Assessing skin disease in children

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Abstract

Skin disease in children is a common presentation in both primary and secondary care. A focused history and examination in addition to appropriate investigations are key to reaching the correct diagnosis. This article addresses fundamental components of the assessment of children with skin disease, providing examples of common and important conditions.

Keywords child; diagnosis; differential diagnosis; examination; investigation; skin

Introduction

Children frequently present with a skin problem. This may arise in a variety of forms from an acute rash to recalcitrant chronic disease. Even the most experienced clinicians will encounter a difficult case and revisiting the basic history and examination is necessary. An essential component of any clinical assessment is the ability to recognise and describe the findings appropriately. A clear understanding of the basic descriptive terminology is invaluable (Table 1).

The aim of this article is to offer non-dermatologists a structured framework on which to base their approach to assessing and managing children with skin disease. It will address key elements of history taking, skin examination and investigations, followed by specific mention to common chronic diseases and their differentials, as well as conditions in neonates.

History

A good history should reveal the patient and parent's concerns and expectations while generating differential diagnoses. Because the skin is visually apparent, anxiety, (even in benign conditions) can be significant.

Associated symptoms

The child's general health should be established in the history. Although common acute viral exanthems may be associated with mild systemic upset, the skin can also reflect underlying systemic disease. Recognising early symptoms of systemic involvement or the potential for deterioration is vital. Pruritus and pain are often associated with skin disease and can have a significant effect on quality of life.

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Timing

Duration and progression over time are important and help to differentiate conditions which have a similar clinical appearance e.g. vascular marks in infants, where infantile haemangiomas have a very different natural progression to vascular malformations.

Previous treatments and efficacy

In chronic conditions, understanding previous treatments and the clinical response will guide future management.

Family history

A family history is often present in psoriasis, and one of atopy in eczema. Household contacts may have similar eruptions with an infectious aetiology such as scabies or chickenpox. A skin problem can be the presenting complaint in genetic conditions where a history of parental consanguinity may be relevant.

General health

A general medical history should include antenatal, perinatal, and developmental issues, as well as medication and immunization details.

Examination

The child and parent should be made comfortable during the consultation, in a room with adequate heat and lighting. Measuring height and weight provides an indicator of overall wellbeing. As the skin plays a role in heat regulation, recording the temperature is important in the presence of a widespread rash or an unwell child. The entire skin including the hair, nails, teeth and oral mucosa should be examined. The clinician should look at the skin to address morphology, distribution and pattern of the condition and palpate to assess for warmth, tenderness and subtle elevation.

Pattern, distribution and morphology

The pattern, distribution and morphology of a rash will help to generate a differential diagnosis. Hand, foot and mouth disease for instance, is characterized (as its name suggests) by vesicles on the palms and soles in association with oral mucosal macules, vesicles and painful ulcers. In the absence of peripheral lesions, a differential may include herpes simplex virus (HSV), herpangina or aphthous ulcers.

Another example is guttate psoriasis, which manifests as discrete erythematous scaling lesions, mainly on the trunk. The history may reveal a recent sore throat suggestive of a streptococcal infection or a family history of psoriasis. Pityriasis rosea, can have a similar clinical appearance but features such as the salmon-coloured, oval lesions oriented along skin folds in a classic 'Christmas tree' pattern and the early presence of a single 'herald patch' with a fine collarette scale (circular rim of scale with loose central portion) should allow differentiation.

Identifying the presence or absence of key features of a particular condition allows the formulation of likely differentials, although one should appreciate that not all diseases assume a classic appearance.

Descriptive terms

Term	Features	Examples
Bulla	Blister >5 mm, containing serous fluid	Bullous impetigo Insect bite reaction
Crust	Dried exudate such as pus or blood	Impetigo Infected eczema
Erosion	Focal superficial epidermal loss (above the basal layer)	Trauma Staph scalded skin
Erythema	Redness due to vascular dilatation	Sunburn Cellulitis
Excoriation	Area of eroded skin secondary to scratching	Eczema
Lichenification	Thickening of skin due to chronic scratching/rubbing	Eczema
Macule	Flat area of discoloured skin <5 mm	Freckle Measles
Nodule	Circumscribed, solid, raised area on the skin >5 mm	Pyogenic granuloma Viral wart
Papule	Circumscribed, solid, raised area on the skin <5 mm	Molluscum contagiosum Naevus
Patch	Flat area of abnormal skin >5 mm	Vitiligo
Plaque	Palpable, flat-topped thickening of the skin >1 cm	Psoriasis
Scale	Fragments of the stratum corneum shed from the skin	Tinea capitis Psoriasis
Vesicle	Blister <5 mm, containing serous fluid	Pompholyx eczema Herpes simplex
Wheal	Superficial, transient skin oedema	Urticaria

Table 1

Investigations

Access to special investigations in primary care or non-dermatological settings is limited, however there are some simple investigations that can be useful, particularly to confirm an infective aetiology. Some skin conditions should always prompt the clinician to question the possibility of other organ involvement and investigate appropriately. For example, renal impairment is a potentially serious complication of vasculitic conditions such as Henoch Schonlein purpura. Regular urinalysis and blood pressure monitoring should form part of follow up care.

Skin swabs and scrapings

Children with chronic inflammatory skin disease e.g. eczema, are prone to superimposed infection (Figure 1). Repeated courses of empiric antibiotics without confirmation of the underlying organism can result in an inadequate response and resistance. Similarly with suspected fungal infections, a scraping from the involved skin or clipping from the nail will identify the infective species, which will guide management. Fungal specimens take a number of weeks to culture and sampling the edge of the lesion is likely to provide higher yields.

Swabs of vesicle fluid for herpes simplex PCR (in viral transport medium) should be considered in suspected eczema herpeticum.

Wood's lamp

A Wood's lamp emits ultra violet light under which certain conditions will fluoresce brightly. For example, *Pseudomonas* species fluoresce yellow-green, *Microsporum* dermatophytes fluoresce green and depigmented areas in conditions such as vitiligo are more obvious. The examination requires a completely darkened room.

Dermoscopy

A dermatoscope allows magnification and illumination of the skin to increase the diagnostic accuracy of benign and malignant pigmented lesions. With training, it can be useful in differentiating pigmented from vascular lesions for example.

Skin biopsy

Where histological confirmation in children is being considered, referral to secondary care is likely to be appropriate, particularly as a specialist opinion may well avoid an unnecessary procedure in a young child.

Chronic skin disease

Eczema

Most clinicians who deal with children on a regular basis will be able to identify and treat mild eczema. However, some less common presentations and differentials are discussed below.

Eczema herpeticum

Eczema herpeticum (see Figure 2) is a widespread herpes simplex infection on the background of eczematous skin. It presents with clusters of painful punched out erosions and possibly vesicles, most commonly on the face and neck. This is associated with worsening eczema and systemic symptoms with the