



# Paediatric psoriasis

## A common skin disorder with potential multisystem implications

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Paediatric psoriasis is a diagnostic challenge but it can be managed well if recognised and treated correctly. With evidence increasing that children with psoriasis are at greater risk of cardiovascular disease, obesity and metabolic syndrome later in life, a young patient with this chronic skin disorder presents an important opportunity for preventive action to reduce future health risks.

### KEY POINTS

- The presentation of psoriasis in children may differ markedly from the typical adult presentation. It can be confused with atopic dermatitis or discoid eczema.
- Psoriasis in children is generally a mild disease, and most cases can be managed successfully with regular topical treatment.
- Narrow-band UVB phototherapy is beneficial and safe for children.
- Specialist referral is recommended for the small group of children who require systemic medication for psoriasis that is severe and widespread.
- Evidence is increasing that children with psoriasis have an increased risk of cardiovascular disease, obesity and metabolic syndrome later in life.

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Psoriasis is a common chronic skin condition that affects around 3% of all people. Retrospective studies indicate that one-third of adult patients recall a childhood onset, and two-thirds of patients have a family history of psoriasis. The results of twin studies are suggestive of a strong genetic component.<sup>1</sup> A number of chromosomal loci have been linked to an increased susceptibility for psoriasis.<sup>2-4</sup>

The typical age of onset for psoriasis is in late childhood and early adulthood, but psoriasis can start at any time in life. Exacerbations and acute attacks may be triggered by certain events, such as trauma or infections, including viral upper respiratory tract infections. Group A streptococcal throat and skin infections are one of the most common causes of acute guttate psoriasis and can worsen pre-existing psoriasis. In susceptible children, streptococcal genital infections often precipitate genital psoriasis. Psoriasis may also be precipitated by certain drugs, particularly beta blockers, antiepileptic drugs, antimalarial agents and lithium.

The pathophysiology of psoriasis is related to an excessively rapid turnover of keratinocytes. Recent studies in adults suggest it to be an immune-mediated condition that is associated with a number of autoimmune disorders and can have systemic implications, particularly arthritis and metabolic syndrome. Studies suggest that children with psoriasis are more likely to be overweight and may be at risk for metabolic syndrome from adolescence onwards.<sup>5-7</sup> Psoriasis is therefore increasingly viewed as being a skin disorder that has potential multisystem implications.

### Clinical presentations

Although some children with psoriasis develop the classic plaques seen in adults, the presentation of psoriasis in others may differ markedly from the typical adult presentation.



**Figure 1.** Extensive paediatric psoriasis resembling eczema.

Paediatric psoriasis is sometimes difficult to recognise and can be confused with atopic dermatitis or discoid eczema (Figure 1). Psoriatic plaques in children tend to be thinner, not as well demarcated, less scaly and less erythematous than in adults. Children may have concurrent psoriasis and atopic dermatitis, which produces a mixed clinical picture.

**Infants**

In infants, a scaly scalp ('cradle cap') is often one of the first signs of psoriasis (Figure 2). Persistent nappy rash that is resistant to treatment is another common early sign –

a psoriatic nappy rash tends to be bright red and well demarcated in this location, and it often involves the groin folds (Figures 3 and 4). It may present as elbow and facial plaques (Figure 5).

**Young children**

In children of primary school age, the most common presentation of psoriasis is scaly erythematous plaques or papules, typically involving the dorsal surfaces of the knees and elbows. These plaques are usually not as raised, hyperkeratotic or as well defined as in adults (Figures 6a and b).<sup>8</sup> Other common areas of involvement include the scalp, ankles (Figure 7) and the post-auricular and infra-auricular regions (Figure 8). Erythema may be very persistent. Splitting of the skin is common and may affect the soles and palms (Figures 9 and 10); there may also be fingertip redness and fissuring. Excoriations are less common in psoriasis than in atopic dermatitis.

Facial involvement is common in children with psoriasis (rare in adults). It may present as chronic plaques on the cheeks (Figure 11), blepharitis, cheilitis (perlèche; Figure 12), or as a band extending from the frontal hairline to mid-forehead. Facial lesions can be particularly difficult to treat.

Children may present with genital involvement, either alone or as part of more generalised psoriasis. Clinically, this presents as an itchy, sore and red vulva or as erythematous plaques on the scrotum, penis and perianal skin with extension into the natal cleft. A recent study has suggested that psoriasis is the most common cause of vulva itching and rashes in prepubertal girls.<sup>9</sup>

**Older children and adolescents**

Psoriasis of older children and adolescents begins to resemble typical psoriasis seen in adults. In this age group, many patients who had coexisting atopic dermatitis when they were younger will experience remission of atopic dermatitis and be left with a clinical picture of psoriasis only.

In older children and adolescents,

**PSORIASIS IN INFANTS**



**Figure 2 (top left).** Severe hyperkeratotic scalp ('cradle cap') caused by psoriasis.  
**Figure 3 (top right).** Typical psoriatic nappy rash.  
**Figure 4 (bottom left).** Persistent and severe psoriatic nappy rash with well demarcated edge.  
**Figure 5 (bottom right).** A baby with a typical elbow plaque and similar plaques on the cheeks.



## PSORIASIS IN YOUNG CHILDREN



**Figures 6a and b (top left and centre).**

Psoriatic plaques on the knee (a) and elbow (b) may be subtle or papular.

**Figure 7 (top right).** Psoriasis of the ankle.

**Figure 8 (middle left).** Infra-auricular splitting and scaling.

**Figure 9 (middle centre).** Psoriasis affecting the soles of the feet.

**Figure 10 (middle right).** Psoriasis affecting the palms of the hands.

**Figure 11 (bottom right).** Typical facial plaque of childhood psoriasis.

**Figure 12 (bottom far right).** Angular cheilitis (perlèche).

psoriasis typically presents as thickened scaly plaques with involvement of the dorsal knees (Figure 13), elbows (Figure 14), feet and hands, and scattered patches of involvement elsewhere. They may also have a red and scaly scalp. Nail involvement is common but usually minimal and may not be evident if pitting is the only sign (Figure 15). However, other nail changes can be seen in patients with more severe disease (Figure 16). Changes include lifting of the nail plate (onycholysis), discolouration ('salmon patches') and thickening (sub-ungual hyperkeratosis).

### Differential diagnosis

Other diagnoses to consider in children with suspected psoriasis include atopic dermatitis, fungal infection and discoid eczema. In babies and adolescents, seborrhoeic dermatitis is another possibility.

Atopic dermatitis usually responds very well to potent topical corticosteroids and emollients, whereas psoriasis is typically more resistant to treatment, displaying only a partial response to even the more potent topical corticosteroids and a rebound flare on cessation of treatment. Atopic dermatitis is characteristically distributed in a

different pattern to psoriasis, with involvement of the cubital and popliteal fossae, and is associated with generalised xerosis. It tends to be significantly more itchy than psoriasis and has a tendency to interrupt sleep. However, psoriasis in children may be very itchy, particularly when there is also an element of atopic dermatitis.

Tinea may mimic psoriasis of the hands and feet and may cause scalp scaling (almost always with alopecia) and scaly patches on the skin. It can be suppressed by topical corticosteroids and, like psoriasis, flare on cessation of treatment.

**PSORIASIS IN OLDER CHILDREN AND ADOLESCENTS**



**Figure 13 (top left).** Psoriatic plaques on the knees and lower legs.  
**Figure 14 (top right).** Typical elbow psoriasis.  
**Figure 15 (bottom left).** Typical nail pitting in psoriasis.  
**Figure 16 (bottom right).** Severe dystrophic nail change in psoriasis.

Discoid eczema may closely mimic psoriasis but is very itchy and randomly distributed. In some children, discoid eczema evolves into psoriasis.

‘Seborrhoeic dermatitis’ as a phenotype may evolve into psoriasis and can be the first sign of psoriasis in babies. It can be self-limiting and readily suppressed with topical corticosteroids, but if it persists beyond 1 year of age then psoriasis is a more likely diagnosis. In adolescents, seborrhoeic dermatitis resembles the typical presentation in adults, with scaly scalp, eyelids and axillae, groin rash and paranasal scale and erythema. However, it may resemble psoriasis very closely.

Zinc deficiency may closely mimic psoriasis in babies. However, this is very rare and would only be suspected where there was no response to appropriate treatment for psoriasis and in the setting of a very unwell child with failure to thrive.

**Investigations**

Psoriasis is a clinical diagnosis. Skin biopsies are not always diagnostic and are not required or justified in a child. For scenarios where the presentation is atypical, taking a fungal scraping or skin swab at the edge of the active lesion for culture may be worthwhile to rule out infection.

In a child presenting with sudden onset

guttate psoriasis (Figures 17a and b), a full blood count and C-reactive protein (CRP) measurement are indicated to rule out active infection (particularly streptococcal infection). Raised inflammatory markers and antistreptolysin-O titre (ASOT) and DNAase-B level indicate infection with *Streptococcus pyogenes*. In some children, chronic guttate psoriasis has an association with chronic ear, nose and throat infections; such patients may benefit from oral antibiotics and tonsillectomy and may require referral to an ENT specialist.<sup>10</sup>

**Approach to management**

It is important for parents and children to understand that psoriasis is a chronic condition and that it is distinct from atopic eczema. Some patients improve with time, with remission or indolent disease, but in our experience children with severe psoriasis maintain this pattern into adolescence. It is very difficult, however, to predict long-term outcome.

The Psoriasis Area and Severity Index (PASI; [www.pasitraining.com](http://www.pasitraining.com)) and the Dermatology Life Quality Index (DLQI) can be used to assess disease severity (mild, moderate or severe) and identify treatment goals.<sup>11</sup> The PASI measures the extent and intensity of psoriasis. The DLQI measures the extent to which psoriasis is affecting a patient’s life; a modified version exists for children (Children’s DLQI [CDLQI]; [www.cardiff.ac.uk/dermatology/quality-of-life/childrens-dermatology-life-quality-index-cdlqi/](http://www.cardiff.ac.uk/dermatology/quality-of-life/childrens-dermatology-life-quality-index-cdlqi/)). A PASI score of more than 10 indicates moderate to severe psoriasis. A CDLQI score of more than 10 indicates a moderate to severe effect on a child’s life.<sup>11</sup>

A diagnosis of psoriasis in a child can be devastating for parents if they conceptualise it to be an incurable condition. It can also induce feelings of guilt in a parent who is also a sufferer. Part of management involves addressing these feelings and providing reassurance about the relatively good prognosis of this condition in childhood, despite the fact that there are no good quality data on long-term outcomes.

### Topical treatment

Psoriasis in children is generally a mild disease compared with psoriasis in adults, and most cases can be managed successfully with regular topical treatment. It is important that parents be made aware that good control of psoriasis is very dependent on regular treatment.

For children with psoriasis, the initial treatment of flares is focused on the use of basic emollients and topical corticosteroids, with the choice depending on the severity of the flare. For facial plaques, a mild to moderate topical corticosteroid could be suitable (e.g. hydrocortisone 1% or methylprednisolone aceponate 0.1%). For plaques on the body, a moderate potent topical corticosteroid is required. Betamethasone dipropionate in combination with calcipotriol, which is more effective for psoriasis than either component alone, is particularly helpful and can be applied once or twice a day. Scalp psoriasis can initially be treated with a topical corticosteroid lotion, such as methylprednisolone aceponate 0.1% or betamethasone dipropionate/calcipotriol gel. Corticosteroid lotions that are alcohol-based (e.g. mometasone furoate 0.1% or betamethasone dipropionate 0.05%) usually cause stinging and are poorly tolerated in children.

As the severity of the flare reduces and there is less inflammation and excoriation, an attempt should be made to introduce maintenance therapy with tar preparations. Treatment with liquor picis carbonis (LPC), in either aqueous cream or emulsifying ointment, is generally well tolerated; however, some children find that it stings and others do not tolerate the odour. A typical regimen would include 2% LPC for the face and 4% LPC for the body, applied once daily after bathing.

For maintenance treatment of scalp psoriasis, a tar-based shampoo can be recommended. Instructions should be given to rub the product into the scalp and leave it on for five to 10 minutes before rinsing out and then washing the hair as normal. Many patients use such products



Figures 17a and b. Guttate psoriasis.

as shampoo to wash hair rather than as a scalp treatment, and it is important to explain correct application. The treatment is applied daily until the scalp is normal and then once or twice a week as needed.

### Phototherapy

For children with patches of psoriasis that are resistant to treatment, narrow-band UVB phototherapy is beneficial and safe.<sup>12,13</sup> Phototherapy is especially useful for children with psoriasis that covers a large surface area of the body and for areas that are notoriously difficult to treat, such as the hands and feet. Even small children can receive phototherapy, although its administration sometimes requires patience on the part of the practitioner.

### Systemic medications

Systemic medications are required for the small group of children who have psoriasis that is severe and widespread, and specialist referral is recommended in this situation. Acitretin and methotrexate are commonly used – these medications are effective and have a good safety profile in children. The biological agent etanercept has been approved for use in children over 4 years of age with difficult to control psoriasis and has shown positive results.<sup>14</sup> Referral to a dermatologist is recommended.

### Comorbidities

As a result of extensive studies required for the introduction of biological agents, psoriasis in adults has been found to be a multisystem disorder that has associations with autoimmune disease, mental health disorders, cardiovascular disease and malignancies. Fortunately, psoriasis in children is not commonly associated with other medical conditions, possibly because of the inadequate duration to cause the systemic effects that result from a chronic inflammatory condition.

There is, however, increasing evidence that children with psoriasis are at greater risk of cardiovascular disease, obesity and metabolic syndrome later in life.<sup>5-7</sup> This presents an opportunity for preventive action to reduce future health risks. Older children and adolescents with psoriasis are almost twice as likely to be overweight or obese, and psoriasis severity has been correlated with an increased risk of being overweight.<sup>5-7</sup> Children can be identified as being overweight through a sex- and age-adjusted BMI percentile or height-to-weight ratio.

The waist-to-height ratio has been proposed as a simpler measure for identifying children who have increased central adiposity, with a waist circumference more than half of the height in a child or adolescent being highly specific for increased

cardiometabolic risk.<sup>15-18</sup> However, the waist-to-height ratio has not been validated in children under the age of 5 years, so it should not be used in this age group.

For children with psoriasis who are over the age of 10 years and who are found on screening to be at cardiometabolic risk, it would be appropriate to perform metabolic screening (including fasting lipid and blood sugar levels). All parents of children with psoriasis should be educated about the risks of obesity and the importance of a healthy lifestyle.

### Psoriatic arthritis

Although it has been reported, true psoriatic arthritis in children has a very low incidence, about 1%.<sup>19,20</sup> The clinical course of psoriatic arthritis in children is unpredictable, and the majority of mild cases can be treated with an NSAID such as naproxen or ibuprofen. It is important to educate parents of affected children about the potential chronic nature of psoriatic arthritis. Early assessment by a rheumatologist is ideal to achieve optimal outcomes.

### Conclusion

Psoriasis in children is a chronic skin condition that can be managed well if recognised and treated specifically. The disease is less likely to be severe in children and is more responsive to treatment. Accurate diagnosis and appropriate management are essential to achieving adequate disease control. The involvement of a dermatologist is recommended for children with psoriasis that is severe or hard to treat. MT

### References

A list of references is included in the website version ([www.medicinetoday.com.au](http://www.medicinetoday.com.au)) and the iPad app version of this article.

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