Case Report

Treatment of Ashy Dermatosis with Dapsone and Tacrolimus: A Case Report

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Abstract

Background: Ashy dermatosis (AD), a rare pigmentary disorder of unknown etiology, has no satisfactory treatment.

Observation: Two patients having asymptomatic and slowly progressive, gray macular lesions with darkening involving the face, arms, neck, and the trunk was diagnosed clinicopathologically as AD. The patients were treated with an oral dapsone (100 mg/day) and a topical tacrolimus (0.1%) twice daily for six months.

Result: After three months of treatment, a gradual improvement of lesions was observed, and perpetuation of the treatment for six months completely removed the lesions of the both patients. The lesions did not recur within the study period for one year.

Conclusion: Results suggest that dapsone and tacrolimus as the combined therapeutic option might have a substantial effect for treatment of AD.

Keywords: Ashy dermatosis, dapsone, tacrolimus.

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Introduction

Ashy dermatosis (AD), also known as erythema dyschromicum perstans (EDP) and dermatosis cinecienta, is an acquired macular hyperpigmentation characterized by asymptomatic of unknown etiology.[1] It is symmetrically-distributed over the trunk, neck, face, and upper extremities with rare mucosal involvement.[2] It appears usually among the young adults; however, it may occur in any age regardless of genders and seasons.[3] AD is found worldwide albeit its prevalence is most common in Central and South America.[3,4] Although AD is a cosmetic issue, it is very troubling in dark skinned individuals. Therefore, it is necessary to study this rare dermatologic condition and the dermatologists are showing more awareness.

Case Report

Two female patients, one was of 28-years old and the other was of 20-years old visited the Dermatology outpatient department, Sylhet Women's Medical College Hospital, Sylhet, Bangladesh over the last one year started with no symptoms but gradually progressed and diffuse darkening the arms, neck, and the trunk (Figures 1 and 2).

The patients had no previous history of skin diseases and were not under any kind of medication for a year before the first visit to our outpatient department. The oral mucous membrane, palms, and soles and nails were normal. Furthermore, the general and systemic examinations indicated no abnormality. However, cutaneous examination showed ashy gray-colored,

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confluent, symmetrical macules with polycyclic margins distributed over the entire trunk, proximal upper limb, posterior neck and proximal thigh. A few lesions distinguished as isolated lesions were variable in size ranging from 0.5-2.5 cm. Erythematous borders could not be differentiated. Hematological and biochemical investigations suggested that the findings of blood counts, blood glucose level, liver and kidney functions, and adrenocorticotropic hormone (ACTH) stimulation test were normal. The skin biopsy of the both patients revealed focal vacuolar perturbation of basal layer with mild to moderate infiltrate of lymphocytes and histiocytes intermingled with melanophages in the dermis. This is the characteristic feature of AD. Based on the clinical and histolopathology findings, the both patients were diagnosed having AD. These patients were advised photoprotection with a broad-spectrum sunscreen as well as a tablet Dapsone 100 mg daily for six months. The topical tacrolimus (0.1%) with an emollient was further added to the treatment. After three months of treatment, an improvement of the erythematous violaceous component of lesions was observed, and at the end of treatment, the lesions completely disappeared.

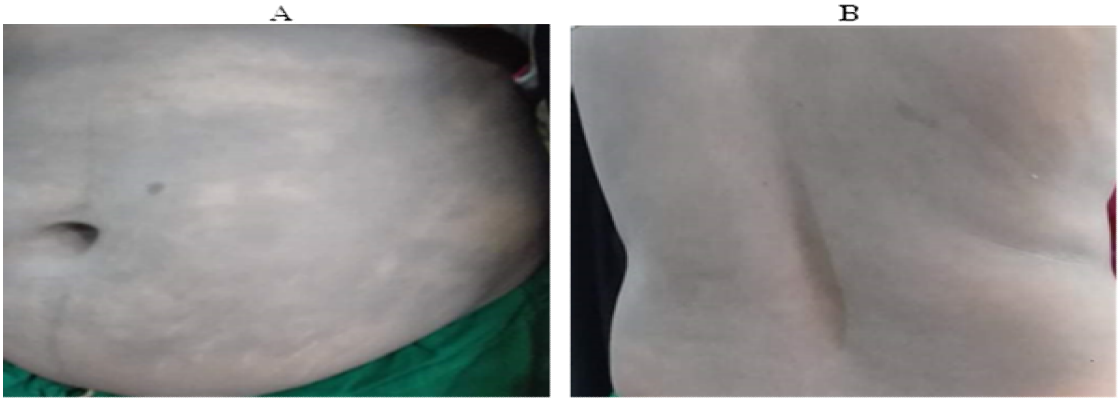

Figure 1: **Multiple, variable sized, round to oval, bluish-gray macules with distinct minimally elevated red borders over the front (A) and back (B) of the trunk in the patient of 28 years old.**

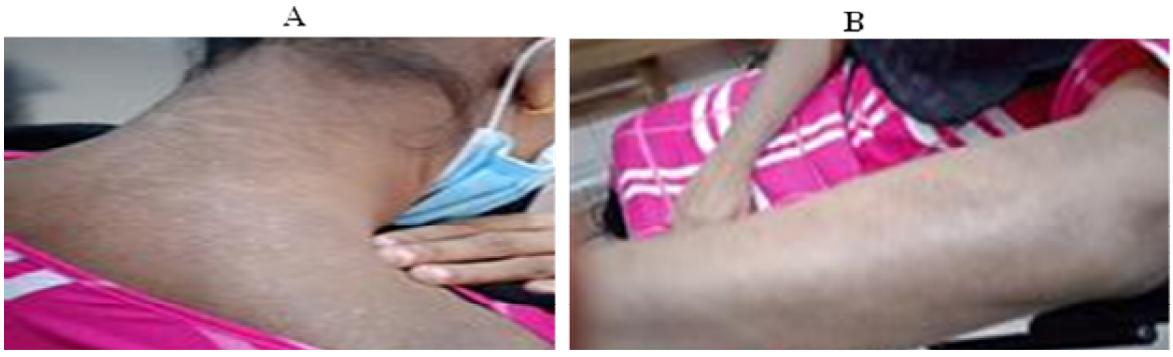

Figure 2: Round to oval, slate-gray-colored macules with distinct minimally elevated erythematous borders around the posterior neck (A) and upper extremities (B) in the patient of 20 years old.

The patients had no previous history of skin diseases and were not under any kind of medication for a year before the first visit to our outpatient department. The oral mucous membrane, palms, and soles and nails were normal. Furthermore, the general and systemic examinations indicated no abnormality. However, cutaneous examination showed ashy gray-colored, confluent, symmetrical macules with polycyclic margins distributed over the entire trunk, proximal upper limb, posterior neck and proximal thigh. A few lesions distinguished as isolated lesions were variable in size ranging from 0.5-2.5 cm. Erythematous borders could not be differentiated. Hematological and biochemical investigations suggested that the findings of blood counts, blood glucose level, liver and kidney functions, and adrenocorticotropic hormone (ACTH) stimulation test were normal. The skin biopsy of the both patients revealed focal vacuolar perturbation of basal layer with mild to moderate infiltrate of lymphocytes and histiocytes intermingled with melanophages in the dermis. This is the characteristic feature of AD. Based on the clinical and histolopathology findings, the both patients were diagnosed having AD. These patients were advised photoprotection with a broad-spectrum sunscreen as well as a tablet Dapsone 100 mg daily for six months. The topical tacrolimus (0.1%) with an emollient was further added to the treatment. After three months of treatment, an improvement of the erythematous violaceous component of lesions was observed, and at the end of treatment, the lesions completely disappeared.

Discussion

AD or EDP was first described by Ramirez in 1957.[5] AD and EDP are considered as a single entity, and have been used interchangeably by many authors.[4] AD or EDP is more common in Latin America and Asia. Although the etiology of AD is unknown, a number of possible etiological factors such as ingestion of ammonium nitrite, nematodes invasion, radiographic contrast media, cobalt allergy, and chlorothalonil exposure have been reported.[6-9] However, our patients were exposed to none of these factors.

The differential diagnosis of AD usually includes pigmented lichen planus (LP). LP lesions are typically characterized by bright violaceus-purple, flat, solid papules and often crossed by whitish lines. Some types of LP further involve mucous membranes and associated with mild pruritus.[10] These symptoms were absent in our patients. The diagnosis in our patients was mainly clinicopathologic based on the criteria proposed by Zaynoun et al. (2008).[11] AD comprises patients with idiopathic eruptive hyperpigmented macules, regardless of the presence or absence of histological interface dermatitis.[11,12]

The treatment of AD is still unsatisfactory and challenging. The treatment options for AD currently include topical and systemic steroid, dapsone, retinoids, clofazimine, chemical peels, antibiotics, corticosteroids, vitamins, tetracyclines, anti‑histamines, griseofulvin, isoniazid, chloroquine, estrogens, progesterone, phototherapy, laser therapy, keratolytics, clofazimine, narrow band UVB phototherapy, and psychotherapy.[4,10] However, none produces satisfactory outcomes without recurrence. In terms of our setup, the patients were treated for six months with an oral dapsone 100 mg/day and a topical tacrolimus (0.1%) twice per day. We observed an excellent response after three months of treatment and complete disappearance of the lesions after 6 months. When the two patients came for follow-up after 12 months, no sign of recurrence was observed. Tacrolimus has been approved by US FDA as a therapeutic modality for atopic dermatitis. It is a calcineurin inhibitor and has been found as an effective immunomodulator

having off-label indications. Although some mild side effects in the gastrointestinal tract such as nausea and vomiting are initially observed with oral dapsone treatment, these are subsequently subsided.[13] Furthermore, dapsone may play roles in the regulation of immune responses involved in AD in addition to its antimicrobial potency.[14] Therefore, dapsone and the topical tacrolimus might have exerted their therapeutic effects in AD possibly by their immunomodulatory effects. This report supports the notion that the treatment of AD with dapsone along with tacrolimus might be an effective and safe alternative therapeutic option. However, further study with large number of patients is necessary to make a conclusive recommendation.

Conclusion

Dapsone and tacrolimus might be successful therapeutics for AD treatment without recurrence. However, additional studies with large number of patients are needed to understand the pathogenesis of AD and to find out the successful therapeutic option for AD.

Contribution of Authors: Concept, design of the study and manuscript editing: PAC; Critical review of the manuscript: TAC and HSD.

Conflict of Interest: Authors declare no conflict of interest.

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