

# Management of Pediatric Nail Psoriasis

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## PRACTICE POINTS

- No clinical trials assessing the management of pediatric nail psoriasis currently are present in the literature. Limited information on the treatment of pediatric nail psoriasis exists, mostly in the form of small case series and case reports.
- As more agents are approved for on-label use in plaque psoriasis in pediatric patients, gradually more real-life data on their efficacy for nail psoriasis in children are expected to come to light.

Nail psoriasis is a condition that can affect children and adolescents. It often is refractory to treatment. Data on its management in the pediatric population are limited. This article aims to summarize existing information—small case series and case reports—on the successful therapeutic approaches for nail psoriasis in children. As more agents are approved for on-label use in plaque psoriasis in pediatric patients, gradually more real-life data on their efficacy for nail psoriasis in children are expected to come to light.

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**P**ediatric nail psoriasis is a condition that has not been extensively studied. The prevalence of nail alterations in pediatric patients with psoriasis varies among different studies, ranging from 17% to 39.2%.<sup>1</sup> Nail pitting, onycholysis associated with subungual hyperkeratosis, paronychia, and pachyonychia are the most frequent features of psoriatic nail involvement in children.<sup>2,3</sup> The management of nail psoriasis in children and adolescents is critical due to the quality-of-life impact,

from potential functional impairment issues to the obvious cosmetic problems, which can aggravate the psychologic distress and social embarrassment of patients with psoriasis. Despite the emergence of modern potent systemic agents to treat chronic plaque psoriasis, nail psoriasis often is refractory to treatment.<sup>4</sup> Coupled with the limited on-label options for psoriasis treatment in children, the management of nail psoriasis in this special patient group constitutes an even greater therapeutic challenge. This report aims to summarize the limited existing data on the successful management of nail psoriasis in the pediatric population.

## Reviewing the Literature on Nail Psoriasis

We conducted a search of PubMed articles indexed for MEDLINE, Embase, and Scopus using the following Medical Subject Headings key terms: *nail psoriasis* and *children, juvenile, pediatric*. Additional articles were identified from the reference lists of the retrieved articles and citations. Our search included reports in the English language published from 2000 to 2019. The selection process included the following 2 steps: screening of the titles and abstracts, followed by evaluation of the selected full-text articles.

## Topical Treatments for Nail Psoriasis

Because most systemic antipsoriatic treatments that can be administered in adult patients have not yet been granted an official license for administration in children, topical treatments are considered by many physicians as the preferred first-line therapy for psoriatic nail involvement in pediatric patients.<sup>5,6</sup> However, only scarce data are available in the literature concerning the successful use of local agents in pediatric patients with psoriasis.

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The eFigure is available in the Appendix online at [www.mdedge.com/dermatology](http://www.mdedge.com/dermatology).

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The main limitation of local treatments relates mostly to their impaired penetration into the affected area (nails). To optimize drug penetration, some authors suggest the use of potent keratolytic topical preparations to reduce the nail volume and facilitate drug absorption.<sup>7</sup> A popular suggestion is trimming the onycholytic nail plate followed by 40% urea avulsion to treat subungual hyperkeratosis<sup>8</sup> or simply the use of occlusive 40% urea in petroleum jelly.<sup>9</sup> Other approaches include clipping the onycholytic nail over the diseased nail bed or processing the nail plate through grinding or even drilling holes with the use of mechanical burrs or ablative lasers to enhance the penetration of the topical agent.<sup>7</sup>

A frequent approach in pediatric patients is clipping the detached nails combined with daily application of calcipotriene (calcipotriol) and steroids, such as betamethasone dipropionate.<sup>5,8</sup> Reports on the use of regimens with clobetasol propionate ointment 0.05% under occlusion, with or without the concomitant use of calcipotriol solution 0.005%, also are present in the literature but not always with satisfactory results.<sup>10,11</sup> Another successfully administered topical steroid is mometasone furoate cream 0.1%.<sup>12</sup> Although the use of intralesional triamcinolone acetonide also has demonstrated encouraging outcomes in isolated reports,<sup>13</sup> associated adverse events, such as pain and hematomas, can result in tolerability issues for pediatric patients.<sup>7</sup>

Piraccini et al<sup>14</sup> described the case of an 8-year-old patient with pustular nail psoriasis who showed improvement within 3 to 6 months of treatment with topical calcipotriol 5 µg/g as monotherapy applied to the nail and periungual tissues twice daily. Another approach, described by Diluvio et al,<sup>15</sup> is the use of tazarotene gel 0.05% applied once daily to the affected nail plates, nail folds, and periungual skin without occlusion. In a 6-year-old patient with isolated nail psoriasis, this treatment regimen demonstrated notable improvement within 8 weeks.<sup>15</sup>

### Systemic Treatments for Nail Psoriasis

Data on the successful administration of systemic agents in pediatric patients also are extremely scarce. Due to the lack of clinical trials, everyday practice is mostly based on isolated case series and case reports.

**Methotrexate**—Lee<sup>11</sup> described the case of an 11-year-old girl with severe, symptomatic, 20-nail psoriatic onychodystrophy who showed a complete response to oral methotrexate 5 mg/wk after topical clobetasol propionate and calcipotriol failed. Improvement was seen as early as 4 weeks after therapy initiation, and complete resolution of the lesions was documented after 9 and 13 months of methotrexate therapy for the fingers and toes, respectively.<sup>11</sup> The successful use of methotrexate in the improvement of psoriatic nail dystrophy in a pediatric patient also was documented by Teran et al.<sup>16</sup> In this case, a 9-year-old girl with erythrodermic psoriasis, psoriatic arthritis, and severe onychodystrophy showed notable amelioration of all psoriatic manifestations, including the

nail findings, with systemic methotrexate therapy (dose not specified).<sup>16</sup> Notably, the authors reported that the improvement of onychodystrophy occurred with considerable delay compared to the other psoriatic lesions,<sup>16</sup> indicating the already-known refractoriness of nail psoriasis to the various therapeutic attempts.<sup>9-15</sup>

**Acitretin**—Another agent that has been linked with partial improvement of acrodermatitis continua of Hallopeau (ACH)-associated onychodystrophy is acitretin. In a case series of 15 pediatric patients with pustular psoriasis, a 5-year-old boy with severe nail involvement presented with partial amelioration of nail changes with acitretin within the first 6 weeks of treatment using the following regimen: initial dosage of 0.8 mg/kg/d for 6 weeks, followed by 0.3 mg/kg/d for 4 weeks.<sup>17</sup>

**Biologics**—The emerging use of biologics in pediatric psoriasis also has brought important advances in the successful management of nail psoriasis in children and adolescents.<sup>18-21</sup> Wells et al<sup>18</sup> presented the case of an 8-year-old girl with nail psoriasis, psoriatic arthritis, and plaque psoriasis who showed complete resolution of all psoriatic manifestations, including nail involvement, within 3 months of treatment with secukinumab 150 mg subcutaneously every 4 weeks. Prior failed treatments included various systemic agents (ie, subcutaneous methotrexate 20 mg/m<sup>2</sup>, etanercept 0.8 mg/kg weekly, adalimumab 40 mg every 2 weeks) as well as topical agents (ie, urea, tazarotene, corticosteroids) and intralesional triamcinolone.<sup>18</sup>

Infliximab also has been successfully used for pediatric nail psoriasis. Watabe et al<sup>19</sup> presented the case of an 8-year-old girl with psoriatic onychodystrophy in addition to psoriatic onycho-pachydermo-periostitis. Prior therapy with adalimumab 20 mg every other week combined with methotrexate 10 mg weekly failed. She experienced notable amelioration of the nail dystrophy within 3 months of using a combination of infliximab and methotrexate (infliximab 5 mg/kg intravenously on weeks 0, 2, and 6, and every 8 weeks thereafter; methotrexate 10 mg/wk).<sup>19</sup>

Cases in which infliximab has resulted in rapid yet only transient restoration of psoriatic onychodystrophy also are present in the literature. Pereira et al<sup>20</sup> reported that a 3-year-old patient with severe 20-digit onychodystrophy in addition to pustular psoriasis had complete resolution of nail lesions within 2 weeks of treatment with infliximab (5 mg/kg at weeks 0, 2, and 6, and then every 7 weeks thereafter), which was sustained over the course of 1 year. The therapy had to be discontinued because of exacerbation of the cutaneous symptoms; thereafter, etanercept was initiated. Although the patient noted major improvement of all skin lesions under etanercept, only moderate amelioration of the psoriatic nail lesions was demonstrated.<sup>20</sup>

Dini et al<sup>21</sup> described a 9-year-old girl with severe ACH-associated psoriatic onychodystrophy who showed complete clearance of all lesions within 8 weeks of treatment with adalimumab (initially 80 mg, followed by

40 mg after 1 week and then 40 mg every other week). Prior treatment with potent topical corticosteroids, cyclosporine (3 mg/kg/d for 6 months), and etanercept (0.4 mg/kg twice weekly for 3 months) was ineffective.<sup>21</sup>

**Phototherapy**—Other systemic agents with reported satisfactory outcomes in the treatment of psoriatic onychodystrophy include thalidomide combined with UVB phototherapy. Kiszewski et al<sup>22</sup> described a 2-year-old patient with ACH and severe 19-digit onychodystrophy. Prior failed therapies included occluded clobetasol ointment 0.05%, occluded pimecrolimus 0.1%, and systemic methotrexate, while systemic acitretin (0.8 mg/kg/d) resulted in elevated cholesterol levels and therefore had to be interrupted. Improvement was seen 2 months after the initiation of a combined broadband UVB and thalidomide (50 mg/d) treatment, with no documented relapses after discontinuation of therapy.<sup>22</sup>

Narrowband UVB (311 nm) also has been used as monotherapy for ACH-associated onychodystrophy, as demonstrated by Bordignon et al.<sup>23</sup> They reported a 9-year-old patient who showed partial improvement of isolated onychodystrophy of the fourth nail plate of the left hand after 36 sessions of narrowband UVB using a 311-nm filtering handpiece with a square spot size of 19×19 mm.<sup>23</sup>

## Conclusion

Nail psoriasis constitutes a type of psoriasis that is not only refractory to most treatments but is accompanied by substantial psychological and occasionally functional burden for the affected individuals.<sup>24</sup> Data concerning therapeutic options in the pediatric population are extremely limited, and therefore the everyday practice often involves administration of off-label medications, which can constitute a dilemma for many physicians, especially for safety.<sup>10</sup> We suggest a simple therapeutic algorithm for the management of pediatric nail psoriasis based on the summarized data that are currently available in the literature. This algorithm is shown in the eFigure.

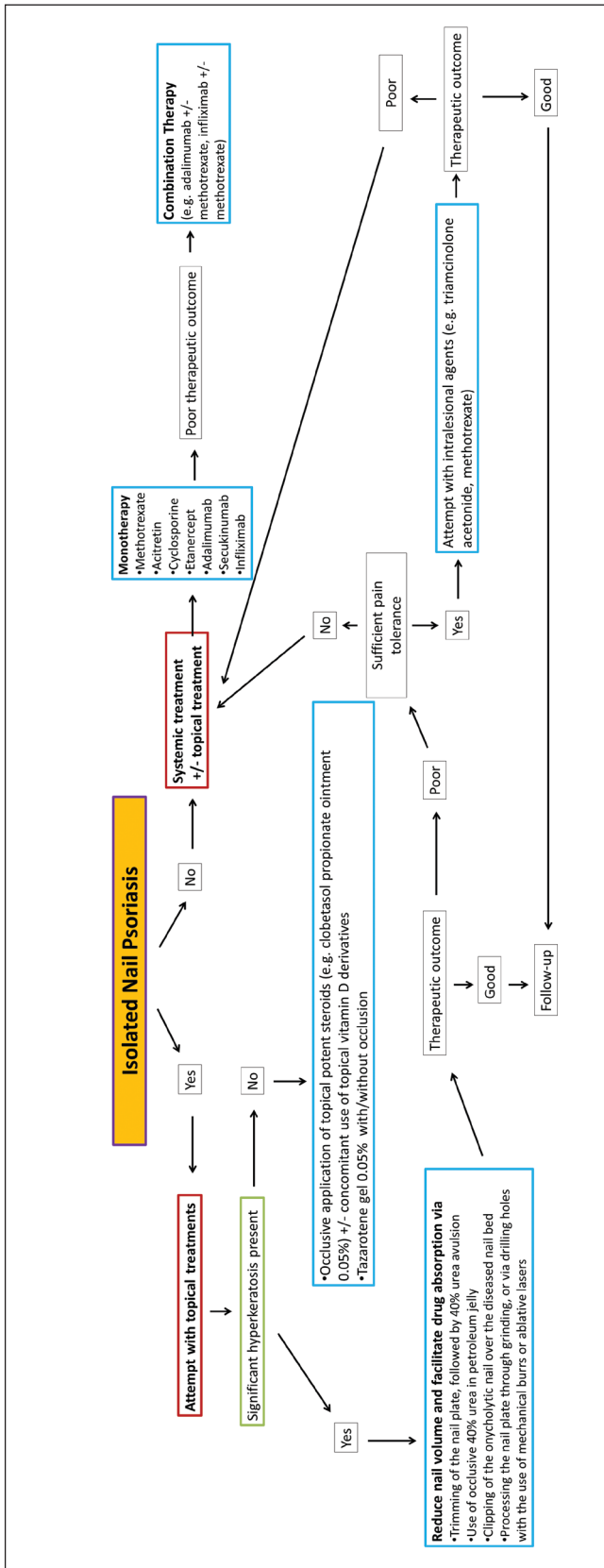
As progressively more agents—especially biologics—receive approval for use in plaque psoriasis in pediatric patients,<sup>25</sup> it is expected that gradually more real-life data on their side efficacy for plaque psoriasis of the nails in children also will come to light. Furthermore, their on-label use in pediatric psoriasis patients will facilitate further relevant clinical trials to this target group so that the potential of these medications in the management of nail psoriasis can be fully explored.

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APPENDIX



**eFIGURE.** Proposed algorithm for the management of nail psoriasis in children.