

Dermatological Disorders at the Emergency Department of a Tertiary Hospital in Singapore

Dear Editor,

Skin disorders pose a frequent diagnostic challenge for emergency physicians due to their broad spectrum and varied clinical manifestations.¹ The diagnosis of acute dermatologic diseases may be challenging for junior doctors working in a busy emergency department (ED), many of whom may have inadequate clinical exposure or supervised training in dermatology. This study aims to characterise the epidemiology, clinical assessment and disposition of adult patients presenting with a primary dermatological disorder at the ED of a major tertiary hospital.

Materials and Methods

We performed a retrospective review of all adult patients aged 18 years and above presenting to the adult ED of the National University Hospital (NUH) in Singapore for a primary dermatological condition over a 1-year period from January to December 2007. Patients were identified by searching for all dermatological disorders by their International Classification of Diseases (ICD-9) code, followed by reviewing their electronic medical records in the ED. For patients referred to a dermatologist, their outpatient dermatology case notes were reviewed to track their attendance at the clinic and to obtain the dermatologist's diagnosis. We excluded cases such as cellulitis, skin abscess, traumatic injuries and other conditions that were largely managed by and classified under other disciplines such as infectious disease, orthopaedics and general surgery. The study was approved by the hospital's ethical review board.

Results

Patient Characteristics

Of a total of 89,792 ED attendances in 2007 in NUH, 934 patients presented with a primary dermatological complaint, giving a dermatological case load of 1%. More male patients (60.0%) than females visited the ED for skin complaints, similar to the overall gender distribution of all ED patients seen in that year. The mean age of the cohort was 35.2 years (range, 18 to 90 years); 62.7% of patients were Chinese, 17.0% Malay, 12.5% Indian and 7.7% comprised other minority ethnic groups.

Primary Dermatological Conditions Encountered in ED

Table 1 summarises the frequency of primary dermatologic disorders seen at the ED. The most common conditions encountered were urticaria and angioedema (39.0%), dermatitis/eczema (19.4%) and fungal infections (8.8%).

Table 1. Frequency of Dermatological Disorders Seen in the ED

Dermatological Disorders*	Frequency	Proportion (%)
Urticaria/angioedema	364	39.0
Eczema/dermatitis	181	19.4
Fungal infections	82	8.8
Nail disorders	79	8.5
Rash/exanthem	46	4.9
Callosities and warts	37	4.0
Insect bite reaction	27	2.9
Psoriasis	14	1.5
Acne	14	1.5
Erythema multiforme/ SJS/TEN	10	1.1
Pruritus	8	0.9
Bullous dermatosis	6	0.6
Granuloma	6	0.6
Others	60	6.4
Total number of patients	934	100

*As diagnosed by the ED physician

SJS: Stevens-Johnson syndrome; TEN: toxic epidermal necrolysis

Disposition and Diagnostic Concordance

In 21% of the cases, a senior emergency physician was consulted for an opinion. Table 2 summarises the disposition of patients with dermatologic disorders by the emergency physician. Slightly over half (54.2%) of the patients referred to the dermatologist defaulted their appointment. Among those who were seen by the dermatologist, the diagnostic concordance between the emergency physician and dermatologist was 57.5%.

Table 2. Disposition of Patients with Dermatological Disorders by the ED Physician

Disposition	Frequency	Proportion (%)
Admitted as inpatient	74	7.9
Referral to primary care	169	18.1
Referral to dermatologist	319	34.2
Referral to other specialty*	117	12.5
Discharged from care	255	27.3

*Includes orthopaedics, hand surgery, general surgery, podiatrist, and allergist

Discussion

Severe life-threatening dermatological diseases require prompt recognition and treatment to reduce morbidity and mortality.² This study found that 7.9% of skin disorders seen in the ED were true dermatologic emergencies such as toxic epidermal necrolysis and Stevens-Johnson syndrome. In comparison, the proportion of dermatologic emergencies was reported as 0.9% at another local ED in Tan Tock Seng Hospital, and 21% at an ED in India.^{3,4} These disparities may be due to differences in study methodology and disease definitions.

The diagnostic concordance of the ED diagnosis with the dermatologist was 57.5%, with a discordance rate of 42.5%. Only 21% of junior doctors in the ED consulted a senior emergency physician when dealing with dermatological disorders, possibly due to time constraints in a busy ED. In a study of 591 patients in a Miami hospital, dermatologic consultation revised the initial clinical diagnosis and treatment in more than 60% of the patients.⁵ This is in agreement with our findings that a dermatologist's review for patients referred by emergency physicians had a significant impact on dermatologic diagnosis and management. Teledermatology may be useful in evaluating urgent dermatologic complaints in the ED, whereby digital photographs of the patient's skin lesions are transmitted electronically to a dermatologist for an opinion.⁶

We recognise a few limitations in this study. Firstly, we may have underestimated the true number of dermatological conditions encountered because some diagnoses may not have been coded into the electronic medical records, especially secondary or concomitant dermatoses. Secondly, our study is confined to a single hospital's experience, and may be subject to geographical and selection bias. On a further note, this study is unable to conclude on any aspect of the erroneous management or disposition of diagnostically challenging life-threatening dermatological emergencies, as we did not follow-up on patients who were admitted to

determine their final diagnosis or appropriateness of ED management.

Conclusion

The relatively high diagnostic discordance of 42.5% between the ED diagnosis and dermatologist found in our study is consistent with another study in Miami. Although dermatological disorders constitute a small load in the ED census, this has significant implications on the management and disposition plan for the patients. We propose that doctors working in the ED receive dermatology education as part of their core curriculum with emphasis on recognition and management of both serious and minor dermatological emergencies. Other ways to improve ED diagnosis in dermatological conditions can also be explored, including making available dermatological atlas for quick reference and teledermatological service from an off-site dermatologist.

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