Erythema Dyschromicum Perstans: A Case Report and Review

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GOAL

To describe a case of erythema dyschromicum perstans (EDP)

OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Outline the epidemiology, etiology, and differential diagnosis of EDP.
2. Describe the clinical presentation of EDP.
3. Identify therapies and their efficacy in treating EDP.

CME Test on page 56.

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Erythema dyschromicum perstans (EDP) is an acquired ashy dermatosis characterized by patches of blue-gray pigmentation over the trunk, extremities, and neck. These pigmentary changes may become chronic and disfiguring. At present, the etiology of EDP remains unclear, and there is no single established therapy. We describe a 21-year-old Hispanic man with extensive patches of EDP who improved with oral corticosteroid therapy.

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Erythema dyschromicum perstans (EDP) was first described by Ramirez[1] in 1957 in Salvadorans who developed an ashy-gray macular pigmentation and thus were called *los cenicientos* (ie, ash-colored ones). Ramirez called this condition *dermatosis cenicienta*. Of interest, Cinderella was also named Cenicienta in Spanish for her association with

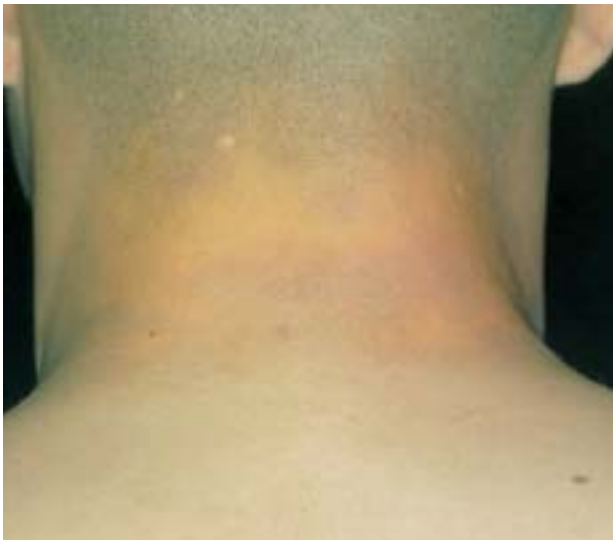

Figure 1. Large blue-gray patches on the patient's upper back and neck and a small area of preserved normal light brown skin on the mid posterior neck. (Photograph courtesy of Thomas Hirota, MD.)

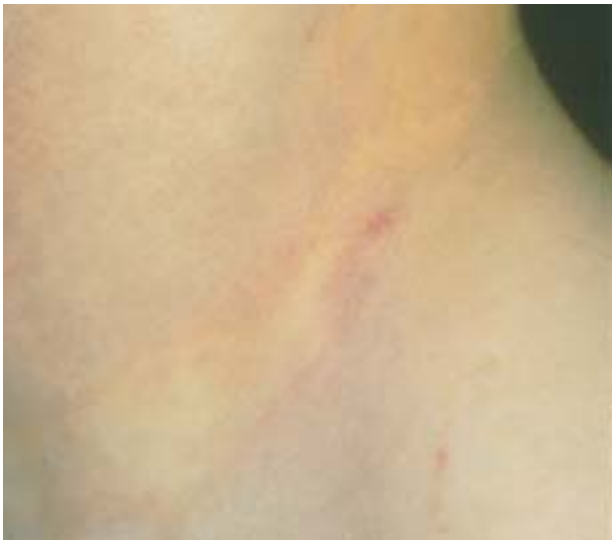

Figure 2. Large blue-gray patches on the left neck with a thin erythematous border.

ashes.[2] Previous authors have called this entity *erythema chronicum figuratum melanodermicum* prior to the description *erythema dyschromicum perstans* reported by Convit in 1961.[3] The etiology remains unclear, and treatment regimens vary. We report a case of extensive EDP treated with oral steroids.

Case Report

A 21-year-old Hispanic man presented to our clinic with a year-long history of progressive cutaneous pigmentary changes. These began as truncal, asymptomatic blue-gray macules and patches, which slowly spread to his extremities and neck. The patient's medical history and review of systems was typical, and his family history was noncontributory. He had been unsuccessfully treated with topical and oral antifungals for presumed tinea versicolor.

Physical examination revealed diffuse, nonmucosal patches of blue-gray pigmentation located on his neck, trunk, abdomen, bilateral antecubital fossae, and posterior legs. The patches on the nape of his neck had an erythematous border without appreciable scales (Figure 1 and Figure 2).

A 4-mm punch biopsy of the erythematous border demonstrated a superficial, perivascular lymphocytic infiltrate with vacuolar interface change and pigment incontinence in the papillary dermis with macrophages (Figure 3 and Figure 4). The patient was diagnosed with EDP and treated with a 3-week course of oral prednisone. One month later, the blue-gray discoloration remained; however, the erythema at the boundaries had resolved. Three months later, the patient demonstrated partial fading of the blue-gray discoloration.

Comment

EDP is an acquired dermatosis characterized by macular, blue-gray hypermelanosis with no known genetic predisposition. Cases occur most frequently in Central and South America, Mexico, and the south central United States.[4] Although EDP appears to be more prevalent in Latin Americans, it also may appear in whites and other races.[2]

There is no clear sexual predilection; however, some researchers report EDP to be more common in females.[5] The age of onset varies, but EDP will often present in the first to third decade.[5]

Lesions often begin as asymptomatic-to-occasionally pruritic erythematous macules that subsequently become slate gray. Early lesions may have an identifiable erythematous border that may be raised like a thin piece of string, but often the erythema fades or becomes less distinct prior to evaluation.[6] Infrequently, lesions may be surrounded by a pale halo that accentuates the ashen color, particularly in dark-skinned individuals.[7]

Macular areas may slowly enlarge or multiply to involve large areas of the trunk in round, oval, or polycyclic patterns. The trunk and proximal extremities are more commonly involved, followed by the neck and face. Although large areas of the body may be affected, the palms, soles, scalp, nails, and mucous membranes are usually spared.[8] Asymmetric EDP, unilaterally affecting the left trunk and leg, has been reported.[7] Pigmentary changes often become chronic and can be disfiguring.

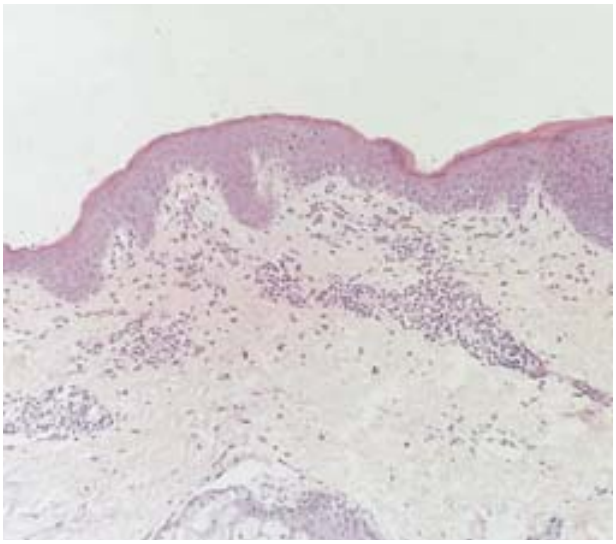

Figure 3. Patchy lichenoid tissue reaction with melanin incontinence and a superficial perivascular lymphocytic infiltrate (H&E, original magnification ×10). (Photograph courtesy of Karen Warschaw, MD.)

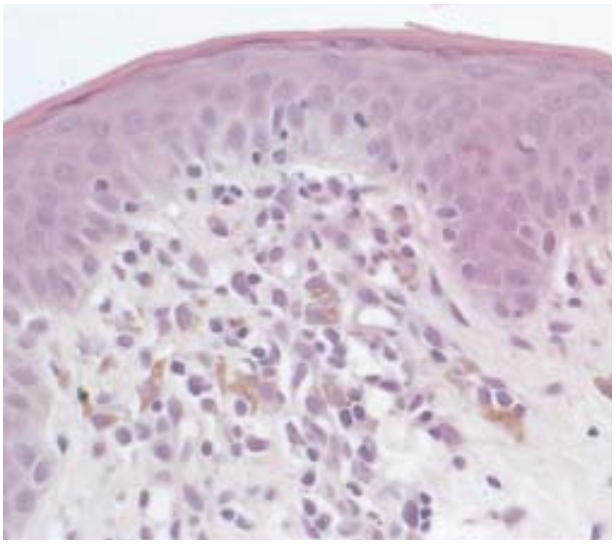

Figure 4. Vacuolar interface change with prominent melanin incontinence in the papillary dermis (H&E, original magnification ×20). (Photograph courtesy of Karen Warschaw, MD.)

Differential diagnoses include Addison disease, fixed drug reaction, arsenism, hemochromatosis, lichen planus, argyria, maculae cerulae of pediculosis, pinta, leprosy, urticaria pigmentosa, figurate erythemas, and other postinflammatory conditions that produce pigmentation.[2]

Histopathology of the early active border may demonstrate a lichenoid dermatitis with basal vacuolar change and occasional Civatte bodies.[9] The upper dermis shows a mild-to-moderate, perivascular lymphohistiocytic infiltrate intermingled with melanophages. There also may be exocytosis of the infiltrate into the epidermis.[10] In older areas, prominent melanin incontinence consistent with postinflammatory pigmentation is evident, but the melanophages may extend deeper than other causes, perhaps because of appendageal structures.[9,11] The inflammatory infiltrate usually diminishes with disease progression, and there is a gradual loss of the rete ridge pattern.[11]

Direct immunofluorescence has shown IgG, IgM, and complement deposition on necrotic keratinocytes at the dermal-epidermal junction.[10,11] Fibrinogen, when found, has been localized at this junction in active lesions, whereas inactive, older lesions demonstrate only a weak fibrinogen pattern.[11] Electron microscopy reveals vacuoles in the basal keratinocytes, with widening of intercellular spaces and retraction of desmosomes to either one cell or the other. Also evident are discontinuities in the subepidermal basement membrane, colloid bodies located at the dermal-epidermal junction, and melanophages in the dermis containing aggregates of melanosomes enclosed by lysosomal membranes.[10,12]

Various causes of EDP have been reported but are not conclusive. EDP has occurred following ingestion of ammonium nitrate and treatment for hookworm infestation, as well as one case occurring immediately after an x-ray contrast study.[4,5] EDP has been reported simultaneously with active lesions of vitiligo[13] and in 2 patients with human immunodeficiency virus.[14,15] There has been speculation that EDP is a variant of lichen planus because EDP has accompanied, preceded, and followed lesions of LP and has similar histopathologic and direct immunofluorescence patterns.[7,11]

Miyagawa et al[16] found Ia (HLA-D) antigen expression on epidermal keratinocytes, pronounced OKT4 and OKT6 staining of epidermal dendritic cells, and dermal infiltration of T lymphocytes of both helper-inducer (OKT4) and suppressor (OKT8) phenotypes, a common pattern in lichen planus. Others believe EDP is more closely related to a fixed drug eruption, another disease in which prolonged injury to the basal layer of the epidermis occurs.[4] The true nature of this disease is still unknown.

There is no single, established therapy for EDP. Treatments have included sun protection, topical and systemic steroid therapy, keratolytics, hydroquinone, dapsone, antibiotics, retinoids, griseofulvin, ascorbic acid, chloroquine, estrogens, chemical peels, and laser therapy.[5,7,11] Clofazimine has been used with some success apparently because of its anti-inflammatory and immunomodulating effects.[17,18]

In summary, our patient's case exemplifies extensive EDP with the classically described, but

infrequently seen, erythematous border. The patient responded well to oral steroids, perhaps because he presented with active inflammatory areas. For many patients, however, EDP can be a chronically disfiguring and disconcerting problem that is resistant to treatment. Clinicians should suspect this entity whenever a large pigmentary process presents so therapy can be initiated early if the diagnosis is EDP. Further research is necessary to improve our understanding of the pathophysiology of this condition and to determine consistently effective treatment regimens.

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