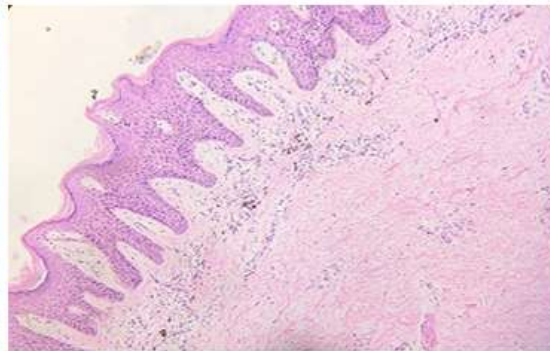


Figure 5: histopathology from a patient of psoriatic erythroderma: dilated tortuous capillaries in papillary dermis, superficial perivascular infiltrate and epidermal hyperplasia [H& E, x10]

Table 1

Etiology	Number of patients
Psoriasis	13 (38.27%)
Drug induced	7 (20.59%)
Atopic dermatitis	2 (5.88%)
Irritant dermatitis	2 (5.88%)
Pityriasis rubra pilaris	2 (5.88%)
Pemphigus foliaceus	1 (2.94%)
Systemic lupus erythematosus	1 (2.94%)
Scabies	1 (2.94%)
Tinea corporis	1 (2.94%)
Staphylococcal scalded skin syndrome	1 (2.94%)
Congenital ichthyosiform erythroderma	1 (2.94%)
Collodion baby	1 (2.94%)
Idiopathic	1 (2.94%)

VI. Discussion

Erythroderma was first described by Hebra in 1868[4]. Erythroderma or exfoliative dermatitis is defined as diffuse erythema and scaling of the skin involving more than 90% of the total body surface area. It is more commonly seen in males, with male to female ratio ranging from 2:1 to 4:1[5]. The male to female ratio in our study was similar, at 2.4:1. Even though it can affect any age group, average age of onset is from 41 -61 years[5,6]. But in our study, the most commonly affected age group was 21- 30 years. Among the 34 patients of erythroderma, 3 were children, constituting 8.8% of the total cases. This was similar to that reported by Sehgal et al[7].

Cytokines, chemokines and their receptors play an important role in the pathogenesis of erythroderma. A T helper 1 cytokine profile is seen in benign erythroderma while a T helper 2 cytokine profile is seen with sezary syndrome. Increased levels of cellular adhesion molecules (Intercellular adhesion molecules, vascular cellular adhesion molecules, E selectins) are found in different types of erythroderma. There is a complex interaction between these adhesion molecules and cytokines which leads to increased mitotic and epidermal turnover rate which is clinically seen as scaling[1,8].

Acute onset was seen in 26.5% patients which included drug induced, staphylococcal scalded skin syndrome and collodion baby. This is comparable to the findings in other studies of erythroderma[2,4]. Most common aggravating factor was winter season (38.2%), the most affected being patients of psoriasis. Another common aggravating factor was the application of topical irritants. Two patients of pustular psoriasis of pregnancy developed erythroderma a few days after delivery. The cases of tinea corporis and scabies gave history of prior improper treatment with oral steroids.

In most of the cases history and clinical features helped in making a diagnosis. Comparable to previous studies, a preexisting dermatoses was present in 76.5% of the patients [9,10]. Hasan et al reported 32% patients with idiopathic erythroderma[11] while in our study, it was only 2.9%. This is probably due to the small sample size in our study. Even then, rare causes of erythroderma like pityriasis rubra pilaris and systemic lupus erythematosus were found in our study.

The complications of erythroderma includes fluid and electrolyte imbalance, thermoregulatory disturbances, high output cardiac failure, cardiogenic shock, acute respiratory distress syndrome etc. There is also increased susceptibility to colonization of bacteria in erythroderma due to inflammation and fissuring of skin. This may lead to development of sepsis in susceptible individuals[1,8].

VII. Conclusion

Prognosis of erythroderma depends on underlying etiological factors, comorbidities and early therapy [1]. Thus it is important to find out the underlying cause of erythroderma by detailed history taking and clinical examination to start specific therapy. It is also advisable to educate the patients regarding possible causes of erythroderma to prevent future episodes.

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