Dermatology Practical & Conceptual

Pink-Red Fluorescence Observed in Ultraviolet-Induced Fluorescence Dermoscopy of Psoriatic Plaques

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Introduction

Psoriasis is a prevalent erythematous-desquamative dermatosis with a substantial global mental and socioeconomic impact, affecting individuals of all ages. Among the primary risk factors are genetic susceptibility, metabolic syndrome, trauma, and stress. When examined under Wood's lamp (peak wavelength 365nm), certain psoriatic plaques exhibit a red fluorescence [1-4]. Previous studies have reported an association between this finding and increased psoriasis severity [1,2]. Through the Stokes shift phenomenon, ultraviolet-induced fluorescence dermoscopy (UVFD) offers a novel non-invasive diagnostic approach that visualizes the UV-induced fluorescence of skin chromophores [5], with red fluorescence reported to be associated with the presence of protoporphyrin IX in the stratum corneum [3]. To date, the fluorescence patterns in psoriasis under Wood lamp have been mostly limited to clinical naked-eye examination [1-3]. Here, we report pink-reddish fluorescence of psoriasis under UVFD.

Case Presentation

A 51-year-old man (Psoriasis Area Severity Index score 2.8) presented to the dermatology outpatient clinic with a solitary psoriatic plaque on his thigh present for a few weeks. In addition to the bright blue-greenish fluorescence of keratin and the blue background fluorescence of collagen and elastin fibers under UVFD, a distinctive pink-red fluorescence was identified in the central part of the lesion (Figure 1). In the reported case, this neon-like luminescence appeared to emanate from the scale near the elongated dermal papillae. Microbiological culture collected from the patch was negative. The patient was treated with topical clobetasol and emollients with excellent response.

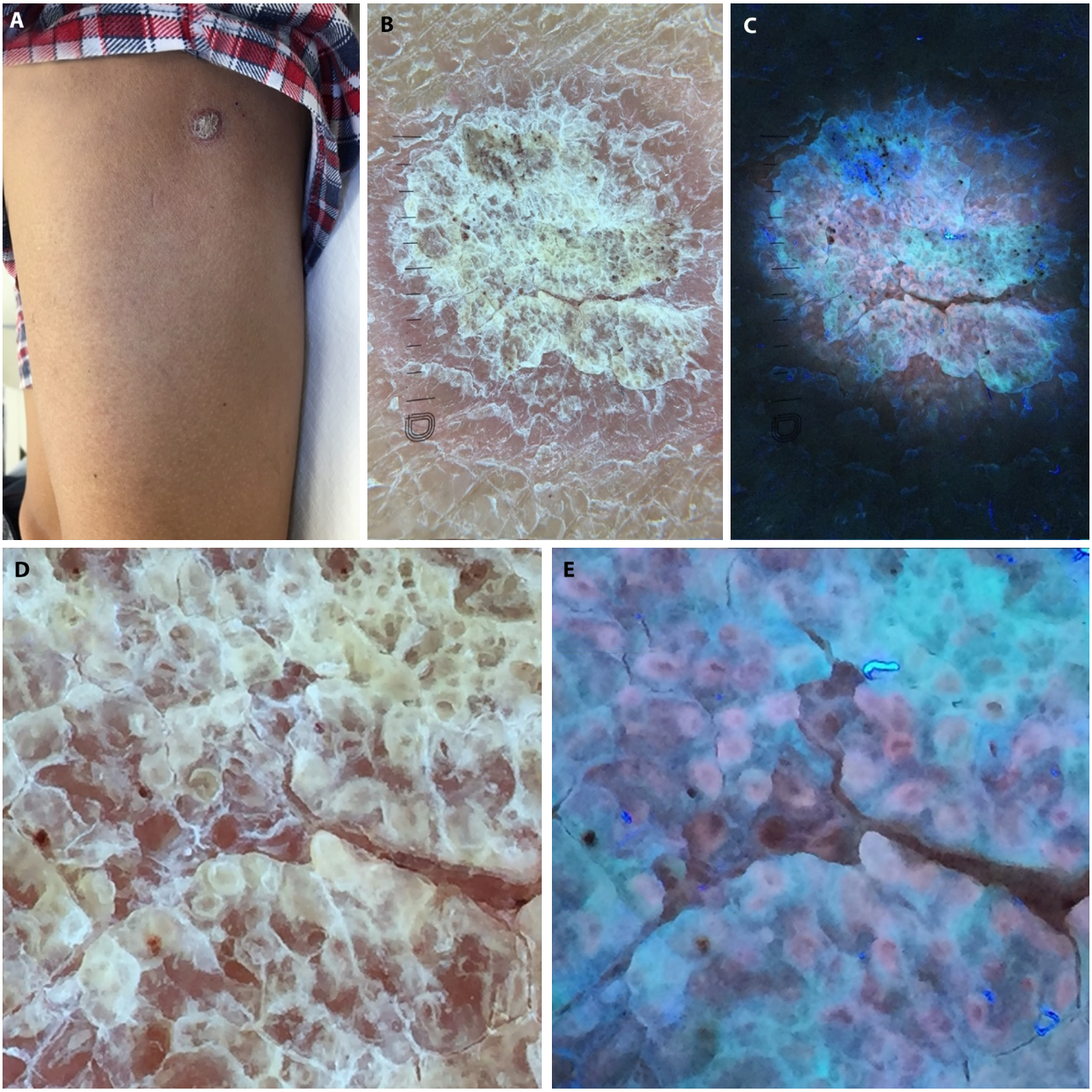

Figure 1. (A) Clinical presentation of plaque psoriasis in a 51-year-old patient with a single lesion on a left thigh present for a few weeks. (B) Non-contact polarized dermoscopy of a suspect lesion reveals a silvery white-yellowish diffuse scale strongly adhering to the skin surface. Single hemorrhagic dots can be appreciated. (C) Ultraviolet-induced fluorescence dermoscopy (UVFD) reveals bright blue-greenish fluorescence of keratin, black centered hemorrhagic dots (high UV-absorbance of hemoglobin) and pink-red fluorescence of protoporphyrin IX within the stratum corneum. Blue stain is an artifact, likely associated with an emollient applied the other day. (D) Magnified image of non-contact polarized dermoscopy shows diffuse white-yellowish scale with roundish clods. Some of them enclose a centered hemorrhagic dot - a remnant of a dermal papillary vessel. (E) Magnified image with UVFD displays pink-red dots and clods surrounding the perivascular areas of elongated dermal papillae. Areas with greenish tint might correspond to serous deposits within the hyperkeratotic and parakeratotic scale.

Conclusions

We have confirmed red fluorescence of psoriatic plaques observed with UVFD by Xie et al [2]. The exact source of epidermal porphyrins (protoporphyrin IX) remains unclear. The origin of protoporphyrin IX in psoriatic plaques might have either bacterial or non-bacterial origin. Despite a negative microbiological culture, we cannot confidently exclude an infectious origin as the cause of fluorescence. The latter hypothesis might be supported by the previously unreported deposition of chromophores around the tortuous elongated vessels of acanthotic papillae (Figure 1E). Wang et al. reported that red fluorescence was positively correlated with psoriasis severity. Accordingly, besides diagnostic purposes, UVFD evaluation might also be helpful in assessing disease outcomes/prognosis. However, further investigation is required to understand the mechanism of porphyrin deposition in psoriatic lesions, the spatial distribution of fluorescence patterns, and how these phenomena relate to disease variants, severity and prognosis.

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