Common rashes in children: 2

Figure 1. Scabies on the hand of an infant: note the variety of papules, vesicles, pustules, nodules and the pathognomonic linear burrows.

This second article covering rashes commonly seen in children looks at three further conditions with very distinctive clinical presentations that are none the less commonly misdiagnosed.

Scabies

Scabies is an infestation with the mite *Sarcoptes scabiei*. This causes an intensely pruritic and contagious skin condition. It is usually spread by direct skin-to-skin contact. The infection is especially common in children, following close contact with family members or other children (Johnston and Sladden, 2005).

Clinical manifestations

Symptoms usually occur within 4–6 weeks of infection and are the result of an immune response to the mites and their eggs and faeces. The hallmark of scabies is intense pruritus, which is worse at night. The eruption presents as papules, vesicles, pustules, nodules and the pathognomonic linear burrows (*Figure 1*). Burrows are thin, short, curled channels on the skin, and are most easily seen on the webs of the fingers, axillae, wrists and genitals. In infants and young children, the face, neck and scalp can also be involved (Johnston and Sladden, 2005).

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Norwegian scabies

Also known as crusted scabies, this hyperinfestation with sarcoptes mites usually occurs in the immunocompromised, often in human immunodeficiency virus (HIV)-positive patients (Heukelbach and Feldmeier, 2006), in the elderly, and in patients with neurological disorders. Owing to absent pruritus or the inability to scratch, mites multiply rapidly. This form of scabies is highly contagious because of the high parasite load. Clinically it presents as widespread dermatitis with heavily crusted lesions, hyperkeratosis and extensive scaling.

Diagnosis

The diagnosis of scabies can prove a challenge. Ask about a recent history of pruritus involving several members of the household and look specifically for burrows at the typical sites. A skin scraping demonstrates the presence of mites or eggs under the microscope. In infants and small children the typical picture is often disguised by excoriation, eczematization or secondary infection (*Figure 2*), mostly as a result of *Staphylococcus* or *Streptococcus* spp., and so burrows may be difficult to identify (Sladden and Johnston, 2005).

Differential diagnosis

Several conditions can be misdiagnosed as scabies in children, especially if there is a low index of suspicion and secondary infection or eczematization. Anyone presenting with a short history of an itchy rash should alert the clinician to consider a diagnosis of scabies, regardless of age.

Atopic dermatitis can resemble scabies, as lesions such as vesicles and papules together with extensive erythema occur in both conditions (*Figure 3*).

Insect bites typically present as pruritic papules but are far less numerous.

Impetigo is an infectious bacterial skin condition that can also occur as a secondary infection in scabies.

Treatment

It is crucial to treat any contacts rigorously and concurrently, irrespective of the presence or absence of symptoms, and to apply treatment correctly in order to prevent treatment failure (Johnston and Sladden, 2005). All members of the same household should be treated at the same time to prevent subsequent re-infection.

Figure 2. Scabies on the wrist and arm of an infant: note the eczematous predominance of eczematous changes and presence of impetiginised lesions with characteristic golden crusting.

Figure 3. This child was treated for a widespread eczematous rash. Only the presence of discrete papules and nodules within the rash alerted the clinicians to the correct diagnosis of scabies.

Topical treatment

Permethrin

The first-line treatment in the UK is 5% permethrin cream. It should be applied twice, with applications 1 week apart, to all skin from the neck down. Particular attention should be taken to apply it to the webs of fingers and toes, genitalia and the umbilicus. Permethrin should be washed off 12 hours after application. In infants under the age of 2 years, permethrin should be applied to the whole body, including face, neck, ears and scalp. Infants might remove treatment when sucking their thumb or toes and these body parts therefore need to be covered with mittens or socks (Johnston and Sladden, 2005).

Malathion

Malathion 0.5% can be used as an alternate treatment. It is available as both aqueous and alcoholic preparations. Alcoholic lotions are not recommended in the treatment of scabies. It is applied in the same way as permethrin but left on for 24 hours before being reapplied 7 days later.

Systemic treatment

Ivermectin

Ivermectin is a potent orally administered antihelminthic drug, used in the treatment of crusted scabies in specialist centres. It is administered in two doses 1 week apart, but is only licensed in children who weigh more than 15 kg (Sladden and Johnston, 2004).

Symptomatic treatment

The pruritus and eczema of scabies can persist for up to 6 weeks after treatment, and this must be made clear to patients who otherwise suspect treatment failure (Johnston and Sladden, 2005; Sladden and Johnston, 2005). Oral antihistamines, topical steroids or topical antipruritic agents such as crotamiton may help to alleviate pruritus. Any secondary skin infection should also be treated. Clothes and bedding need washing at a temperature of above 50°C.

Tinea capitis

Tinea capitis (scalp ringworm) is an infection caused by a number of dermatophytes, a specialized group of fungi. It mainly affects children between the age of 3 and 7 years, although occasional adult cases occur. It is common worldwide with a higher prevalence in developing countries as well as in north-west Europe. Its worldwide incidence is rapidly increasing.

Epidemiology

The prevalence of the different species of dermatophytes differs regionally and has been changing over time. While *Microsporum canis* used to be the main cause of tinea capitis, *Trichophyton tonsurans* is now the main pathogen in the UK and the United States (Fuller et al, 2003), in contrast to most parts of Europe, where 90% of infections are still caused by *Microsporum canis*. Tinea capitis is transmitted directly from person to person and so occurs more frequently in conditions where there is overcrowding and lower socioeconomic status.

Clinical presentation

There is a wide range of presentations and so diagnosis can prove challenging. The six main clinical patterns are as follows:

Grey type

Circular patches of hair loss with extensive scaling.

Black dot

Well-demarcated areas of alopecia with breakage of hairs at the scalp.

Moth eaten

Patchy hair loss with scaling of the entire scalp.

Kerion

Severe inflammation, localized swelling, pustules and oozing from the scalp with associated cervical lymphadenopathy.

Diffuse scale

Dandruff-like appearance mimicking seborrheic dermatitis.

Diffuse pustular pattern

Widespread scattered pustules with at times associated painful lymphadenopathy (Fuller et al, 2003).

Diagnosis

Microsporum spp. fluorescence green-yellow under filtered UV (Wood's) light but *Trichophyton* spp. do not fluoresce, which makes their diagnosis more difficult (Fuller et al, 2003).

For laboratory diagnosis both scale and broken hairs should be dissolved with 10% potassium hydroxide solution and examined microscopically. The optimum diagnostic method is fungal cultures of hair debris.

Differential diagnosis

Seborrhoeic dermatitis

Seborrhoeic dermatitis can present with diffuse scaling and itching of the scalp. There is no associated alopecia.

Psoriasis

Psoriasis also presents with scaling and itching. The scale is usually larger and thicker and forms plaques with well-defined edges. Alopecia may be present in severe cases but is diffuse rather than localized.

Alopecia areata

This causes well-defined annular patches of hair loss and exclamation mark hairs. There is no scaling of the affected scalp.

Management

Oral treatment is recommended. The only oral antimycotic licensed for treatment of tinea capitis in children is griseofulvin. It should be given in a dose of 10 mg/kg body weight daily or 500 g daily for children above 12 years of age, for a minimum of 6 weeks (Fuller et al, 2003).

In some cases of resistant *Trichophyton tonsurans* infections children need to be treated at higher doses of up to 25 mg/kg daily. Side effects include nausea, headache and rashes. The addition of selenium sulphide shampoo may reduce the risk of spread to others, since it increases the rate of eradication.

The oral antifungal agent terbinafine is not licensed for the treatment of children in the UK (Jones, 1995). A 2-week course prescribed according to body weight for children over 1 year is used in specialist centres.

Molluscum contagiosum

Molluscum contagiosum is a common, benign but contagious cutaneous infection caused by a poxvirus. It is mainly an infection of children but can also occur in adults as a sexually transmitted disease.

Epidemiology

Mollusca contagiosa are transmitted by direct contact or autoinoculation. New lesions occur over a period of many months, although individual papules may only last for up to 2 months. The majority of patients are children aged 2–5 years. The infection is more common in tropical climates and in immunosuppressed patients (Sladden and Johnston, 2004).

Clinical appearance

The lesions are small, pearlescent flesh-coloured, dome-shaped, papules or nodules (*Figure 4*). There is a central dimple or umbilication and they grow over several weeks to a size of 2–6 mm. Otherwise healthy individuals develop 11–20 lesions on average but in immunocompromised patients hundreds of papules can be found. Molluscum contagiosum is generally asymptomatic, although some patients complain of itching or tenderness, especially when lesions become secondarily infected. The head and neck, trunk and axillae are the commonest sites, and lesions typically occur in groups. Rarely, molluscum contagiosum can cause keratoconjunctivitis when the eyelid or its margin is involved.

Figure 4. The classic lesion of molluscum contagiosum: there is a small pearlescent flesh-coloured, dome-shaped, papule with central umbilication.

Diagnosis

Molluscum contagiosum is diagnosed clinically. In difficult cases the core of the lesion can be expressed and examined microscopically where characteristic large viral inclusion bodies are seen.

Differential diagnosis

Atopic dermatitis

Around 10% of children develop dermatitis around mollusca, which require treatment to prevent scratching and further autoinoculation.

Viral warts

Viral warts (verruca vulgaris) begin as smooth flesh-coloured papules, similar to mollusca, but go on to develop a rough, hyperkeratotic surface peppered with the black dots of thrombosed capillaries.

Treatment

In immunocompetent persons molluscum contagiosum is a self-limiting disease. Individual lesions heals after a few weeks or months without scarring. Therefore in the majority of cases, especially in children who will not tolerate treatment, parents can be reassured and the lesions left to resolve.

Topical agents such as cantharidin, sodium nitrite, salicylic acid and phenol lack evidence that they are superior to each other or to watchful waiting (van der Wouden et al, 2006). Physical treatments include manual expression, cryotherapy, curettage or electrodessication under local anesthetic. These are painful and distressing for children and in fact treatment may be detrimental: phenol treatment has shown to induce scarring in a much higher proportion of patients than leaving lesions to resolve (Weller et al, 1999).

Conclusions

These articles show that by taking a careful history and looking for the specific physical signs, the majority of rashes in children can be diagnosed clinically without the need for invasive investigation. BJHM

Conflict of interest: none.

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KEY POINTS

- In a child with a rash always ask about a recent history of pruritus involving several members of the household: this is highly suggestive of scabies.
- In widespread rashes always look specifically for the burrows of scabies at the typical sites of the webs of the fingers, axillae, wrists and genitals.
- In infants and small children scabies is often masked by excoriation, eczema or infection.
- Tinea capitis requires oral antifungal therapy.
- Children will not usually tolerate treatment of molluscum contagiosum. The condition is harmless and the lesions should be left to resolve.