Rash

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Abstract

The clinical appearance of a rash, a thorough history, and some knowledge of pathology of common conditions are necessary to make an accurate dermatological diagnosis. Certain rashes follow a typical pattern anatomically and aid the diagnosis. Other rashes are important markers of systemic disease and must be recognized in acute medical presentations.

Skin problems are common, affecting up to one-third of the population during their lifetime. While most chronic skin diseases are not life threatening, many carry high morbidity related to discomfort, cosmetic embarrassment, social stigmatism and loss of work and earnings.

This article explores the assessment of the patient with a dermatology condition, outlines the appropriate dermatological terminology to describe rashes and discusses common presentations of the acute, chronic and infective rashes with their appropriate treatments.

Keywords dermatology; examination; history; investigation; rash; skin biopsy

What's new?

- About 20–30% of patients with psoriasis have severe disease. Biological therapies can be used for patients with severe disease intolerant of, or unresponsive to, standard therapies. Biological therapies block specific molecular steps considered important in the pathogenesis of psoriasis. Biological therapies include agents that target the cytokine tumour necrosis factor-α (TNF-α) (e.g. etanercept, infliximab, adalumimab) and agents that target T cells or antigen-presenting cells (e.g. efalizumab, alefacept)[1]
- Topical photodynamic therapy is a high-efficacy treatment for actinic keratoses, Bowen's disease, superficial basal cell carcinoma and thin nodular basal cell carcinoma[2]

History

Questioning should follow a systematic approach.

Demographic questions

Age: acute infective rashes are more common in childhood.

Sex: certain rashes are more frequent in females (e.g. lupus erythematosus, erythema nodosum).

Home circumstances: relevant for outbreaks of infection/infestation (e.g. impetigo, scabies).

Travel abroad: relevant with regard to exotic infective rashes. A knowledge of endemic areas for infection is important.

Rash

Duration: how long has the rash been present? Acute conditions (e.g. drug eruptions, allergic contact dermatitis, anaphylaxis, erythroderma, acute infection) appear suddenly, and often resolve after a short duration.

Treatments: what treatments have been tried and how much did they help?

Contact allergic dermatitis can be caused by the application of topical products (e.g. cosmetics, topical medication or other chemicals). Drug-related rashes often relate to oral or systemic agents and are a common reason for requesting a dermatological opinion. One needs to know the commencement date of a new drug to establish an association. A comprehensive list of current medications, including over-the-counter preparations the patient was taking within 2–3 weeks of the rash appearing is essential.

Occupational and recreational history

Contact allergic dermatitis is more common in certain occupations. Evidence suggesting occupational dermatoses includes:

- similar dermatoses in others at the patient's workplace
- time relationship between occupational exposure and dermatitis
- improvement of the rash when the patient is away from the workplace.

Contact history

Certain infective skin conditions, such as impetigo, scabies and herpes simplex, are acquired from direct contact. Identification and treatment of affected family members and close social contacts is essential to avoid ongoing cross-infection.

Provocative factors

Some rashes develop only after exposure to ultraviolet radiation or are exacerbated by it. Chronic actinic dermatitis is an acute eczematous eruption occurring on sun-exposed sites during the summer. It may be confused with atopic eczema. Lupus erythematosus is also exacerbated by ultraviolet exposure.

Examination

Some rashes have a typical body distribution on the body that can aid diagnosis. The whole body, including hair, nails and mucosae should be examined, in natural light whenever possible, paying attention to the distribution and morphology of the rash.

Distribution

Is the rash:

- localized or generalized?
- symmetrical or asymmetrical? – psoriasis is typically symmetrical
- characterized by lesions with well-defined or ill-defined edges? Psoriatic plaques are usually well defined. Eczema lesions are usually ill-defined.
- linear, grouped or annular (in a ring)?

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- flexural — typical of atopic eczema
- extensor — typical of psoriasis
- localized to the scalp, eyebrows, nasolabial folds, or the chest in men — typical of seborrhoeic dermatitis
- confined to sun-exposed sites — typical of photodermatoses (e.g. lupus erythematosus, chronic actinic dermatitis)

Morphology

Rashes have characteristic morphological features. Familiarity with this terminology is useful and outlined in Tables 1 and 2.

Acute rashes

Impetigo: a contagious, superficial infection due to *Staphylococcus aureus*. The face is commonly infected and it mainly affects pre-school and young school children. It presents as tiny vesicles and the vesicle exudate forms a brown/yellow crust. In mild, limited cases, topical antibiotics (mupirocin) may suffice, but in more severe or widespread infection, systemic flucloxacillin is needed.

Shingles: due to herpes virus varicella. The first manifestation is usually painful skin followed by constitutional symptoms. There are grouped papules that become vesicular and then pustulate in one or more contiguous dermatomes. Post-herpetic neuralgic pain is a common sequel occurring in up to 30% of cases. Rapid treatment is needed with aciclovir (800 mg orally five times daily) for 7—10 days to minimize symptoms and reduce the incidence of post-herpetic neuralgia.

Erythroderma/skin failure: generalized erythema involving more than 90% of the body surface area, oedema, malaise, and shivering due to heat loss. This can be due to a drug reaction, underlying malignancy, lymphoma, or exacerbation of eczema or psoriasis. Reactive lymphadenopathy can occur. This is a medical emergency and can be fatal due to high output cardiac failure, heat loss and metabolite abnormalities. Treatment includes bed rest, cool emollients, and possibly topical corticosteroids of moderate potency, thermoregulation and metabolite stabilization. A multi-professional approach in a tertiary referral centre with dermatologists, intensive care and burns surgeons is often needed.

Staphylococcal scalded-skin syndrome: following an initial staphylococcal infection, an exfoliative rash develops due to release of epidermolytic toxins from certain strains of *S. aureus*. This results in erythema that is often widespread, followed by superficial epidermal split or blister formation. It is more common in children although it may occur in adults. Intravenous flucloxacillin and careful wound care is needed. Prognosis is good, especially in children.

Viral exanthemata: widespread viral exanthemata may be a manifestation of viral infections that cause viraemia. The exanthema is often the result of circulating immune complexes of antibody and viral antigen. The rash can be maculopapular (e.g. measles), macular (e.g. rubella), vesicular (e.g. hand, foot and mouth disease (Coxsackie 16,5)) or vesiculopapular (e.g. varicella-zoster infection).

Pityriasis rosea: the first sign of this rash is usually a single 'herald patch' that is larger than the later eruption. It is erythematous, oval and covered with fine scale. After 1—2 weeks a pruritic more florid eruption of discrete oval lesions with a peripheral collarette of scale will develop mainly on the trunk. Only symptomatic treatment for the rash is needed. The aetiology is thought to be post-infective. The rash usually subsides over a 2—3-month period. It must be differentiated from guttate psoriasis, seborrhoeic dermatitis and secondary syphilis.

Erythema multiforme: this presents typically on the palms of the hands, wrists and feet. It presents typically as targetoid lesions with a central target surrounded by a dusky erythema. It can be

Morphology of skin conditions

Lesion	Description	Examples
Macule	Flat lesion, altered in colour or consistency; colour change may be caused by melanin, or erythema from blood vessel dilatation	*Café-au-lait* macules, post-inflammatory pigmentation
Papule	Raised lesion <5 mm diameter	*Molluscum contagiosum*
Nodule	Raised lesion >1 cm diameter	Basal cell carcinoma
Plaque	Flat, elevated lesion on skin	Psoriasis
Pustule	Raised lesion containing purulent material	Sterile pustules in pustular psoriasis, infective pustules
Vesicles and bullae	Raised fluid-containing lesions; a bulla is larger than a vesicle	Vesicles — chickenpox, herpes simplex type 1 bullae — bullous pemphigoid
Wheals	Transient, pruritic, raised lesions caused by local dermal oedema	Urticaria
Excoriation	Partial or complete loss of epidermis caused by scratching	
Annular	Ring-shaped lesions	Granuloma annulare, erythema annulare centrifugum
Lichenification	Thickening of skin with exaggerated skin markings, often from prolonged rubbing or scratching	Eczema
Atrophy	Thinning of skin giving a translucent appearance; may lose normal surface markings; blood vessels may be visible	

Table 1

Diagnosis, investigation and treatment of skin rashes

Diagnosis	Presentation	History/investigations	Treatments
Acute conditions			
Drug rash	Macular and papular morbilliform rash (Figure 2) Itchy generalized eruption	1–3 weeks after new drug	Drug withdrawal (commonly NSAID, penicillins, sulphonamides) Anti-histamine for the itch
Anaphylaxis	Life-threatening reaction Urticaria/angioedema/ hypotension/ tachycardia	Sudden onset after drug (e.g. penicillin, latex, bee venom)	IV adrenaline (epinephrine) and antihistamine Avoidance
Erythroderma/skin failure	Generalized erythema and oedema, shivering due to heat loss Tachycardia	Skin biopsy to elicit cause after acute rash settled Look for cause (e.g. eczema psoriasis, drug, solid organ or haematological malignancy)	Bed rest, cool emollients, thermoregulation, metabolic stabilization
Contact dermatitis	Eczematous rash at site of contact with allergen	Time-scale of rash in keeping with allergen contact Patch testing	Withdrawal of allergen contact Topical corticosteroid for rash
Immunobullous disorder (e.g. bullous pemphigoid)	Tense blisters on background of itchy urticated skin (Figure 3)	Skin biopsy with immunofluorescence	Topical and oral corticosteroids ± immuno-suppressants (e.g. azathioprine)
Chronic conditions			
Eczema	Erythematous, scaly, itchy rash, flexural and/or generalized	Family history of atopy, raised serum total IgE	Emollients, topical corticosteroids anti-histamine, wet-wraps/paste bandaging
Psoriasis	Well-demarcated scaly plaques, extensor distribution, along hairline. Nail onycholysis associated.	Positive family history	Emollients, vitamin D analogues, tar preparations, UVB phototherapy, systemic immunosuppressant (e.g. methotrexate)
Subacute lupus erythematosis	Photosensitive eruption	Exacerbated in sun, autoantibody screen, anti-DNA antibody, skin biopsy with positive immunofluoresence	Sun avoidance/sunscreens, topical corticosteroid, anti-malarials
Pityriasis versicolor	Itchy, flaky, hypopigmented areas	Skin scraping shows *Malassezia furfur* infection	Topical anti-fungal (e.g. itraconazole)
Acne rosacea	Facial papules, pustules, telangiectasia in adults	Facial flushing exacerbated by certain foods, e.g. spice, wine, cheese	Systemic tetracycline (topical antibiotic can be used in mild cases)

Table 2

precipitated by several agents – most typically herpes simplex virus and drugs, including penicillins. It occurs at any age and tends to last approximately 2–3 weeks.

Chronic rashes

Eczema: this presents with pruritic scaly erythematous areas anywhere on the body but typically in the flexures. There is often a family history of eczema, asthma or hayfever. Management includes liberal emollient use, oral antihistamine and topical corticosteroids (the potency depending on body site and severity of the rash). Protopic cream can be used for mild-to-moderate disease if the patient is older than 2 years. If very extensive and severe, a short course of systemic corticosteroids or immunosuppressant agents such as azathioprine or ciclosporin may be needed.

Psoriasis (Figure 1): this affects 1–2% of the population and there is often a family history. The rash consists of well demarcated keratotic plaques usually affecting the extensor surfaces and hairline.[3] Treatments include topical tar-based preparations, vitamin D analogues combined with corticosteroid, or dithranol. Phototherapy with ultraviolet light should be considered for more extensive or resistant psoriasis. Immunosuppressants such as methotrexate, azathioprine or biologic agents can be used for prolonged unresponsive disease.

Dermatomyositis: this is a connective tissue disease that may be related to polymyositis. It can be a paraneoplastic syndrome, so malignancy should be sought. There is inflammation of muscles

Figure 1 Typical psoriatic plaque on extensor aspect of elbow.

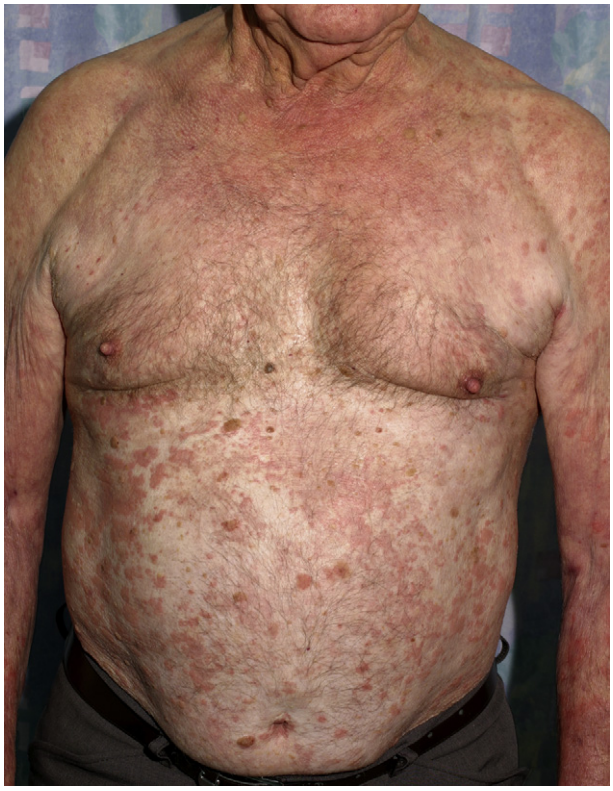

Figure 2 Typical maculopapular morbilliform drug rash.

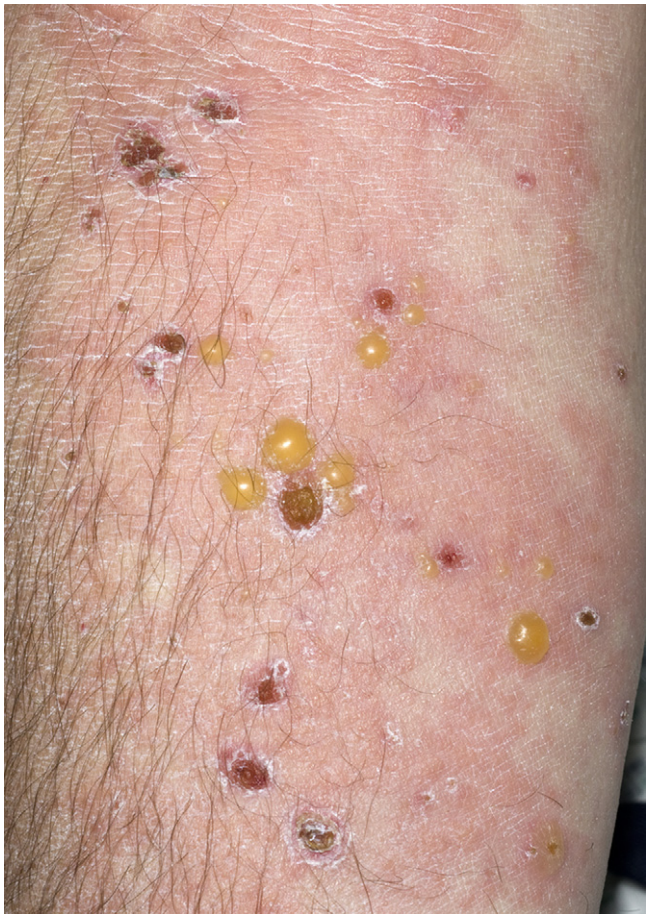

Figure 3 Typical tense blisters on an erythematous urticated background.

and skin, presenting with a photosensitive erythematous scaly eruption, proximal myopathy, Gottron's papules (multiple small erythematous papules that coalesce to form papules) on the knuckles and a violaceous eruption on the eyelids. Serum creatine kinase will be markedly raised. Acute management includes systemic corticosteroids. ◆

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