

# Psoriasis in Infancy: Therapy With Calcipotriene Ointment

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## GOAL

To better understand the symptoms and types of psoriasis in infancy

## OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Name the various types of psoriasis that present in infants.
2. Describe the clinical manifestations of psoriasis types in infants.
3. Discuss treatment modalities for psoriasis in infancy.

**CME** Test on page 338.

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*Psoriasis in infancy is often more therapeutically challenging than atopic and seborrheic dermatitis. The generalized nature of psoriasis and the*

*intensity of inflammation often reduce the efficacy of topical corticosteroids. Furthermore, involvement of intertriginous skin and the presence of scalp disease limit the potency of the topical steroids that can be prescribed. We report on an infant treated with topical calcipotriene for infantile psoriasis who experienced greater benefit than he had with standard corticosteroid medications. Laboratory testing for calcium metabolism was normal during the course of therapy. We conclude that calcipotriene can be a safe and effective therapy for psoriasis in early infancy.*

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Children and infants may present with psoriasis vulgaris or pustular psoriasis.<sup>1</sup> Infantile psoriasis vulgaris generally presents as plaque-type disease, erythroderma, nail psoriasis, pityriasis amiantacea, napkin dermatitis, or pustular psoriasis. Pustular psoriasis refers to a recalcitrant condition in which sterile pustules form within erythematous, scaly psoriasiform lesions.<sup>2</sup>

Both adults and children with psoriasis have been treated with topical corticosteroids, psoralen plus UVA (PUVA), UVB, topical and systemic retinoids, methotrexate, and tar.<sup>3</sup> In the past 10 years, topical calcipotriene has been shown to be effective in the therapy of psoriasis in adults.<sup>4,5</sup> Traditionally, first-line treatments are conservative for children and infants with psoriasis, generally consisting of mild topical corticosteroids and intense use of emollients. Systemic treatments (methotrexate and oral retinoids) have been described in younger patients who do not respond or who are refractory to conservative therapies; however, these therapies have side effects.<sup>6</sup>

Calcipotriene has been shown to be effective in children with psoriasis<sup>3,7</sup> but not in infants younger than 6 months. We describe an infant, 2 months of age, who was treated with calcipotriene with good results and minimal side effects.

### Case Report

Our patient is a 2-year-old Hispanic boy who was born by normal spontaneous vaginal delivery at 27 weeks to a healthy 19-year-old mother. Due to perinatal asphyxia, the child developed grade IV intracranial hemorrhages and consequent progressive microcephaly. The child developed seizures at 2 weeks of age and was placed on phenobarbital, with good seizure control.

At 2 months of age, the patient presented with a generalized erythematous eruption involving the scalp; face; chest; back; extremities; and the intertriginous areas, including the diaper region (Figure). This eruption got progressively more hyperkeratotic and lichenified over the next month. No pustules were noted.

Results from a biopsy of the abdomen demonstrated psoriasiform epidermal hyperplasia and neutrophils in the stratum corneum. Based on the clinical appearance and biopsy, the patient was diagnosed as having erythrodermic psoriasis of infancy. A battery of immunologic testing, including complement studies, T-cell profiles, and immunoglobulin assays, were within normal limits.

After one month of topical corticosteroid application with little results, a trial of twice daily application of topical calcipotriene ointment was begun.

After one month, the child was 90% clear. For the first month, the child required more than 200 g of calcipotriene; however, the calcium, organic phosphate, albumin, and parathyroid hormone studies were performed and were within normal limits. The child continued to improve on this therapy over the following 2 months and was 100% clear at the age of 7 months, at which time calcipotriene ointment was discontinued.

### Comment

Psoriasis vulgaris is a papulosquamous disorder that may present in infancy. Infantile psoriasis may present with plaque-type, erythrodermic, pustular, nail psoriasis, pityriasis amiantacea, or napkin dermatitis. This entity should be considered in the differential diagnosis of diaper dermatitis. Beylot et al<sup>8</sup> strongly felt that napkin psoriasis was an important precursor to the development of classical psoriasis. A 1975 Copenhagen study<sup>9</sup> showed that a significant number of the 245 children included had exhibited the disorder in infancy. After reexamining 9 of these children 6 to 13 years after they were diagnosed with infantile psoriasis, Farber et al<sup>10</sup> stated that they believed this disorder continued through childhood. Their study also contradicted the belief that the earlier psoriasis develops, the worse the prognosis. Seven of their 9 patients had recurrent lesions, with 6 exhibiting mild progression and only one needing regular visits to the dermatologist. The remaining two stayed clear of lesions once their initial eruption resolved.<sup>10</sup>

Infantile psoriasis often has a benign course with many patients going into spontaneous remission. Initial treatments should consist of bed rest, bland local therapy, maintenance of adequate hydration, avoidance of excessive heat loss, and topical steroids.<sup>2</sup> Due to the risk of adverse side effects, topical steroids are generally used for brief periods on limited areas. McGibbon<sup>11</sup> reported on a 13-month-old patient exhibiting adrenal suppression after treatment with topical corticosteroids without occlusion. This infant's diurnal hydrocortisone levels returned to normal after dilution of the steroids.<sup>11</sup>

Second-line treatments utilized in serious conditions include ultraviolet light, PUVA, dapsone, sulfapyridine, systemic steroids, retinoids, and antimetabolites. Although systemic steroids are often initially beneficial, there is a high percentage of rebound and a risk of von Zumbusch disease with tapering or discontinuation.<sup>12</sup> McGibbon<sup>11</sup> initiated methotrexate therapy for his 13-month-old patient with von Zumbusch-type psoriasis after numerous cycles of scaling, pustulation, and erythema with



Figure not available online

The patient prior to 2 months of therapy with calcipotriene.

fever and toxicity. The patient showed improvement within a few days but relapsed, and increased doses of the drug did not have the same therapeutic effects. Beylot et al<sup>8</sup> and Judge<sup>6</sup> also reported improvement with methotrexate.

Consideration of side-effect profiles is crucial when deciding what therapy to initiate in a younger patient. Judge et al<sup>6</sup> suggested that methotrexate was a better choice than prednisolone for children needing systemic therapy. Beylot and his associates<sup>8</sup> reported a more benign course in childhood psoriasis guttata if systemic corticosteroids and methotrexate were not used.

Calcipotriene is a synthetic vitamin D<sub>3</sub> analogue that has been approved for the treatment of plaque-type psoriasis in adults and is available as a cream or ointment. Calcipotriene decreases epidermal proliferation in a dose-dependent manner, promotes epidermal keratinocytes to undergo differentiation, and has anti-inflammatory effects.<sup>3,13</sup> It is these properties that may make calcipotriene effective in treating other hyperproliferative disorders in addition to plaque psoriasis.<sup>13</sup> Side effects of this drug include cutaneous irritation and hypercalcemia; the later may be prevented if the dose is kept below 100 g/wk in adults.<sup>3</sup> Calcipotriene has approximately 200 times less potency in its effect on systemic calcium metabolism than 1,25-dihydroxy vitamin D<sub>3</sub>.<sup>4</sup>

There have been several reports of the use of calcipotriene for different forms of psoriasis, including intertriginous, nail, palmoplantar, and

pustular psoriasis. Kienbaum and associates<sup>14</sup> showed 10 out of 12 patients with intertriginous psoriasis responsive to twice daily application of calcipotriene. Five of their patients responded within 3 weeks and the other 5 within 6 weeks.<sup>14</sup> One study reported success with calcipotriene in place of topical corticosteroids for maintenance of mild-to-moderate psoriasis.<sup>15</sup>

Three women treated with 15 to 39 g/d of calcipotriene ointment, divided into 2 daily applications, showed clearing of their pustular psoriasis without elevated serum calcium levels.<sup>11,12</sup> Georgala et al<sup>16</sup> published a case report suggesting that calcipotriene may have precipitated pustular psoriasis.

Calcipotriene has been used successfully in childhood psoriasis. Calcipotriene ointment was used twice daily in a double-blinded, placebo-controlled trial of 77 children with childhood psoriasis.<sup>7</sup> The children in this study were 2 to 14 years of age with less than 30% body surface area affected. More than 60% of patients showed a marked improvement after 8 weeks. Choi et al<sup>3</sup> also have reported a 6-month-old patient with psoriasis who had a rapid response to twice daily calcipotriene. These authors initiated treatment with calcipotriene and emollients after the patient had no improvement with topical steroids and oral antihistamines.<sup>3</sup>

Our own patients demonstrated good response with no side effects. Although the drug was used over a large body surface area, including the scalp, calcium and phosphate metabolism was unaffected in these infants. We propose that the thinner

stratum corneum in infancy may improve the efficacy of calcipotriene as an anti-inflammatory agent. Despite the lack of side effects in our patients, it would be prudent to monitor calcium and phosphate metabolism in infants with widespread disease.

### Conclusion

We have demonstrated that calcipotriene ointment may be used safely and efficaciously in infants with papulosquamous disorders. Calcipotriene should be considered a good alternative to topical corticosteroids and oral agents in the treatment of papulosquamous disorders of infancy.

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