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Case Report

Refractory atopic dermatitis: successful remission with novel new generation emollient consisting of furfuryl palmitate as an adjunct

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ABSTRACT

Atopic dermatitis (AD) is a chronic inflammatory skin condition requiring personalized treatment approaches. Conventional therapies, including topical corticosteroids and immunosuppressants, often fail to provide long-term relief, leading to disease relapse and poor quality of life. Recent advancements in JAK inhibitors, along with novel skin barrier-enhancing strategies such as antioxidant-rich emollients, offer new therapeutic possibilities. A 14-year-old female with treatment-resistant AD and a 27-year-old female with AD triggered by topical steroid withdrawal both presented with severe, widespread lesions. Previous therapies, including systemic steroids, immunosuppressants, and other JAK inhibitors, failed to provide sustained improvement. Both patients were treated with Abrocitinib 200 mg OD alongside an antioxidant-rich emollient containing furfuryl palmitate, known for its skin barrier-restoring and anti-inflammatory properties. Within a week, both patients experienced complete itch resolution, followed by full skin clearance (IGA 0) over three months, highlighting the potential synergy between targeted JAK inhibition and antioxidant therapy. These cases underscore the effectiveness of Abrocitinib in severe AD and emphasize the crucial role of furfuryl palmitate-based emollients in accelerating skin recovery. By addressing both inflammation and oxidative stress, this combination therapy presents a promising approach for improving long-term treatment outcomes in refractory AD. Further research is warranted to explore its broader dermatological applications.

Keywords: Atopic dermatitis, Abrocitinib, Furfuryl palmitate, Antioxidant therapy, JAK inhibitors, Skin barrier repair, Inflammation control

INTRODUCTION

Atopic dermatitis (AD) is a common chronic inflammatory skin condition, affecting approximately 15-20% of children and 1-3% of adults worldwide.[1] Despite its high prevalence, the disease varies significantly in severity and treatment response, often requiring personalized therapeutic approaches.[2] While mild cases are typically managed with topical therapies, moderate-to-severe cases frequently necessitate systemic interventions due to persistent symptoms and inadequate disease control.[3]

One of the key challenges in AD management is treatment resistance and disease relapse, which can significantly impact a patient's quality of life.[4] Conventional therapies, including topical corticosteroids and immunosuppressants, often fail to provide sustained relief, leading to cycles of worsening symptoms.[5] Additionally, factors such as topical steroid withdrawal, environmental triggers, and disease chronicity further complicate treatment outcomes, necessitating a shift toward targeted therapies that address both inflammation and skin barrier dysfunction.[6]

The presented cases highlight unique challenges in AD management, emphasizing the importance of targeted treatments for better patient outcomes. Alongside advanced therapies, skin barrier repair remains a crucial aspect of long-term disease control. The incorporation of furfuryl palmitate-based moisturizers, known for their antioxidant and barrier-enhancing properties, plays a

pivotal role in supporting skin healing and reducing disease recurrence. These emollients help restore the compromised skin barrier, reinforcing the effectiveness of systemic treatments and contributing to sustained improvements in AD symptoms.

CASE REPORT

Case 1

A 14-year-old female with a three-year history of skin disease presented with recurrent facial patches affecting the eyelids, neck, arms, and legs. Symptoms began at age 12, triggered by stress and exams, with no significant family history or comorbidities. Despite previous treatments including cyclosporine, prednisolone, methotrexate, tofacitinib, and topical steroids only partial improvement was seen. The patient had discontinued all medications a week before evaluation. Given the severity (IGA 4, BSA 15%), treatment with Abrocitinib 200 mg OD was initiated, along with fluticasone furoate cream for facial patches and an antioxidant-rich emollient (furfuryl palmitate) applied twice daily. A cleanser and moisturizer were also recommended. Within a week, the patient experienced complete itch resolution, followed by complete skin clearance (IGA 0 from 4).

Notably, she expressed satisfaction with the emollient, particularly appreciating that it did not cause any stinging, a concern she had with previous topical products. She resumed outdoor activities comfortably and remained in remission without recurrence. She is currently off all systemic treatments and is being maintained solely on furfuryl palmitate based new generation emollient and routine skincare, with no relapse to date (Figure 1).

Figure 1: Effect of topical furfuryl palmitate-based new-generation emollient on AD patient – before and after analysis (case 1), (a) before treatment, and (b) after treatment.

Case 2

A 27-year-old female with a two-year history of a chronic skin condition presented with recurrent lesions affecting the eyelids, neck, arms, and legs. The symptoms began at the age of 25, following topical steroid withdrawal and heat exposure. There was no significant family history or comorbidities. Her previous treatments included intermittent use of oral and topical corticosteroids, all of which had been stopped one week prior to consultation.

At baseline, her disease severity was recorded as IGA 4 with 60% BSA involvement. She was started on Abrocitinib 200 mg once daily for a duration of three months, along with a twice-daily application of an antioxidant-rich emollient containing furfuryl palmitate.

The patient reported complete resolution of itching within the first week, followed by total skin clearance (IGA 0 from 4). She expressed satisfaction with the emollient, specifically highlighting that it did not cause any stinging or irritation, which had been an issue with her earlier topical treatments. She has since remained in remission without recurrence. The patient is currently off medication and is being maintained solely on antioxidant-rich emollient containing furfuryl palmitate as part of her skincare routine (Figure 2).

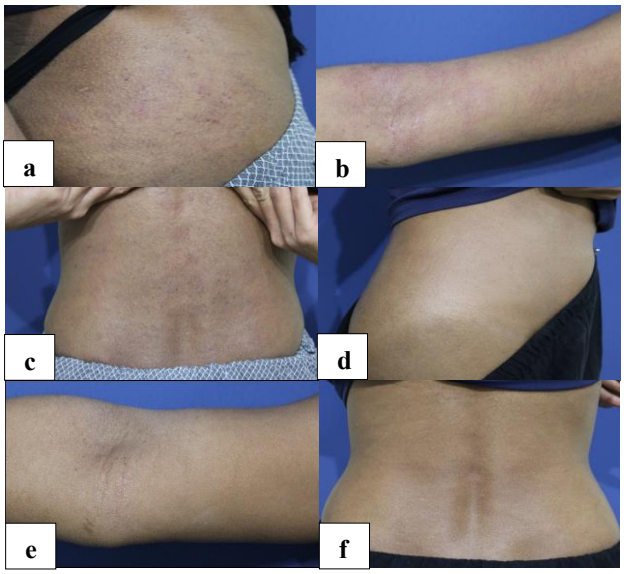

Figure 2: Effect of topical furfuryl palmitate-based new-generation emollient on AD patient – before and after analysis (case 2), (a-c) before treatment, and (d-f) after treatment.

DISCUSSION

This report highlights the efficacy of Abrocitinib in managing severe, refractory skin disease while emphasizing the novel role of an antioxidant-rich emollient (furfuryl palmitate) in accelerating skin recovery. Both cases demonstrated rapid symptom relief, with complete itch resolution within a week and full skin clearance (IGA 0) over three months, despite prior inadequate response to systemic and topical steroids, immunosuppressants, and other JAK inhibitors. The novelty of this case lies in the combined use of a targeted JAK1 inhibitor with furfuryl palmitate, suggesting a synergistic effect in reducing inflammation, repairing oxidative stress-induced damage, and restoring epidermal integrity.

While Abrocitinib's mechanism in blocking pro-inflammatory cytokines is well-documented, its pairing with furfuryl palmitate—a potent antioxidant—offers a new perspective on adjunctive dermatological care.[7,8] Antioxidant-rich emollients not only provide hydration but actively neutralize free radicals, counteracting oxidative damage that worsens inflammatory skin conditions.[9] This explain the rapid improvement observed in these cases, underscoring the importance of addressing both systemic inflammation and skin barrier dysfunction simultaneously. Existing literature primarily focuses on JAK inhibitors alone; however, this case highlights the potential of integrating antioxidant therapy to enhance treatment outcomes, which is an area that remains underexplored.

Clinically, these findings support the emerging role of antioxidant therapy as a crucial adjunct in managing severe skin disease, particularly in treatment-resistant cases.[10] The rapid resolution of symptoms raises important questions for future research like: could furfuryl palmitate help reduce dependency on long-term immune-suppressants? Does it contribute to sustained remission? Further studies should explore its broader applications, optimal formulations, and long-term benefits in inflammatory skin conditions. This case reinforces the need for a multifaceted treatment approach, highlighting a novel therapeutic combination that could shape future dermatological management strategies.

CONCLUSION

The cases highlight the efficacy of furfuryl palmitate based new generation emollient in skin recovery. Rapid symptom relief and full skin clearance suggest the benefit of antioxidant-rich emollients. This approach underscores the need for further research into integrated dermatological treatments.

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