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# Infantile Psoriasis

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*Psoriasis is a common inherited papulosquamous dermatosis that may be a diagnostic dilemma, particularly in infants and children. The treatment of children with psoriasis should be handled with caution and tailored according to the child's age, as well as to the extent, distribution, and type of psoriasis.*

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**P**soriasis is a common inherited papulosquamous dermatosis that often represents a diagnostic dilemma in infants.<sup>1-3</sup> The diagnosis may be challenging if the disease is mild or if the presentation is atypical.<sup>4</sup>

## Pathogenesis

Both genetic and environmental factors interact to precipitate the development of psoriasis.<sup>5</sup> A family history of psoriasis is seen in 25% to 71% of patients with the disease.<sup>2,6-9</sup> Generally, an earlier onset of the disease correlates with familial frequency<sup>7</sup>; the risk for first-degree relatives of an isolated case is at least 10%, and children of 2 parents with psoriasis have approximately a 50% risk of developing the disease.<sup>10</sup>

Positive reactions for HLA-B13, HLA-B17, HLA-B37, HLA-Cw6, and HLA-DR7 are common in patients with psoriasis, but these antigens are represented differently depending on age of onset and clinical features.<sup>8,11,12</sup> Psoriasis has been described in twins. The application of microsatellite techniques has identified distinct positions on

several chromosomes at which putative psoriasis genes may be located. Disease susceptibility genes are thought to be present on chromosomes 4q, 6p, 16q, and 20p. Moreover, on chromosome 1q, genes regulating epidermal differentiation have been identified. Linkage to this area has been proposed. Furthermore, psoriasis gene loci on chromosomes 2, 8, and 20 have been suggested.<sup>12</sup>

Physical injury to the skin (Köbner phenomenon), low humidity,<sup>5</sup> cold weather, and stress may represent important triggering factors.<sup>9</sup> Worsening of psoriasis following stress was observed in 50% of 223 pediatric patients in one survey and in 90% of 245 children in another.<sup>9,13</sup> In addition, in young children, viral or bacterial infection (particularly due to *Streptococcus*) may be a common initiating and maintaining factor, especially for the development of acute guttate psoriasis.<sup>14,15</sup>

In childhood, psoriasis may be induced by some medications, the most common being antimalarials and systemic corticosteroids. Psoriasis also may be induced or exacerbated by the cessation of systemic corticosteroids.<sup>16</sup>

## Clinical Features

All forms of psoriasis that are recognized in adults are encountered in childhood (plaque, guttate, erythrodermic, and pustular). The most frequently observed variants of psoriasis in children are the plaque type (especially localized on the flexural areas) and guttate psoriasis, followed by juvenile psoriatic arthritis.<sup>4,5</sup> Pustular psoriasis, erythrodermic psoriasis, and congenital psoriasis are rare.<sup>5</sup>

Plaque psoriasis appears as a red papule with a silvery white scale; the lesions enlarge, forming a thick, silvery scaling plaque of variable size. Pinpoint areas of bleeding on the surface are seen when the micaceous scale is removed (Auspitz sign). Lesions are usually symmetrically located on the extensor surfaces (elbows, knees, and lumbosacral areas) but also may involve the intertriginous

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regions (groin, perineum, and axillae) and the umbilical area (flexural psoriasis). The face and ears are often involved, though rarely in adults.<sup>5</sup> The palms, soles, and scalp also are frequently involved. Psoriasis may occur exclusively on the scalp for many years. Thick, silvery scaling plaques start at the hairline and may diffusely involve the scalp, especially the nape of the neck. A variant of psoriasis of the scalp, known as pityriasis amiantacea, refers to a firmly adherent or asbestoslike scale associated with minimal erythema. Mucous membrane involvement is rare in childhood psoriasis.

In children, severe nail changes are uncommon and occur particularly in long-standing chronic psoriasis. Nyfors and Lemholt<sup>13</sup> reported nail changes in only 14% of childhood psoriasis cases; another study reported a 40% incidence of changes, with pitting as the most common feature.<sup>17</sup>

Guttate psoriasis appears abruptly, often a week after an episode of streptococcal pharyngitis. An association with perianal streptococcal dermatitis has been described.<sup>18</sup> The lesions vary from 2 mm to 1 cm in diameter, are round and slightly oval, and have characteristic overlying silvery scales. The lesions are scattered more or less symmetrically over the body and are more frequently located on the trunk and proximal parts of the extremities. Guttate psoriasis usually persists for 3 to 4 months and resolves spontaneously.

Psoriatic arthritis is an inflammatory rheumatoid factor–negative arthritis associated with psoriasis.<sup>19</sup> The peak age of onset for arthritis is around puberty. In up to 50% of patients, onset of arthritis precedes the onset of skin disorder. Joint involvement is often asymmetric and may be monoarticular or polyarticular. The long-term prognosis is usually good, with little or no permanent joint deformity. In a study of 112 children with psoriasis, only one child demonstrated psoriatic arthropathy.<sup>17</sup>

In infantile psoriasis, the diaper area is commonly involved, probably related to a Köbner response due to constant maceration. Clinicians should be aware that psoriatic plaques usually first appear in the diaper area in infants (napkin psoriasis) and often lack scale, even when they are inside the moist diaper region. Thus, initially seen as widespread scattered small patches on the trunk and



Figure 1. Napkin psoriasis.

extremities, infantile psoriasis may have no scale<sup>1,2</sup> (Figure 1). It is only weeks later, when scaling white papules and plaques become apparent symmetrically distributed on the body, that the clinician can develop a high degree of confidence in the diagnosis of infantile psoriasis (Figures 2 and 3).

A 2001 survey by Kassay and associates<sup>1</sup> at Children's Hospital in Budapest, Hungary, emphasized the above points in evaluating pediatric patients with psoriasis. Napkin psoriasis was the most common form, representing 80% of infant patients. Clinically, the onset was usually characterized by sharply demarcated red, shiny, non-scaly papules in the perianal and perigenital area. Later, as the psoriasis spread to the entire body, confluent, erythematous, still non-scaly patches were present; weeks later, scaling white papules and plaques became apparent symmetrically distributed on the body. Rarely, psoriasis was pustular or erythrodermic in infants, with the former sometimes evolving into the latter.<sup>1</sup>

The presence of vulvitis or balanitis with a glazed erythema and sometimes fissures, often without typical scale, also may be an initial sign of psoriasis.<sup>20</sup> Additionally, a perianal pruritus may be present. In 2001, a review of 1262 cases of childhood psoriasis showed that of 345 children younger than 2 years, the most common form of psoriasis was diaper rash with dissemination.<sup>2</sup>

Other typical features have been described,<sup>8,14,21,22</sup> including early age of onset, more facial involvement, and a greater incidence of the Köbner phenomenon. In fact, it was noted that facial



**Figure 2.** Psoriatic plaque in the axilla of a 7-year-old boy.



**Figure 3.** Typical psoriatic patch in the pubic area of a 5-year-old boy.

plaques are one of the typical features of psoriatic diaper rash with dissemination<sup>2</sup> (Figure 4). Rarely, psoriasis also can occur in a nevoid form following Blaschko lines or can Köbnerize and become superimposed on an epidermal nevus.<sup>23</sup>

### Differential Diagnosis

The clinical differential diagnosis of infantile psoriasis may be troublesome.<sup>24</sup> Differential diagnosis most frequently includes seborrheic dermatitis; candidiasis; atopic dermatitis; nummular dermatitis; pityriasis rubra pilaris; and, less frequently, pityriasis lichenoides chronica, pityriasis rosea, and tinea corporis.

Seborrheic dermatitis in children only occurs during infancy and puberty. It usually begins on the scalp as cradle cap with yellowish or whitish, greasy, thick, adherent, and often confluent scales. The scales also may be larger, dry, and psoriasiform or diffuse and fine. Facial involvement is more common in seborrheic dermatitis than in psoriasis.

Candidiasis localized in the napkin area is characterized by sharply margined, intensely red scaly plaques with satellite papules and pustules.

Atopic dermatitis may affect the entire body surface, including the scalp. Severe pruritus is a cardinal symptom. Atopic dermatitis, especially when nummular in configuration, can closely mimic psoriasis. Routine history and physical examination distinguish atopic dermatitis from psoriasis in most cases. However, some patients who carry the diagnosis of nummular eczema or chronic hand dermatitis develop typical psoriasis after a number of years. Additionally, some children with psoriasis may develop lesions with eczematous features.

Nummular dermatitis is characterized by an acute eruption of well-demarcated, 1- to 5-cm, coin-shaped patches or plaques resulting from the confluence and extension of minute vesicles and papules. The acute phase consists of edematous, bright red, oozing, crusted patches of papules or vesicles on an erythematous base. Over 1 to 2 weeks, the eruptions progress toward a chronic phase, with less vesicular red scaly disks. Psoriasis is characterized by drier and scaly lesions without vesicles.

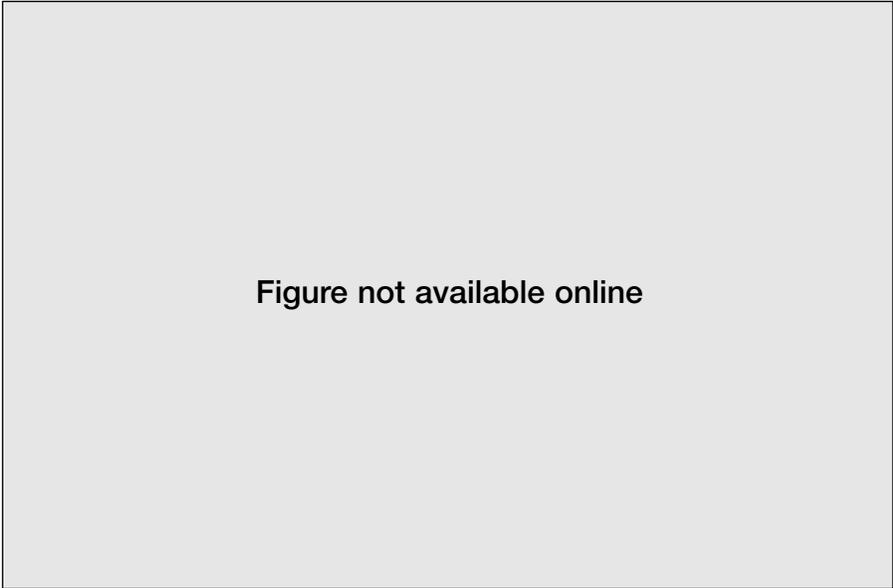


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**Figure 4.** A 3-month-old boy with diffuse psoriasis that began in the diaper area.

Psoriasis may resemble pityriasis rubra pilaris in both its localized and generalized forms. The characteristic sites of predilection are similar (ie, scalp, acral prominences, palms, soles). Some aspects of psoriasis, such as gluteal pinking, distal onycholysis, and linear nail pits, are not seen in pityriasis rubra pilaris. Conversely, skip areas are suggestive of pityriasis rubra pilaris in erythrodermic forms. The keratoderma of pityriasis rubra pilaris is commonly thicker than that of psoriasis. Histopathologically, psoriasis has more extensive interfollicular parakeratosis, elongation of rete ridges, and epidermal exocytosis of neutrophils. Parafollicular parakeratosis is a useful histopathologic sign of pityriasis rubra pilaris.

There are other disorders that may occasionally resemble infantile psoriasis. Pityriasis lichenoides chronica may resemble guttate psoriasis, though the latter may easily be differentiated by the monomorphism of the lesions. Pityriasis rosea also may be mistaken for psoriasis, especially guttate psoriasis. Pityriasis rosea appears as a generalized rash and consists of many smaller but similar lesions that are oval and pink with fine scaling mainly around the periphery. Tinea corporis can be distinguished by the demonstration of fungal elements revealed by microscopic examination. Rarely, early onset psoriasis with extensive involvement may be confused with erythroderma, which is characterized by bright red, somewhat thickened skin with extensive scaling and intense itching. Nevroid psoriasis is usually asymptomatic and typically responds to antipsoriatic treatment. This form must be distinguished from inflammatory linear verrucous epidermal nevi, non-inflammatory epidermal nevi, lichen striatus, and

congenital hemidysplasia with ichthyosis erythroderma and limb defects (CHILD) syndrome.<sup>23</sup>

### Therapeutic Considerations

The treatment of children with psoriasis should be handled with caution and tailored according to the child's age, as well as to the extent, distribution, and type of psoriasis.<sup>4</sup> Topical therapy is a good choice for infantile psoriasis.<sup>1,5,19</sup> Moisturizers and emollients may be helpful. Local therapy with mild to moderate corticosteroids, coal tar preparations, anthralin (dithranol), calcipotriol, calcipotriene, and tacalcitol are often effective.<sup>25,26</sup> Coal tar preparations may be better than topical steroids; however, they should be diluted when used in infants to avoid irritancy, especially on the face and intertriginous regions.<sup>20</sup> Mild keratolytics are effective treatments for scalp involvement, though use of keratolytics containing salicylic acid should be guarded, especially if used in a large amount to treat extensive areas.<sup>27</sup> Ten fatal cases of percutaneous salicylate intoxication have been reported in children younger than 3 years with psoriasis.<sup>28</sup> Acute guttate psoriasis associated with streptococcal infection should be treated with antibiotic therapy and possibly with a tonsillectomy.<sup>29</sup> However, using antibiotic therapy and tonsillectomy to treat psoriasis is controversial because of the lack of well-designed, randomized, placebo-controlled trials.<sup>30</sup>

Systemic therapy is required in a minority of patients, usually those with resistant or erythrodermic disease, pustular psoriasis, or psoriatic arthritis.<sup>4</sup> Severe pustular or erythrodermic psoriasis may be treated with systemic retinoids.<sup>1,20</sup> However, the

potential effect on bone growth limits their long-term use in children. Phototherapy and a psoralen-UVA bath may be indicated for selected children who do not respond to other treatments.<sup>31</sup> Phototherapy with UVB may be combined with topical agents.<sup>4</sup> Cyclosporine and methotrexate may be used in children as a crisis intervention, but these medications are not indicated for routine use because there are few data regarding their use in childhood psoriasis. Published data on calcineurin inhibitors in children with psoriasis is scanty. An impressive and almost immediate effect with topical tacrolimus has been reported in a 6-year-old girl with extensive psoriasis and severe facial involvement.<sup>32</sup>

## Conclusion

Psoriasis in infants may be a diagnostic and therapeutic challenge. It is most often seen in plaque form, but guttate psoriasis and juvenile psoriatic arthritis may occur. Fortunately, pustular and erythrodermic forms are rare. Because the scalp is most frequently involved, it must be distinguished from seborrheic dermatitis. Treatment should be individualized to the child's age, as well as to the extent, distribution, and type of psoriasis.

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