

Erythroderma in Khuzestan province, southwest of Iran

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Background: Erythroderma is a rare but serious skin disorder that may result from different causes. There are many publications on this subject, with a different incidence rate for each etiology. The aim of this study was to determine the frequency of erythroderma, and describe the incidence of each etiologic cause in patients indigenous to Khuzestan.

Methods: In a retrospective study, we reviewed the files of patients diagnosed with erythroderma who were admitted to the dermatology ward of Sina Hospital, affiliated to Jondishapour Medical University of Ahvaz, southwest of Iran, in a period of 9 years from 1980 to 1989. We studied the clinical and pathology reports of patients and the final etiologic diagnosis.

Results: Total admission was 6210 patients and the total number of erythrodermic patients was 85. The frequency of erythroderma in our dermatology department was 1.37%. The most common causes in order of frequency were eczema (32.94%), drug reaction (23.52%), psoriasis (21/18%), and malignancy (8.23%). Previous history of skin disease was found in 44 of 85 patients (51.76%) and 28 (32.9%) of them were suffering from eczema. The mean age of our patients was 49.11 years and the male-female ratio was 1.6:1.

Conclusion: Erythroderma is a rare condition. The most common causes in our study were eczema and drug reactions; the high incidence of drug reactions in our patients compared to studies in other countries may be due to more administration of drugs in Iran, especially in Khuzestan

Keywords: drug reaction, erythroderma, etiology, eczema, frequency, inpatient

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INTRODUCTION

Erythroderma, also known of exfoliative dermatitis and first described by Herba in 1868¹, is a reaction pattern characterized by generalized or nearly generalized and confluent erythema affecting more than 90% of the body surface and accompanied by a variable degree of scaling. Due to the large areas of the affected skin and the advanced age of most patients, erythroderma imposes an important risk to the life of the patients². A variety of diseases and other exogenous factors may cause

this condition. Therefore, it is important to identify and treat any underlying disease whenever possible and to remove any contributing external factors³. The aim of our study was to assess the frequency of different etiologies, the sex ratio and the age of the patients at the onset of erythroderma.

PATIENTS AND METHODS

Because erythroderma imposes an important risk to the life of the patients, we generally treat them as inpatients. In a retrospective study, we

reviewed the files of 85 patients diagnosed with erythroderma out of 6210 patients who were admitted to the dermatology ward of Sina Hospital affiliated to Jundishapur Medical University of Ahvaz in a period of about 9 years from 1980 to 1989. We studied the medical records of all erythrodermic patients by checking the data of clinical and pathologic reports and the final etiologic diagnosis. All data were tabulated for further analysis.

RESULTS

In the above-mentioned period, the total number of admissions was 6210 patients of whom 85 patients were erythrodermic. The frequency of erythroderma in our dermatology department was 1.37%. Regarding the 3.5 million population of Khuzestan province and the 9-year period of this study, the incidence of erythroderma in Khuzestan province was estimated about 0.27 per 100,000 inhabitants per year. The sex ratio (male/female) was 1.6:1. The mean age of our patients was 49.11 years with the youngest patient being 4 days old and the oldest being 92 years old (Table 1). Previous history of skin disease was positive in 44 patients (51.76%) and 28 of them were suffering from eczema. The most common diseases in order of frequency were eczema 32.94%, drug reaction 23.52%, psoriasis 21/18% and malignancy 8.23% (Table 2). According to our findings, the second most common cause of erythroderma was drugs among which carbamazepin and penicillins were the two most common (Table 3). Malignancies associated with erythroderma are presented in Table 4.

Table 1. Age and sex of the patients

Age	Number	Male	Female	Percentage
0-9	7	4	3	8.23
10-19	9	5	4	10.59
20-29	3	-	3	3.53
30-39	11	7	4	12.94
40-49	9	4	5	10.59
50-59	12	7	5	17.12
60-69	16	12	4	18.82
70-79	11	6	5	12.94
80-89	5	5	-	5.88
90-99	2	2	-	2.35
Total	85	52	33	100

DISCUSSION

Erythroderma is defined as diffuse erythematous dermatitis involving all or almost the entire skin. The skin becomes red, dry and scaly. A burning sensation and pruritus are usually present. Erythroderma is a rare but severe and life-threatening disorder with many different underlying causes. Because both the clinical manifestations and histopathologic findings of erythroderma are usually non-specific, it is impossible to detect the precise underlying causes in many cases. The condition usually affects older people and some of its etiologies are lethal, so it is necessary to establish its etiology as soon as possible in order to facilitate its precise and immediate management. Awareness of the most frequent causes of erythroderma can help us to develop an efficient diagnostic strategy and often results in appropriate management of the disease¹⁻³.

To our knowledge, this study is the first report of the incidence and causes of erythroderma from Khuzestan Province in the southwest of Iran. The incidence of erythroderma in our study was about 0.27 per 100,000 people per year, which is much lower than other studies in other parts of the world. The annual incidence of erythroderma in the Netherlands is 0.9 patients per 100,000⁴ and in Finland is 1-2 per 100,000⁵ but Sehgal and Srivastava from India reported an incidence of 35 per 100,000⁶. The mean age of our patients was 49.11 years that is similar to the study of Akhyani et al from Tehran-Iran⁷ reporting a mean age of 46.2 years but was higher than the 41.6 years reported from Pakistan⁸ and lower than 61 years reported from Finland⁵. The male to female ratio in our study was 1.6, similar to the 1.85 reported by Akhyani et al from Tehran⁷. This ratio was

Table 2. Dermatoses as the causative factor of erythroderma

Etiology	Number	Percentage
Eczema	28	32.94
Drugs	20	23.52
Psoriasis	18	21.17
Malignancy	7	8.23
Ichthyosis	2	2.35
Dermatomyositis	1	1.17
Pemphigus foliaceus	1	1.17
Lichen planus	1	1.17
Unknown	7	8.23
Total	85	100%

Table 3. Drugs associated with erythroderma

Drugs	Number	Percentage
Carbamazepin	8	40
Penicillins	5	25
Isoniazid	2	10
NSAIDS	2	10
Co-Trimoxazole	1	5
Cephalexin	1	5
Unknown	1	5
Total	20	100

1.85 in Pakistan and 1.94 in Finland but 2.25 in Thailand². Previous history of skin disease was found in 44 patients (51.76%) and 28 (32.9%) of them were suffering from eczema. The most common disease was eczema (32.94%), followed by drug reaction (23.52%); these findings are different from a report from Finland that showed 42% and 10% respectively; in addition, 12% developed erythroderma due to contact reaction to topical drugs⁵. In Thailand, pre-existing dermatoses were seen in 38% and drugs reactions were seen in 23% of the patients². These results in Pakistan were 74.4% and 5.5% respectively⁸ which are much different from our study. Regardless of the causes of erythroderma, the pathology reports are usually suggestive of eczema but the exact diagnosis should not only be based on the pathology report. The large differences between our study and Pakistan's may be due to the method of diagnosis in their study or other unknown factors. It should be noted that the percentage of eczema in Pakistan's study is much higher than other reports.

Onset of erythroderma due to drug reactions is typically sudden and rapid, and its resolution is typically faster than cases of erythroderma due to other causes. A notable exception occurs when erythroderma accompanies systemic drug hypersensitivity reactions due to antibiotics, anticonvulsants, and allopurinol. Hypersensitivity develops within 2 to 5 weeks after the medication is started and may persist for weeks despite discontinuation of the medication⁹, but the best prognosis as clearing of erythroderma is in the drug reaction group⁵. Most drugs can cause erythroderma. Drugs as an etiologic group had the second highest percentage in our series; one reason may be very low drug costs in Iran, the fact that physicians prescribe many drugs in one visit. Therefore, because patients are frequently on many

Table 4. Malignancies associated with erythroderma

Type of malignancy	Number	Percentage
Mycosis fungoides	3	42.85
Lymphoma	1	14.28
Hepatocellular carcinoma	1	14.28
Adenocarcinoma of the prostate	1	14.28
Unknown	1	14.28
Total	7	100

different drugs, it is often difficult to determine which drug is responsible. In an erythrodermic patient, any drug should be considered a potential factor. Generally, it is attributed to the drug most recently added. In our findings, the agents of greatest risk for inducing erythroderma were carbamazepine followed by penicillins.

Malignancy is definitively associated with erythroderma (most commonly cutaneous T-cell lymphoma (CTCL))³. About 8.23% of our cases were secondary to malignancy and the most common type of malignancy was Mycosis Fungoides (MF). In some studies, a much higher percentage of malignancy has been reported. For example, up to 25 - 40% of erythroderma are secondary to MF^{10,11}. Patients with chronic erythroderma without a defined etiology and a high index of suspicion for CTCL or other underlying malignancies must be maintained³. Because erythroderma is occasionally associated with internal malignancies, even patients with previous history of known dermatoses whose clinicopathologic features are inconclusive should be investigated carefully to rule out malignant neoplastic causes⁷. In 8.23% of our patients, no causes were found; these patients are classified as idiopathic. The percentage of idiopathic patients varies in most erythrodermic series. The diversity of the incidence of each cause of erythroderma in various studies seems to be related to the variability of investigative procedures and follow-up. In idiopathic cases, if the patients are followed up for a long time, a significant proportion of them will progress to Cutaneous T Cell Lymphoma³. So, repeated skin biopsies are recommended as the best method for etiologic diagnosis of erythroderma.

In our study, only 52 out of 85 patients had skin biopsy records. In other patients, the diagnoses were determined based on history, course and clinical presentation of the diseases. Our patients, who had MF, all had skin biopsy records suggestive of MF. A patient with hepatocellular carcinoma had

non-specific skin histopathology and a patient with lymphoma had a positive lymph node and skin biopsy. All patients with unknown diagnosis had more than one skin histopathologic records with nonspecific changes. There are significant differences in the frequency of causes of erythroderma in different epidemiological studies, possibly due to differences in criteria and methods of selection of patients in these studies. Almost all studies are retrospective and patient selection is based on either initial condition at the time of admission, or in the middle and during the treatment or final diagnosis at the time of discharge. To overcome these biases and problems, it is better to design prospective studies

Erythroderma is a rare but serious skin disorder. Awareness of the most frequent causes can help us to develop an efficient strategy for diagnosis and appropriate management of the disease. The results of this study may serve as a guide to identify the causes in new erythrodermic patients, at least in Khuzestan.

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