

Evaluation of Emergency Dermatological Conditions: A Prospective Study

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Abstract

Background: Dermatology is often thought of as non acute, outpatient centered speciality. However, there are many dermatological conditions presenting as emergency situations that demands early diagnosis, monitoring and multidisciplinary intensive care to minimize the associated morbidity and mortality. The aims of this study are to study the clinico-epidemiological profile and clinical pattern of various dermatological emergencies and to find out mortality in dermatological emergency cases. **Methods:** This is a prospective study which was conducted over period from September 2014 to December 2016. In this study we classified dermatological emergencies into Primary, where involvement of skin is the primary cause and Secondary, where cutaneous manifestations are the indicators of impending or underlying severe systemic involvement. A detailed history of all the patients was taken and recorded with all demographic details and clinical examinations. **Results:** Out of 154 patients, 88 (57.14%) were male and 66 (42.86%) female. Maximum 42 (27.27%) patients were in the age group of 31-40 years. In these study 89 (57.80%) cases were of primary dermatological emergencies and 65 (42.20%) cases of secondary dermatological emergencies. At the time of first presentation 81 (52.60%) patients were having mucosal involvement, 76 (49.35%) patients were having various systemic involvement. Total 16 different conditions were included during the study amongst them acute urticaria with or without angioedema was the commonest (34.41%), followed by Lepra reaction (12.33%), Acute erythroderma (10.38%), Pemphigus vulgaris with secondary infection (7.80%) and Steven johnson's syndrome (7.14%). In the this study, mortality was 1.95%. **Conclusion:** Criteria for real emergencies needs to be further defined and classified properly. This study suggests that the role of the dermatologist in the emergency department is very important.

Keywords: Dermatology; Emergency; Primary and Secondary Dermatological Emergencies.

Introduction

Dermatology is often thought of as a non acute, outpatient centered speciality. However, there are many dermatological conditions presenting as emergency situations. Dermatological emergencies comprise diseases with severe alteration in structure and function of the skin, with some of them leading to acute skin failure that demands early diagnosis, hospitalization, careful monitoring and multidisciplinary intensive care to minimize the associated morbidity and mortality.

Murr et al. [1] considered a dermatologic emergency to be any acute skin disease or condition that deteriorates within 5 days of onset. Though there are no standard guidelines for defining the word "Dermatological Emergency". It can be defined as, "Any dermatological disease or other systemic disease which involves extensive area of the skin and/or mucous membrane, which endangers the life of a patient, makes the patient apprehensive and to consult dermatologist urgently, and may necessitate rapid diagnosis, hospitalization and intervention." Consequently, it

is clear that not all emergencies are equal, the terms emergency and severity are not synonymous, and any attempt to classify emergencies must take into account both objective and subjective aspects. It has been reported, however, that on an average, approximately 5% to 8% [2]. of all emergency department visits are due to dermatological conditions with variations from 4.8% [3] to 21% [4] in different studies.

Sudden severe alterations in the anatomy and physiology of skin consequent to some of the generalized dermatoses presenting as emergency situation, can lead to disabling complications eventuating in the potentially fatal condition of acute skin failure [5].

In this article, we included the major causes of dermatological emergencies, some of which lead to acute skin failure and lay stress for their management in ICU like set up attached to dermatology department itself so that such emergencies may be dealt with more effectively and without wastage of time. The aims of this study are to study the clinico-epidemiological profile as well as clinical pattern of various dermatological emergencies and to find out mortality in dermatological emergency cases.

Method

This is a prospective study which is to be conducted over period from September 2014 to December 2016 in the Department of Dermatology, venerology and leprology in a teaching hospital.

Dermatological emergencies were classified into Primary, where involvement of skin is the primary cause and/or major manifestation such as Erythroderma (exfoliative dermatitis) Urticaria, angioedema and anaphylaxis, Bullous disorders and, Secondary, where it is associated with medical/surgical emergencies, where cutaneous manifestations are the indicators of impending or underlying severe systemic involvement such as Connective tissue diseases, Metabolic conditions, Drug reactions.

Inclusion criteria

- All patients attending emergency department OR outdoor patient department of Dermatology of our Hospital, having skin lesion/mucosal lesion with/without systemic complains, requiring urgent interventions, investigation or hospitalization, were included.
- All indoor patients, admitted to different wards of our Hospital, having skin lesion/mucosal lesion with/without systemic complains, requiring urgent interventions, investigation or hospitalization, were included.
- There was no age limit or no sex predilection.

Exclusion criteria

- Patients having factitious complains or patient visiting emergency department with casual skin lesions /mucosal lesion with /without systemic complains which did not require urgent investigation or interventions from skin department were excluded from the study.
- Patient not willing for informed written consent were excluded from study.

Informed written consent was taken from all patients or patient's relatives before including them into the study group. Necessary photographs were taken as and when required.

A detailed history of all the patients was taken and recorded with all demographic details. Clinical examination of all the patients was done with particular emphasis on type and extent of skin and mucous membrane lesions. All the required interventions and investigations were done as and when required for systemic involvement.

Results

In our study we had included 154 patients of dermatological emergency during the period from September 2014 to December 2016 in the Department of Dermatology, venerology and leprology in a teaching hospital.

Out of 154 patients, 88(57.14%) were male and 66 (42.86%) were female. [Chart 1]. Maximum 42 (27.27%) patients were in the age group of 31-40 years with decreasing frequency towards the extremes of age. [Table 1]. In these study 89 (57.80%) cases were considered under primary dermatological emergencies and 65 (42.20%) cases were of secondary dermatological emergencies. [Table 2]. At the time of first presentation 81 (52.60%) patients were having mucosal involvement, 76 (49.35%) patients were having various systemic involvement. And 86 (55.84%) patients were presented with more than 50% body surface area involved. [Chart 2].

Total 16 different conditions were included during the study. In this present study Acute urticaria with or without angioedema was the commonest (34.41%) of all total cases, followed by Lepra reaction (12.33%), Acute erythroderma (10.38%) Pemphigus vulgaris with secondary infection (7.80%) and Steven johnson’s syndrome (7.14%).[Table 3]

Out of 53 patients of acute urticaria with or without angiodema, 36 (67.92%) were of drug induced, 7 (13.20%) of food induced, 9 (16.98%) of idiopathic and 1 (1.88%) of insect bite (bee bite). Total 19 patients were included of lepra reactions, from which majority 14 (73.68%) were of type 2 reactions and rest 5 (26.32%) of type 1 reactions. In conditions presenting with erythroderma, most common was psoriasis, 6 (37.50%) followed by spongiotic dermatitis 4 (25%), drug induced erythroderma 3 (18.75%), idiopathic 2 (12.50%), pemphigus foliaceus 1 (6.25%). Amongst 16 cases were under

cover of SJS-TEN, which include 11 patients of SJS, 3 patients of TEN and 2 patients of SJS/TEN overlap.

Out of 154 cases, 66 (42.85%) cases were of drug reaction. Most common drug reaction presenting as an emergency was acute urticaria with or without angioedema 36 (54.54%), SJS-TEN 16 (24.24%) and extensive maculopapular rash 7 (10.60%). [Chart 3] Non-steroidal anti-inflammatory drugs were the commonest drugs (33.33%) causing acute urticarial reactions, followed by amoxicillin and ciprofloxacin. Common drugs causing SJS and TEN were antiepileptic drugs (carbamazepine) in 7 (43.75%) cases followed by sulphonamides.

From vesiculobullous disorders, cases of pemphigus vulgaris with secondary infection 12 (7.80%) were presented as an emergency. Amongst nutritional dermatoses, pellagra 9 (5.84%) and acrodermatitis enteropathica 1 (0.65%) were presented as an emergency. Acute systemic lupus erythematosus 9(5.84%) from the autoimmune

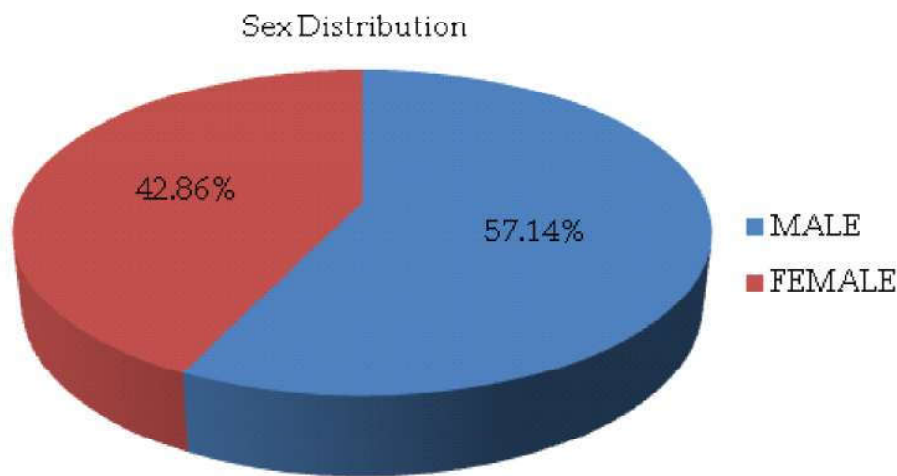


Chart 1: Sex Distribution

Table 1: Age Distribution

Age Group	Patients	Percentage
Infant	1	0.65%
1 -10 Years	10	6.49%
11-20 Years	5	3.25%
21-30 Years	36	23.38%
31-40 Years	42	27.27%
41-50 Years	38	24.67%
51-60 Years	17	11.04%
>60 Years	5	3.25%
Total	154	100%

Table 2: Primary vs Secondary Dermatological Emergencies

Emergencies	Number of Patients	Percentage
Primary	89	57.80%
Secondary	65	42.20%

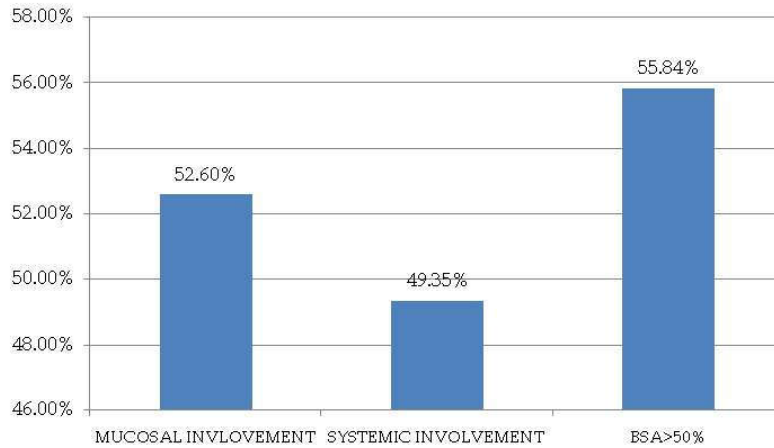


Chart 2: Different Mucosal Involvement, Body Surface Area Involvement and Systemic Involvement at the Time of Presentation

Table 3: Various Types of Dermatological Emergencies

Diagnosis	No. of Cases	Percentage
Acute Erythroderma	16	10.38%
Acute Generalised Exanthematous Pustulosis (Agep)	1	0.65%
Acute Generalized Pustular Psoriasis	2	1.30%
Acute Urticaria With Or Without Angioedema	53	34.41%
Acute Systemic Lupus Erythematosus	9	5.84%
Acrodermatitis Enteropathica	1	0.65%
Drug Reaction With Eosinophilia And Systemic Symptoms(Dress)	2	1.30%
Erythema Multiforme	2	1.30%
Extensive Maculopapular Rash	10	6.50%
Lepra Reaction	19	12.33%
Pemphigus Vulgaris With Secondary Infection	12	7.80%
Pellagra	9	5.84%
Sjs/Ten Overlap Syndrome	2	1.30%
Staphylococcal Scalded Skin Syndrome	2	1.30%
Stevens Johnson Syndrome	11	7.14%
Toxic Epidermal Necrolysis	3	1.95%
Total	154	100%

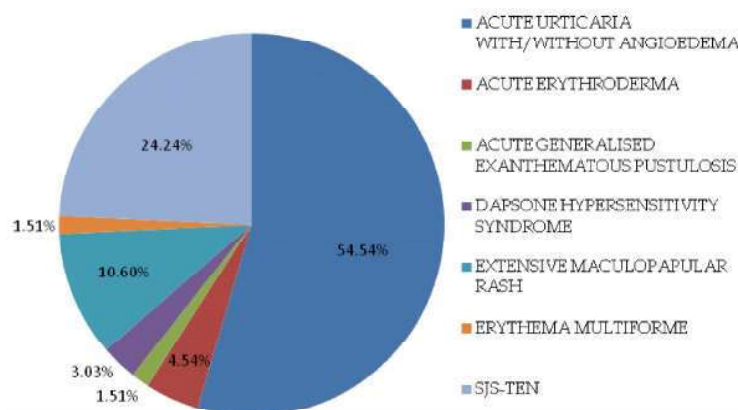


Chart 3: Various Types of Drug Reactions Presenting as Dermatological Emergency

connective disorders were presented as an emergency.

Discussion

The incidence of Dermatological Emergencies was difficult to determine as the study was carried out only at one centre in Ahmedabad and many patients taking treatment from other hospitals of the city were not included in the study.

The sex distribution in the present study was 1.33:1 (M: F), 57.14% cases were male and 42.86% were female which is similar to that in Gupta et al. [4] (63% male, 37% female). In India, usually females have restricted outdoor activities, more illiteracy, and social stigma and also there is slightly higher male to female ratio in general population. Similarly common dermatological emergencies like drug reactions, pemphigus vulgaris, and leprosy are also more common in males in India.

The age distribution in present study was mainly in the middle age group, maximum in the age group of 31-40 years (27.27%), followed by 41-50 years (24.67%) and 21-30 years (23.38%), which correlates with the studies of M.L. Martínez-Martínez et al. and Gonzalez Ruiz et al. [7,6]. Higher frequency in this age group shows concern for their appearance. Present study was showing that 11 patients (7.14%) presented with dermatological emergency were of pediatric age group (<12 years). Acute urticaria was the commonest (54.55%) presentation followed by Steven Johnson Syndrome, Staphylococcal Scalded Skin Syndrome, Extensive Maculopapular Rash in pediatric age group.

Primary dermatological emergencies were slightly higher than secondary dermatological emergencies in ratio of 1.37:1. Most common primary dermatological emergency was urticaria (33 patients) followed by lepra reaction (19 patients) and pemphigus (12 patients). Drug induced dermatological emergencies were most commonly presenting secondary dermatological emergencies. As primary dermatological emergencies are higher, it is obvious that to identify them at the very first level in hospitals are definite need so earliest dermatological consultation can be done to reduce morbidity and mortality. It is often a challenge to differentiate mundane skin ailments from more serious, life-threatening conditions that require immediate intervention.

In the present study, 81 Patients presenting as dermatological emergencies having mucosal involvement, 73 patients were without mucosal

involvement. Patients presenting with oral mucosal involvement (47.75%) and eye (39.61%) involvement were more common than the genital lesions (14.93%). In case of patients with multiple mucosa involvement combination of eye+oral and eye+oral+genital were more common. Patients with oral mucosal involvement were more toxic and more severely ill because of the compromised oral intake. In the present study, average body surface area involvement was 34.28% of total BSA. Patients having more than 50% body surface area involved were 86. Bullous lesions rupturing and converting to erosions are more at risk of infection and septicemia. Higher the percentage of BSA involved, higher is the chance of infection as seen with Pemphigus, SJS-TEN. In present study, systemic involvement was seen in 76 patients at the time of presentation and most common system involved were hematological-cardiovascular system, followed by renal system, gastro-hepatic system and respiratory system. Morbidity and mortality chances are high as the systemic involvement is associated primarily or secondarily with the condition.

As urticaria with or without angioedema can lead to severe discomfortable itchy wheals to laryngeal edema, anaphylaxis and severe respiratory as well as gastric problems if not treated in emergency. As we know Acute Urticaria with or without angioedema is very common in the population, and that fact is also strongly supported by the findings of the present study accounting for the 53 cases (34.41%) out of 154 cases and in Wang E et al. [8] series frequency of Urticaria was 11.40% and 68.1% done by Kim JY et al.[9]. In Acute urticaria with or without angioedema patients, drug reaction cases were most common (67.92%) followed by food allergy (13.20%). This high frequency of drug reaction may be due to easily available over the counter drugs and their inadvertent use. 7 cases out of 53 cases of acute urticaria with or without angioedema were of food induced. Other less common causes reported in this study are insect bite (bee) (1 patient), and idiopathic (9 patients) where no cause was identified.

The concept of acute skin failure is nowadays very important though it is less serious than other organ failures. Various conditions that lead to extensive structural disturbance and total functional impairment of the skin like acute erythroderma, pemphigus, SJS-TEN, staphylococcal scalded skin syndrome, etc are included under acute skin failure [10,11]. Acute skin failure is associated with hemodynamic changes, impaired thermoregulatory

control, and metabolic complications. In addition, fluid and electrolyte imbalance and loss of essential nutrients affect patient survival if not restored urgently [12]. Like other states of shock, intravascular fluid loss must be replaced quickly. Thereafter the total body water and electrolytes can be restored gradually [13].

Acute erythroderma is another condition which is commonly seen as Dermatological emergency cases. In the present study it accounted for 10.38% of total cases. Out of total 16 cases 37.50% cases were of Psoriatic origins, followed by spongiotic dermatitis 25%. These patients had history of skin lesions specific for the disease, but because of lack of treatment or inappropriate treatment it rapidly converts to erythroderma. Other common causes were Drug reaction (18.75%) culminating into erythroderma, and rest was pemphigus Foliaceous, idiopathic.

In present study we found high frequency of Stevens Johnson syndrome and toxic epidermal necrolysis (10.38%) which is comparable to the study done by Alexander et al. (22%) [14]. while in Wang E et al. [8] series frequency of SJS - TEN was only 0.60%. SCORTEN in case of patients with Stevens Johnson syndrome and Toxic epidermal necrolysis was noted in the first 24 Hours of Hospital admission. In the present study the average SCORTEN in patients of toxic epidermal necrosis was 2.3 with statistical mortality risk of 12.1% to 35.8%. Similarly average SCORTEN in patients of SJS & SJS-TEN overlap syndrome was 0.62 with statistical mortality risk of 3.2%. In present study one case of mortality was reported of toxic epidermal necrolysis.

Similarly Pemphigus vulgaris is also endemic in Gujarat, especially in areas of Saurashtra, justifying more number of cases of Pemphigus (7.80%) in the present study while in Wang E et al. [8] series frequency of Immunobullous disease was 0.80%. Patients with Pemphigus Vulgaris with secondary infection are mostly from the Lower socioeconomic class, illiterate and from the rural areas. Most patient present late (1-2 months) after the onset of disease, and do not take any treatment during this period, predisposing themselves towards septicemia.

In the present study frequency of drug reaction as Dermatological emergency cases was 42.85% and in Wang E et al. [8] series it was 10.29%. Common drug reactions were acute urticaria with or without angioedema (54.54%), Stevens Johnson syndrome-Toxic epidermal necrolysis (24.24%), extensive maculopapular rash (10.60%), acute erythroderma

(4.54%). Other drug reactions are DRESS and AGEF.

High frequency of Leprea reactions (12.33%) may be justified by the fact that there is a high prevalence of leprosy in the Ahmedabad and areas periphery to the city. Most of the leprosy patients being reported in Hospital, Ahmedabad are patient from Gujarat, Migrant population, most from Maharashtra, Bihar, and Madhyapradesh. Type - 2 reaction is more frequent than type - 1 in the Emergency department, as reported in this present study, 73.68% of total Leprea reaction cases were of Type 2 and 26.32% cases were of Type - 1 reaction. As Type - 2 Leprea reaction is more severe and systemic sign and symptoms are with higher severity than in the Type - 1 Leprea reaction, Type 2 reactions are frequently presented as emergency. Neuritis and cold abscess of nerve which is presented in lepra reaction if not treated early can lead to permanent deformity.

In the present study, mortality was 1.95%. Three cases were fatal in the present study. 1 case was of female patient with pemphigus vulgaris with secondary infection, 1 case was of a female with toxic epidermal necrolysis and 1 case of male patient with DRESS.

Conclusion

Given constraints involved in health care today, it is crucial to understand which dermatological presentations are 'true emergencies'. Criteria for real emergencies needs to be further defined and classified properly. Many Indian institutes have facilities for advanced dermatological care like laser therapy, phototherapy, dermatosurgery, few have an intensive care unit for patients with acute skin failure. So in most of the hospitals patients of dermatological emergencies are evaluated by emergency physicians first, not by the dermatologist. So diagnosis and basic treatment of common dermatological emergencies should be stressed during the training of physician in emergency medicine. This study also suggests that the role of the dermatologist in the emergency department is very important.

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