

Update on Management of Atopic Dermatitis in Young Children

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Atopic dermatitis (AD) is a chronic inflammatory skin condition associated with skin barrier impairment and immune system dysregulation.¹ Development of AD in young children can present challenges in determining appropriate treatment regimens. Natural remedies for AD often are promoted on social media over traditional treatments, including topical corticosteroids (TCSs), which can contribute to corticophobia.² Dermatologists play a critical role not only in optimizing topical therapy but also addressing patient interest in natural approaches to AD, including diet-related questions. This article outlines the role of diet and probiotics in pediatric AD and reviews the topical treatments currently approved for this patient population.

Diet and Probiotics

With a growing focus on natural therapies for AD, dietary interventions have come to the forefront. A prevalent theme among patients and their families is addressing gut health and allergic triggers. Broad elimination diets have not shown clinical benefit in patients with AD regardless of age,³ and in children, they may result in nutritional deficiencies, poor growth, and increased risk for IgE-mediated food allergies.⁴ If a true food allergy is identified based on positive IgE and an acute clinical reaction, elimination of the allergen may provide some benefit.⁵

The link between gut microbiota and skin health has driven an interest in the role of probiotics in the treatment of pediatric AD. A meta-analysis of 20 articles concluded that, whether administered to infants or breastfeeding mothers, use of probiotics overall led to a significant reduction in AD risk in infants ($P=.001$). *Lactobacillus* and mixed strains were effective.⁶ While broad elimination diets are not used to treat AD, probiotic supplementation can be considered for prevention of AD.

Topical Corticosteroids

Topical corticosteroids are the cornerstone of AD treatment; however, corticophobia among patients is on the rise, leading to poor adherence and suboptimal control

of AD.⁷ Mild cutaneous adverse effects (AEs) including skin atrophy, striae, and telangiectasias may occur. Rarely, systemic AEs occur due to absorption of TCSs into the bloodstream, mainly with application of potent steroids over large body surface areas or under occlusion.⁸ When the optimal potency of a TCS is chosen and used appropriately, incidence of AEs from TCS use is very low.⁹

Counseling parents about risk factors that can lead to AEs during treatment with TCSs and formulating regimens that minimize these risks while maintaining efficacy increases adherence and outcomes. Pulse maintenance dosing of TCSs typically involves application 1 to 2 times weekly to areas of the skin that are prone to frequent outbreaks. Pulse maintenance dosing can reduce the incidence of AD flares while also decreasing the total amount of topical medication needed as compared to the reactive approach alone, thereby reducing risk for AEs.⁸

Steroid-Sparing Topical Treatments

Although TCSs are considered first-line agents, recently there has been an advent of steroid-sparing topical agents approved by the US Food and Drug Administration (FDA) for pediatric patients with AD, including topical calcineurin inhibitors (TCIs), phosphodiesterase 4 inhibitors, a Janus kinase inhibitor, and aryl hydrocarbon receptor agonists. Offering steroid-sparing agents in these patients can help ease parental anxiety regarding TCS overuse.

Topical Calcineurin Inhibitors—Pimecrolimus cream 1% and tacrolimus ointment 0.03% are approved for patients aged 2 years and older and have anti-inflammatory and antipruritic effects equivalent to low-potency TCS. Tacrolimus ointment 0.1% is approved for patients aged 16 years and older with similar efficacy to a midpotency TCSs. Pimecrolimus cream 1% and tacrolimus ointment 0.03% often are used off-label in children younger than 2 years, as supported by clinical trials showing their safety and efficacy.¹⁰

Topical calcineurin inhibitors can replace or supplement TCSs, making TCIs a desirable option for avoidance of steroid-related AEs. The addition of a TCI to spot treatment

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or a pulse regimen in a young patient can reassure them and their caregivers that the provider is proactively reducing the risk of TCS overuse. The largest barrier to TCI use is the FDA's black box warning based on the oral formulation of tacrolimus, citing a potential increased risk for lymphoma and skin cancer; however, there is no evidence for substantial systemic absorption of topical pimecrolimus or tacrolimus.¹¹ Large task-force reviews have found no association between TCI use and development of malignancy.^{12,13} Based on the current data, counseling patients and their caregivers that this risk primarily is theoretical may help them more confidently integrate TCIs into their treatment regimen. Burning and tingling may occur in a minority of pediatric patients using TCIs for AD. Applying the medication to open wounds or inflamed skin increases the risk for stinging, but pretreatment with a short course of TCSs before transitioning to a TCI may boost tolerance.¹⁴

Phosphodiesterase 4 Inhibitors—Crisaborole ointment 2%, a phosphodiesterase 4 inhibitor, is approved for children aged 3 months and older with mild to moderate AD. Its use has been more limited than TCSs and TCIs, as local irritation including stinging and burning can occur in up to 50% of patients.¹⁵ One study comparing crisaborole 2% with tacrolimus 0.03% revealed greater improvement with tacrolimus.¹⁶ A second phosphodiesterase 4 inhibitor approved for once-daily use in children aged 6 years and older with mild to moderate AD is roflumilast cream 0.15%. Roflumilast reduces eczema severity and pruritus, with AEs also limited to application-site stinging and burning.¹⁷

Janus Kinase Inhibitor—Ruxolitinib cream 1.5%, a Janus kinase inhibitor, has been approved by the FDA since 2023 for twice-daily use in children aged 12 years and older with AD. Similar to TCIs, ruxolitinib cream carries a black box warning. Short-term safety data on ruxolitinib cream have revealed low levels of ruxolitinib concentration in plasma¹⁸; however, long-term studies on topical Janus kinase inhibitors for AD in pediatric and adult populations are lacking. To reduce the risk for systemic absorption, recommendations include limiting usage to 60 g per week and limiting treatment to less than 20% of the body surface area.¹⁹ Ruxolitinib has efficacy similar to or possibly superior to triamcinolone 0.1%.²⁰ Ruxolitinib is emerging as a promising nonsteroidal option that potentially is highly efficacious and well tolerated without cutaneous AEs.

Aryl Hydrocarbon Receptor Agonist—Tapinarof cream 1% is an aryl hydrocarbon receptor agonist that has been approved by the FDA since 2024 for children aged 2 years and older as a once-daily treatment for moderate to severe AD. Adverse events include folliculitis, nasopharyngitis, and headache, which are mostly mild or moderate.²¹

Final Thoughts

Topical management of pediatric AD includes traditional therapy with TCSs and newer steroid-sparing agents, which can help address corticophobia. Anticipatory guidance regarding the safety and long-term effects of individual therapies is critical to ensuring patient adherence to treatment regimens.

Probiotics may help prevent pediatric AD, but future studies are needed to determine their role in treatment.

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