

## A Child Girl Has Severe Case of Pediatric Atopic Dermatitis: Treatment with Terbinafine Hydrochloride

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**Abstract:** Atopic dermatitis in early childhood accounts for 20% of all atopic dermatitis occurrences, with similar atopic dermatitis symptomology of red pustules or scales characteristic. The potential causation of atopic dermatitis varies, may be hereditary in some cases. Combination topical therapies are used to treat patients with a compromised skin barrier. There are few safe and regulated pharmacotherapeutic atopic dermatitis therapies for pediatric use, and current treatment satisfaction is low. Here we provide details of the successful treatment of a pediatric patient with pustular atopic dermatitis using topical application of terbinafine hydrochloride in tandem with maternal diet control on July 22, 2020 at AYA Medical Center in Sydney, Australia. After a six-month follow-up, the patient's symptoms had fully recovered. Thus, Terbinafine hydrochloride may be useful in the treatment of atopic dermatitis in children.

**Keywords:** Pediatric psoriasis, pediatric atopic dermatitis, psoriasis treatment, topical terbinafine hydrochloride, alternative dermatitis treatment.

### طفلة مصابة بحالة شديدة من التهاب الجلد التأتبي: العلاج بالتيربينافين هيدروكلوريد

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**المستخلص:** يمثل التهاب الجلد التأتبي في الطفولة المبكرة 20% من جميع حالات التهاب الجلد التأتبي، مع أعراض التهاب الجلد التأتبي المشابهة للبتور الحمراء أو القشور. وتتنوع الأسباب المحتملة للإصابة بالتهاب الجلد التأتبي وقد تكون وراثية في بعض الحالات. وتستخدم العلاجات الموضعية المركبة لعلاج المرضى الذين يعانون من ضعف في حاجز الجلد. وهناك عدد قليل من علاجات التهاب الجلد التأتبي الآمنة والمنظمة لاستخدام الأطفال، والرضا عن العلاج الحالي منخفض. ونقدم هنا بالتفصيل العلاج الناجح لمريضة من الأطفال المصابين بالتهاب الجلد التأتبي البثرى باستخدام التطبيق الموضعي لتيربينافين هيدروكلوريد جنباً إلى جنب مع التحكم في النظام الغذائي للأُم بتاريخ 22 يوليو 2020 في مركز "أيه واي أيه" الطبي في مدينة سيدني بأستراليا. وبعد ستة أشهر من المتابعة تعافت أعراض المريض تماماً، وبالتالي قد يكون تيربينافين هيدروكلوريد مفيداً في علاج التهاب الجلد التأتبي عند الأطفال.

الكلمات المفتاحية: الصدفية عند الأطفال، التهاب الجلد التأتبي عند الأطفال، علاج الصدفية، هيدروكلوريد تيربينافين الموضعي، علاج التهاب الجلد البديل.

## Introduction.

The causes of atopic dermatitis may be hereditary, resultant from bacterial or viral infections, suspected due to or worsened by vaccinations (1). Studies also reveal that strong dietary and allergic factors in triggering or worsen symptoms (2).

To prevent or reduce flare-ups, pediatric patients who are entirely or partially breastfed may combine topical treatment with the dietary management of the mother (3). For symptom management, alternative pharmacotherapeutic interventions to current best-practice use of corticosteroids for the treatment of atopic dermatitis in pediatric patients are needed to improve quality of life without causing additional side effects.

## Case Report:

Miss Y was four months old when she presented with severely inflamed and cracking skin covering almost 60% of her body. She exhibited mild symptoms of typical neonatal atopic dermatitis when she was two months old.

She presented with severe inflammation of skin folds at the elbows crease, armpits, circumference of the neck, flaps of the ears, inner thighs and buttocks, on the knuckles and finger joints, and mild inflammation of the scalp. Further symptoms noted include flaking scalp, inflammation, and rash on extremities, oozing in breaks of the skin on the face, and extreme irritability (see Figure 1 (A) and (B) below).



**Figure (1) severe inflammation of skin folds on the neck and flaps of the ears (A), inner thighs, and rash on extremities (B). Scabs and breaks in the skin are present in both (A) and (B)**

Diagnosis based on symptoms above was severe atopic dermatitis, commonly referred to as atopic dermatitis. Previously oral probiotics were recommended (the primary caregiver used NESTLE baby probiotic – NANCARE probiotic drops with *Lactobacillus reuteri* DSM17938), and a prescription of topical intervention with Hydrocortisone 0.5%, cold baths and Otocomb Otic ointment for soothing. However, the primary caregiver rejected the usage of hydrocortisone due to Miss Y's young age and cited adverse reactions of the topical hydrocortisone like thinning with easy bruising of the skin, especially when used on the face, acneiform eruption, atrophic striae, burning sensation of skin, folliculitis, hypertrichosis, hypopigmentation, maceration of the skin, miliaria, perioral dermatitis, pruritus, secondary skin infection, skin atrophy, skin irritation, xeroderma.

There are no contraindications listed unless there is hypersensitivity to terbinafine or any component of the formulation, therefore a suspension of terbinafine hydrochloride 0.86 percent in emollient cream to be applied once/twice daily to affected areas was prescribed as an alternative therapy for topical treatment and management of infection symptoms of atopic dermatitis.

Burning sensation of skin, contact dermatitis, exfoliation of skin, pruritus are side effects can be seen more for terbinafine hydrochloride 1 % to 10 % and seen more less in small concentrations and doses. Local irritation is the most common if there is hypersensitivity.

The further topical intervention of wet wrapping therapy three times daily, and cooling baths was prescribed. The breastfeeding mother agreed to follow an elimination diet and consult with a registered

dietitian with the treatment goal of reducing the severity of atopic dermatitis flare-ups by eliminating potential food triggers and allergens such as dairy, gluten, and nightshades from the breastmilk.

Miss Y's skin was mostly clear with considerably reduced inflammation a month later, except for minor inflammation lesions on her scalp and minimal scarring from the previously erupted atopic dermatitis, which showed signs of healing (See Figure 2).

The continued management of Miss Y's atopic dermatitis includes the managed diet of the primary caregiver with a specialist's prescription of a topical solution, cool baths in warm weather, and continued moisturizing. The clinical outcome of terbinafine hydrochloride as an alternative pharmacotherapeutic treatment was found to be positive.

### Discussion.

Local side effects and greater absorption of topical treatment through the skin are current limitations of corticosteroid treatment in pediatric patients (4). The majority of patients and their families have low satisfaction with treatment outcomes when using corticosteroids. Antifungal medicine has had mixed outcomes in treating atopic dermatitis, with some patients reporting positive therapeutic benefits even though research on this therapy is limited compared to other therapies (5).



**Figure (2) Miss Y showed improved temperament with little fussing, crying, and scratching.**

Terbinafine hydrochloride is an antifungal and antibacterial agent that is typically prescribed for oral use. Terbinafine hydrochloride is fungicidal and has immunomodulatory effects similar to other

antimycotics; and therefore it may effectively treat symptoms of atopic dermatitis. Combining best practices for topical treatment of atopic dermatitis with emollients to retain moisture in the skin barrier and topical pharmacotherapeutic intervention in order to control inflammation and prevent or treat infection of atopic dermatitis scabs can help manage patient symptoms.

The current case demonstrated a positive outcome for a pediatric patient with severe atopic dermatitis. The patient followed a treatment plan that included the topical application of terbinafine hydrochloride in conjunction with wet therapy to treat physical symptoms following a severe flare-up of atopic dermatitis. Alternative pharmacotherapy, such as using antimycotics to treat symptoms of inflammatory skin conditions, seems promising. As an alternative to the existing practice of using corticosteroids in pediatric patients, further research is recommended.

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