

SHORT COMMUNICATIONS

Successful Treatment of Vitiligo with Crisaborole 2% Ointment

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INTRODUCTION

Vitiligo is a common disorder of skin pigmentation resulting from autoimmune destruction of melanocytes. A variety of topical and systemic treatment options have been tried with varying success. Here we describe the case of a man with refractory vitiligo successfully treated with topical crisaborole ointment.

Crisaborole ointment is a topical phosphodiesterase (PDE)-4 inhibitor recently FDA-approved for the treatment of atopic dermatitis. Previous literature has discussed the possible role of systemic PDE-4 inhibitors in vitiligo; herein, we discuss the ability of topical crisaborole to accelerate repigmentation in treatment-resistant vitiligo.

CASE REPORT

A Hispanic male in his 40s presented to the dermatology clinic with a chief complaint of white spots of the ears and penis. He carried a diagnosis of persistent vitiligo for more than 20 years. The patient had previously attempted therapy with topical steroids for years without any repigmentation. Most recently, he used topical calcineurin inhibitors intermittently for years without success. He

had no other past medical history, and took no medications. On physical exam, he was noted to have mildly irregular and well-demarcated depigmented macules and patches on the bilateral ears (Figure 1) and the glans of the penis. Depigmentation was confirmed by examination with Wood's lamp. No epidermal change, scarring, or evidence of an active inflammatory process elsewhere were present on exam. No biopsy was performed. Crisaborole 2% ointment was prescribed for application twice daily to the affected areas. The patient chose to only treat his ears and did not treat the lesions on his penis. On follow up one month later, the patient's ears showed scattered perifollicular repigmentation (Figure 2). The penile lesions remained unchanged. The patient declined photographs of his penile lesions, and was subsequently lost to follow up.



Figure 1: Ears prior to treatment with crisaborole.

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Figure 2: Ears after 1 month of therapy with crisaborole 2% ointment.

DISCUSSION

Vitiligo is a common cutaneous pigmentary disorder characterized by loss of functional melanocytes in affected skin. Though the pathogenesis of vitiligo is unknown, several hypotheses exist, including the autoimmune model, the zinc- α 2-glycoprotein model, the viral theory, and the reactive oxidative species theory [1]. First line treatment has traditionally included topical steroids or calcineurin inhibitors in order to diminish cellular immune response. Systemic steroids (in high pulsed doses or low daily doses) have also been used to halt the progression of the disease. Procedural treatments are also available, such as phototherapy (especially narrow-band UVB), excimer laser, and various surgical autologous grafting techniques. Despite an ever growing list of treatments, improvement speed is variable and many patients do not achieve complete re-pigmentation [2].

Phosphodiesterase (PDE)-4 inhibitors are a class of medications that reduce and prevent inflammation by increasing intracellular levels of cyclic adenosine monophosphate (cAMP). One member of this class, apremilast, has been previously reported to lead to repigmentation in a case of vitiligo that was resistant to conventional therapies [3]. Apremilast is an oral PDE-4 inhibitor currently

approved for the treatment of moderate to severe plaque psoriasis and psoriatic arthritis in adults. One disadvantage of apremilast, compared to crisaborole, is that it is a systemic medication and thus carries a greater potential risk of side effects, the most commonly reported of which are nausea, diarrhea, headache, and depression, compared to topical therapies [4, 5].

Crisaborole ointment is a topical PDE-4 inhibitor currently approved the treatment of atopic dermatitis in children and adults [6]. The most common side effect that has been reported with this medication was application site irritation, specifically stinging and burning, which was seen in up to 4% of patients [7]. In this report, it was found that crisaborole ointment applied twice daily led to partial repigmentation in some areas previously resistant to standard topical medications, while areas not treated with crisaborole remained unchanged. Crisaborole 2% ointment may be a non-invasive treatment option for vitiligo resistant to standard topical therapy. This is at least the second time that PDE-4 inhibitors have been discussed as a potential treatment modality for patients with resistant vitiligo. It is possible that the reported successes of PDE-4 inhibitors in vitiligo repigmentation are due to the drug class altering levels of important pro- and anti-inflammatory cytokines, especially IL-17 and IL-10. More research is needed to demonstrate the efficacy and safety of topical crisaborole in the treatment of vitiligo and the potential role of PDE-4 inhibitors in vitiligo.

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