Dermatology emergencies: handy hints for the acute medical team

ABSTRACT

This article will help the general physician recognize and manage acute dermatology presentations. This can be challenging for non-dermatology doctors owing partly to the difficulty in providing an extensive dermatology undergraduate education and the lack of exposure to dermatology patients. The problem is further compounded at many hospital trusts because of the lack of on-site dermatology 'on-call'. The general physician must be able to recognize dermatology emergencies in order to provide initial management and maintain appropriate referrals to acute dermatology services.

The emergency presentations discussed are erythroderma, life-threatening drug eruptions, cutaneous vasculitis, eczema herpeticum and bullous disorders.

This article will help the general physician recognize and manage acute dermatology presentations. This can be challenging for non-dermatology doctors in part because of the difficulty in providing an extensive dermatology undergraduate education and the lack of exposure to dermatology patients. The problem is further compounded in many hospitals because of the lack of on-site dermatology 'on-call'. The general physician must be able to recognize dermatology emergencies in order to provide initial management and maintain appropriate referrals to acute dermatology services. This article discusses erythroderma, life-threatening drug eruptions, cutaneous vasculitis, eczema herpeticum and bullous disorders.

Erythroderma

Erythroderma is erythema and oedema of greater than 90% of the skin surface area. It is a descriptive term and not a diagnosis. There are a number of other clinical signs which may manifest in erythrodermic patients depending on the chronicity and underlying cause. These include hair loss, ectropion, palmar plantar keratoderma, nail dystrophy and lymphadenopathy.

Approach to management

Initial steps in the management of patients with erythroderma are common to all causes.

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Assess for systemic upset and offer support as appropriate

Erythrodermic patients have poor temperature control and large insensible fluid losses. Strain on the cardiovascular system can cause high output cardiac failure. A key role of the general physician is to assess the patient for evidence of systemic upset, such as abnormal vital signs or symptoms of poor temperature control, and support as required. Even if patients have normal vital signs fluid balance should be monitored and additional oral fluids should be encouraged to match insensible losses.

If systemically well, not all erythrodermic patients need to be managed in an inpatient setting and some can be managed with urgent and regular outpatient review by a dermatology team. Patients will generally be required to apply intensive topical therapy. If a patient has other medical or psychosocial problems which may prevent him/her adhering to topical treatment, admission should be considered to facilitate this.

Assess for an underlying cause

Clues should be sought from the history and the clinical presentation of the rash.

The causes of erythroderma are (Pal and Haroon, 1998; Akhyani et al, 2005):

- Idiopathic – the most common cause accounting for approximately 30% of cases
- Exacerbation of a pre-existing inflammatory dermatosis – most commonly eczema or psoriasis. It is therefore vitally important to take a history of previous skin problems even if these were mild. Any history of atopy should be considered
- Hypersensitive drug reaction – discussed elsewhere in this article
- Other medical conditions – cutaneous T-cell lymphoma and other malignancies, immunobullous diseases, connective tissue diseases and infections.

Offer appropriate skin care

All erythrodermic patients should apply greasy emollients at least four times a day. They should be supplied with a soap substitute to replace any soap-based products which may irritate the skin.

Generally patients can be commenced on a moderate–potent topical steroid twice a day to reduce inflammation. The exception to this is erythrodermic flares of psoriasis where moderate–potent topical steroids should be avoided. Oral steroids should generally not be started unless recommended by a dermatologist.

In a new presentation or erythroderma where the underlying cause is not clear a skin biopsy may be indicated help establish the cause. Even local application of topical steroids may alter the histological appearance of the biopsy. If swift dermatology review is not feasible as a result of local service provision treatment should not be delayed as delay may cause patient distress. One option in such scenarios is to select a small area of skin to which topical therapy is not applied so that this site can be biopsied at a later point.

Drug reactions

Literature suggests that 2–3% of hospital inpatients will develop an adverse cutaneous reaction (Bigby, 2001). There is a broad spectrum of cutaneous drug eruptions ranging from mild to life threatening. In addition, drugs can cause flares of pre-existing skin conditions; a classic example is beta-blockers causing flares in patients with psoriasis.

This article discusses potentially life-threatening drug eruptions:

- Erythroderma or exfoliative dermatitis
- Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome
- Stevens–Johnson syndrome and toxic epidermal necrolysis.

In suspected drug reactions a drug history including prescribed, over the counter, illicit and homeopathic medications must be taken and clearly documented in the patient records. Knowledge of the latency period (period between taking medication and developing rash or symptoms) can be used to help identify the culprit agent (*Table 1*). The most important management step for any severe adverse cutaneous drug reaction is identifying and stopping the likely culprit medication. In the context of a drug reaction even if a drug is strongly suspected it is advisable to stop all non-essential medication while waiting for clinical improvement of the rash. Much of the care thereafter is focused on supporting the patient and identifying associated complications. Any agent implicated in a severe adverse cutaneous drug reaction should be listed as an allergy on the patient's records and avoided lifelong.

Exfoliative dermatitis or erythroderma

Drugs are responsible for approximately 20% of erythrodermic patient presentations. The clinical features of erythroderma have previously been described in this article.

Exfoliative dermatitis or erythroderma may be a manifestation of DRESS syndrome.

Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome

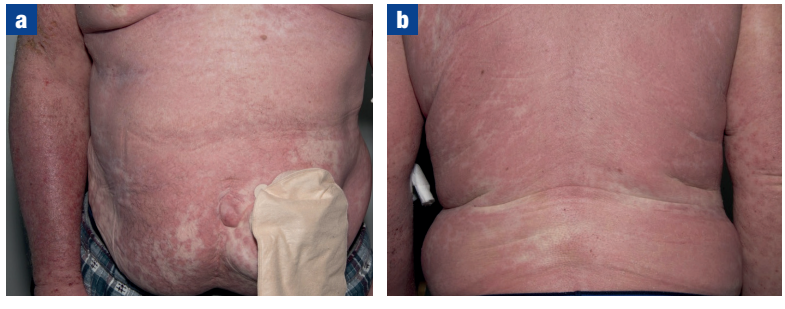
DRESS syndrome (*Figure 1*) is a rare and potentially life-threatening, drug-induced hypersensitivity reaction. The skin eruption in DRESS syndrome is typically a morbilliform eruption. Morbilliform drug eruptions are common and account for approximately 90% of all drug eruptions (Choudhary et al, 2013). When presented with any morbilliform eruption that is presumably related to a drug it is vital to assess for the clinical features of DRESS syndrome (Pal and Haroon, 1998).

Table 1. Cutaneous adverse reactions with their latency period and common causative drug agents

Cutaneous presentation	Latency period	Common causative drug agents
Exfoliative dermatitis or erythroderma	2–8 weeks	Allopurinol
		Penicillins
		Barbiturates
		Gold salts
		Arsenic
		Mercury
Drug reaction with eosinophilia and systemic symptoms (DRESS)	2–8 weeks	Aromatic antiepileptic agents: carbamazepine, phenytoin, lamotrigine, oxcarbazepine and phenobarbital
		Allopurinol
		Sulfonamides
Stephens–Johnson syndrome and toxic epidermal necrolysis	4–28 days	Allopurinol
		Carbamazepine
		Lamotrigine
		Nevirapine
		Phenobarbital
		Phenytoin
		Sulfamethoxazole and other sulfur antibiotics
		Sulfasalazine
		Non-steroidal anti-inflammatory drugs

From Choudhary et al (2013); Creamer et al (2016)

Figure 1. Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome secondary to carbemazepine. a. Typical morbilliform eruption consisting of pink to red macules that measure between 2 and 10 mm. Individual lesions have merged becoming confluent. b. In the context of drug eruptions morbilliform eruptions usually start on the trunk spreading to the limbs and neck, and are distributed bilaterally and symmetrically.



Clinical features of DRESS syndrome

- Skin eruption – commonly: morbilliform rash – less commonly: urticarial type eruption, vesicles, bullae, pustules, purpura, target lesions, facial oedema, cheilitis, and erythroderma (Choudhary et al, 2013)
- Lymphadenopathy
- Fever
- Haematological abnormalities (eosinophilia and atypical lymphocytosis)
- Internal organ involvement including the liver, kidney and lungs (Bocquet et al, 1996; Husain et al, 2013).

A skin rash alone is not sufficient to diagnose DRESS syndrome. Any patient with a skin rash suggestive of DRESS syndrome should be assessed for the other features with blood investigations (full blood count, urea and electrolytes, liver function tests), lymph node examination and assessment of vital signs. It is important to consider the evolution of DRESS syndrome as often the fever and rash precedes other systemic involvement. As such, continued assessment for the features of DRESS syndrome is important in any patient with a morbilliform rash and a suspected drug culprit.

If DRESS syndrome is suspected the patient should be referred urgently to dermatology. The suspected culprit medication should be withdrawn. Early recognition and discontinuation of the culprit medication is of prognostic benefit (Santiago et al, 2010). Most dermatologists would take a skin biopsy to confirm the diagnosis and recommend supportive skin care including liberal use of greasy emollient, soap substitution and moderate–potent topical steroids. Good skin care will help alleviate the patient's symptoms but will not shorten the disease course. The benefit of oral steroids is not well established and as such should only be used under specialist guidance.

Stevens–Johnson syndrome and toxic epidermal necrolysis

Stevens–Johnson syndrome and toxic epidermal necrolysis (*Figures 2–4*) sit on a spectrum of severe life-threatening dermatosis characterized by epidermal loss and multisite mucositis with accompanying systemic disturbance.

Figure 2. **a.** Patient with toxic epidermal necrolysis secondary to carbemazepine. **b.** An erythematous macular rash becoming confluent on the central chest. There is epidermal detachment on the face.

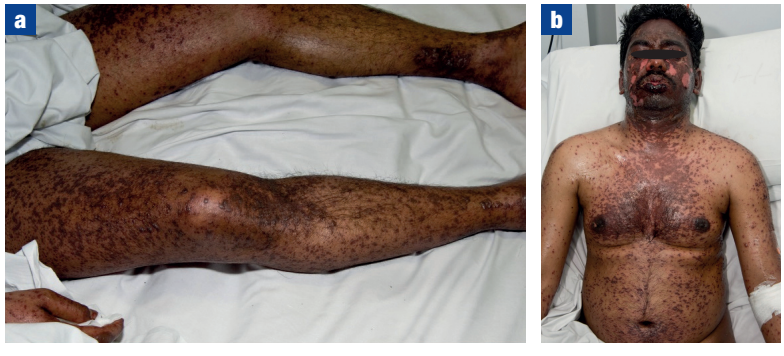


Figure 3. Patient with toxic epidermal necrolysis secondary to a chemotherapy agent. **a.** An erythematous macular rash on the leg with some targetoid lesion on the thighs. **b.** There is diffuse erythema of the back with sheets of epidermal detachment.

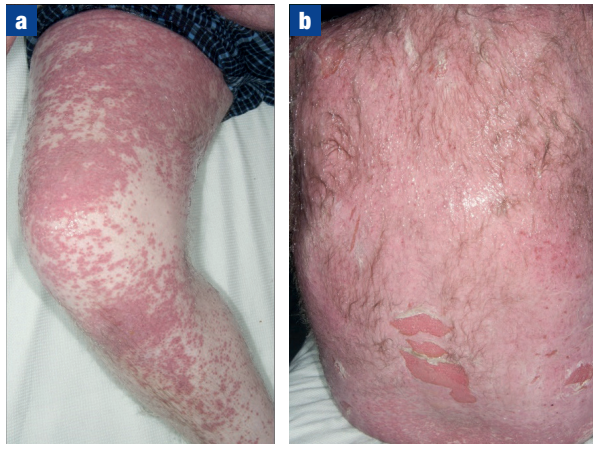
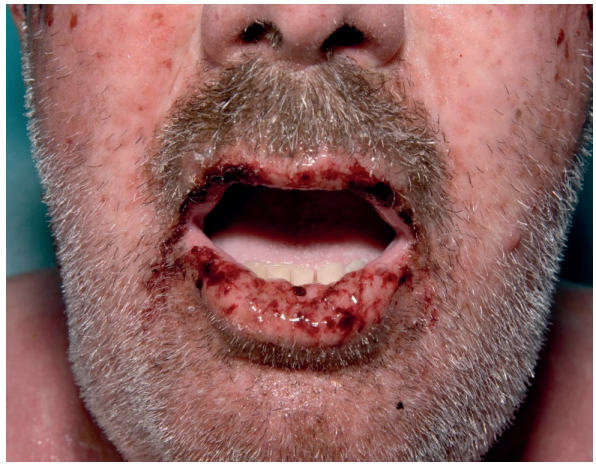


Figure 4. Mucosal erosions in a patient with toxic epidermal necrolysis.



There is often prodromal 'flu-like illness' manifesting as myalgia, red eyes, coryzal symptoms and fever. Skin involvement follows approximately 48 hours later. The initial rash generally starts on the trunk and can be variable in appearance. The skin presentation can manifest as macules, purpura, erythema, targetoid lesions and blisters. Patients may experience severe skin pain. The rash progresses rapidly with blistered areas merging to form large sheets of epidermal detachment exposing the underlying dermis. When lateral pressure is applied to the skin in areas of erythema the epidermis appears to slide over the underlying dermis; this is called the Nikolsky sign.

The extent of epidermal detachment distinguishes Stevens–Johnson syndrome from toxic epidermal necrolysis:

- <10% Stevens–Johnson syndrome
- 10–30% Stevens–Johnson syndrome and toxic epidermal necrolysis overlap
- >30% toxic epidermal necrolysis

Other mucosal surfaces which can be involved include the eyes, gastrointestinal tract, genital tract and respiratory tract.

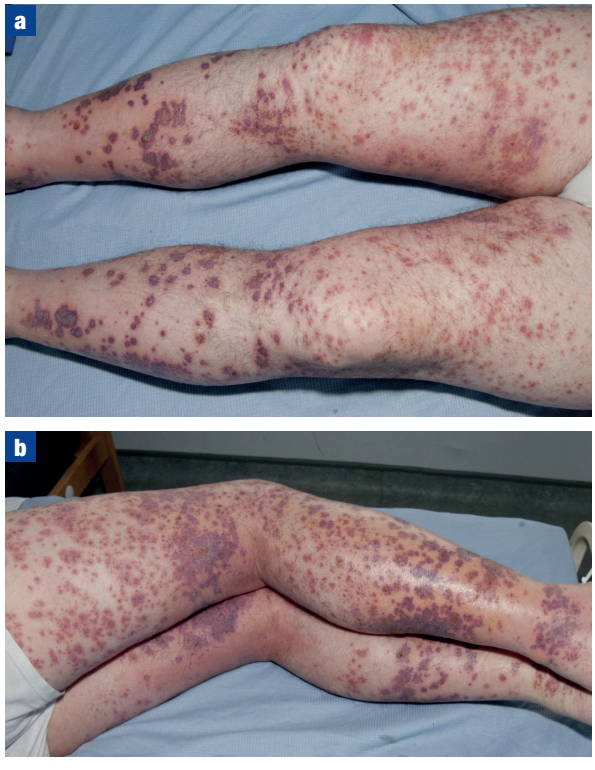
The British Association of Dermatologists has produced a clinical guideline for the management of toxic epidermal necrolysis and Stevens–Johnson syndrome (Creamer et al, 2016). Patients with >10% body surface area involvement should be admitted to a specialist intensive care unit for critical care management and specialist nursing (Santiago et al, 2010). All regions will have a tertiary unit dedicated to caring for patients with Stevens–Johnson syndrome and toxic epidermal necrolysis. It is important that acute hospital physicians are aware of their regional referral pathway. Any patient with suspected toxic epidermal necrolysis or Stevens–Johnson syndrome should be discussed with the dermatology on call service or local specialist unit as a matter of urgency.

Cutaneous vasculitis (small vessel or leucocytoclastic vasculitis)

Vasculitis is inflammation of the blood vessel walls (*Figure 5*). Many different physiological insults can produce this inflammatory response. Patients with cutaneous vasculitis present with palpable, non-blanching purpura (papules and plaques) most commonly on the lower legs and dependent sites. Haemorrhagic bullae, necrosis and superficial ulcerations can be present and there is frequently associated swelling.

The differential diagnosis of cutaneous vasculitis is broad, so it helps to have a systematic approach. Important aspects to consider include:

Figure 5. a and b. Cutaneous vasculitis: purpura and petechiae on the legs with haemorrhagic bullae.



> **“Any patient with suspected toxic epidermal necrolysis or Stevens–Johnson syndrome should be discussed with the dermatology on call service or local specialist unit as a matter of urgency.”**

1. Is there an underlying cause?
   - Drugs (Martinez-Taboada et al, 1997): penicillins, sulphonamides, phenytoin, allopurinol, loop and thiazide diuretics, and non-steroidal anti-inflammatory drugs
   - Infections: hepatitis B and C, HIV, other viral infection and bacteraemias (such as infective endocarditis)
   - Connective tissue disease.
2. Does the presentation of the skin represent a manifestation of a systemic vasculitis?
   - Full vasculitis screen should be requested
3. Are other organs involved? This requires systemic enquiry along with investigations including blood pressure, urine dipstick and bloods (full blood count, urea and electrolytes, liver function test, C-reactive protein).

It is important to remember that dermatologists only manage cutaneous vasculitis. They can assist and advise on the cutaneous manifestations of systemic vasculitis, but if a systemic vasculitis is suspected even in the presence of skin signs these patients should first be assessed and managed by a rheumatologist or nephrologist depending on the systems involved.

Treatment

In isolated cutaneous vasculitis initial treatment is supportive (Micheletti and Werth, 2015). Patients are advised to rest and elevate their legs. Pain is often a prominent feature and appropriate analgesia should also be considered. Potent topical steroids can be applied to the active lesions. If there is more widespread skin involvement, skin ulceration or the disease is not resolving after 3–4 weeks then systemic treatment can be considered. Often a short course of prednisolone can be used – starting at 0.5–1 mg/kg and reducing. In very severe cases with widespread skin necrosis intravenous methylprednisolone should be considered, but this should only be under specialist advice. If disease persists on weaning the prednisolone then other agents can be considered for disease control such as colchicine or dapsone. Only in refractory cases are immunosuppressive agents generally needed.

Eczema herpeticum

Eczema herpeticum (*Figure 6*) is an infective complication of eczema presenting as disseminated viral infection. It is most commonly caused by herpes simplex virus (HSV) 1 or 2.

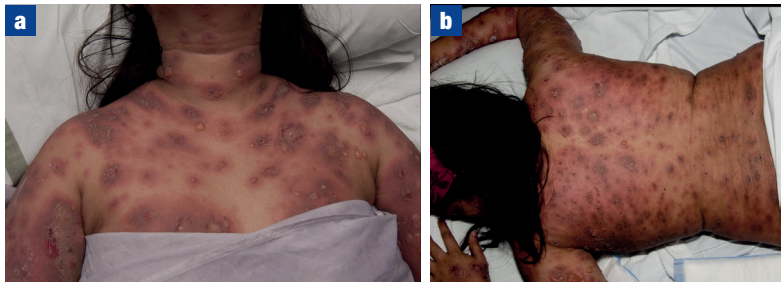
Figure 6. Eczema herpeticum – confluent punched-out eroded areas on the forehead, left orbit and cheek with haemorrhagic crusting.

It begins with clusters of painful blisters which all appear similar to one another (monomorphic). New blisters can appear over a period of 7–10 days. The blisters then begin to crust and form punched-out erosions.

Patients can be systemically unwell as a result of the disseminated nature of the rash. Other organs can be involved such as the eyes, CNS, lungs and liver; the hospital physician must be aware of these complications and assess for them. If eczema herpeticum is seen around the eyes or eyelid margins urgent ophthalmology review is generally required to look for ocular complications.

Secondary bacterial infection can occur usually with staphylococci or streptococci and this presents with golden crusting over the eroded areas.

Figure 7. **a** and **b**. Bullous pemphigoid: widespread tense blisters occurring on a background or erythema and urticated skin.



When a patient presents with suspected eczema herpeticum swabs must be taken for bacterial culture (microscopy and culture) along with viral polymerase chain reaction (HSV 1 and 2). Patients should be started on aciclovir and if there is any clinical suspicion or secondary bacterial infection then antibiotic cover should also be provided.

Bullous eruptions

A blister is a fluid-filled lesion on the skin measuring >1 cm diameter. Blisters normally contain clear serous fluid, they can contain blood and in this case would be termed haemorrhagic. If the lesion measures <1 cm diameter it is described as a vesicle.

Bullous eruptions do not always present with blisters. If the condition affects the top layers of the skin (the epidermis) the blisters are very fragile, presenting as erosions and areas of desquamation. If deeper layers of the skin are affected (subepidermal) then intact blisters will be observed.

The spectrum of bullous disorders is beyond the scope of this article. However, the hospital physician must be aware of the severe and life-threatening dermatosis that can manifest with blistering and therefore should have an ordered approach to assessing a patient with a suspected bullous disease. This would include considering:

- Site(s) of involvement
- Mucous membrane involvement (eyes, mouth or genital tract)
- Size of blisters
- Nature of blisters – flaccid, tense or eroded areas
- History of new medications.

Bullous pemphigoid

A typical patient with bullous pemphigoid (*Figure 7*) is usually elderly and has widespread tense blisters commonly involving the trunk, flexural areas, axillae and groins (Yancey and Egan, 2000). The blisters can occur on a background of both inflamed and non-inflamed skin. Blistering can be preceded by a generalized pruritic eczematous rash or urticarial type lesions. Patients can experience pruritus associated with the blistering. The blisters may de-roof leaving eroded areas with exposed dermis.

Pemphigus

This life-threatening blistering condition is the result of intraepithelial blisters in the skin and mucous membranes. The exact presentation of pemphigus depends on the subtype (*Figures 8* and *9*) but patients present with either mucosal or cutaneous erosions, or a mixture of both. Mucosal involvement is eroded areas and cutaneous involvement presents as flaccid blisters, eroded areas and pustules.

Common subtypes of pemphigus are:

- Pemphigus vulgaris – mucosal or mucosal and cutaneous involvement
- Pemphigus foliaceus – cutaneous involvement only

Figure 8. **a** and **b.** Widespread erosions on the trunk of a patient with pemphigus.

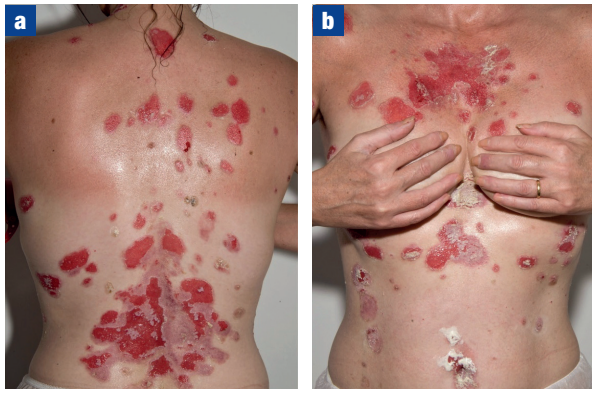
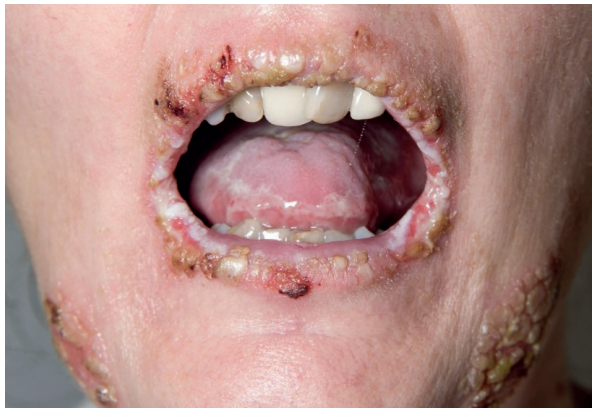


Figure 9. Oral erosion on pemphigus.



- Immunoglobulin A (IgA) pemphigus – grouped vesicles or pustules and erythematous plaques with crusts
- Paraneoplastic pemphigus – extensive, intractable stomatitis and variable cutaneous findings.

Any patient with a blistering condition should be discussed with or urgently reviewed by a dermatologist, particularly if the diagnosis is not clear.

Regardless of the cause of the blistering, good skin care is vital in these patients and should be instituted before dermatology review.

Skin care for blistering patients

- Tense blisters should be popped with a sterile needle allowing the fluid to drain and the epidermis to lie flat over the underlying dermis – this will prevent blisters de-roofing traumatically
- If dressings are required then non-adhesive dressing should be used
- Good oral care is important in the case of mucosal involvement – consider the use of oral chlorhexidine mouthwash and diflam to relieve pain.

Conclusions

While many dermatological problems are non-life threatening and can be managed on a non-urgent basis there a number of dermatology emergencies that have a significant morbidity and mortality. Acute medical physicians are often the first to encounter such presentations; recognition can be challenging owing to lack of exposure to this patient group. This article has summarized the emergency dermatology presentations to hopefully increase readers' confidence in recognition and prompt management of dermatology emergency presentations. BJHM

KEY POINTS

- Medications can cause a spectrum of adverse cutaneous reactions from mild to life-threatening. A thorough drug history is vital with consideration given to the onset of the rash in relation to the start date of the drug.
- Simple bland skin care is unlikely to harm patients and is a simple step to take to help alleviate symptoms in a variety of skin complaints.
- Examination is vital: when presented with a patient with a rash it is vital to examine the entire patient including the mucous membranes as it may give clues to the underlying cause.
- Remember that rashes can evolve; watching the evolution can sometimes give clues to the nature of the skin condition.
- Dermatology emergencies can present with systemic upset, so general physicians must recognize systemic involvement and provide appropriate support and treatment.
- Be aware of how to access your local dermatology service to ensure there is no delay in case of emergencies.

Conflict of interest: none.

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