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**Commentary**

**Narrowband UVB-induced iatrogenic polymorphous light eruption: a case and suggestions to overcome this rare complication**

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**Abstract**

Polymorphous light eruption (PMLE) is the most common photodermatosis characterized by pruritic papules and papulovesicles, which appear hours to days following ultraviolet (UV) exposure. Herein, the authors report successful treatment of generalized plaque psoriasis with Goeckerman regimen in a patient despite new onset iatrogenic PMLE following narrowband (NB) UVB therapy. Although further studies are necessary, this case suggests that the co-existence of psoriasis and PMLE should not prevent the use of phototherapy; phototherapy, especially as part of the Goeckerman regimen, remains a valuable treatment option for psoriasis in patients with PMLE.

**Introduction**

Polymorphous light eruption (PMLE) is the most common photodermatosis and it is characterized by pruritic papules and papulovesicles, which appear hours to days following ultraviolet (UV) exposure. Herein, the authors report successful treatment of generalized plaque psoriasis with Goeckerman regimen in a patient despite new onset iatrogenic PMLE following narrowband (NB) UVB therapy.

**Case synopsis**

A 64-year-old woman with past medical history of cirrhosis of the liver secondary to chronic hepatitis B, renal cell carcinoma in remission status post left nephrectomy, hypertension, and psoriasis vulgaris presented with a generalized flare of psoriasis with more than 50% body surface area involvement. The patient had a greater than 20-year history of generalized plaque-type psoriasis, which was initially well-controlled on topical therapies and phototherapy. Approximately one year previously, the patient had presented with a flare and underwent 38 sessions of Goeckerman therapy during which she tolerated a maximum NB UVB dose of 1020 mJ per session and application of 10% crude coal tar. Remission was maintained with treatment regimen consisting of NB UVB three times per week, 20% liquor carbonis detergents (LCD) in neutraderm nightly, and triamcinolone cream and LCD under occlusion to the scalp weekly until the present flare. Given the patient's comorbidities and inability to use internal agents, she was again enrolled in the Goeckerman program.

The patient tolerated Goeckerman treatments as NB UVB was slowly increased to 1030 mJ with the concentration of crude coal tar up to 10%. Steady improvement was observed with decreasing erythema, induration, and scale of the psoriatic plaques. However, on day 14, the patient was noted to have scattered pruritic papules and papulovesicles on the extensor surfaces of the forearms, chest, and back. Given the presentation, the diagnosis of PMLE was made.

Phototherapy was held for the next 5 treatment days and daily crude coal tar application under occlusion was continued. The patient then took 10 treatment days off of Goeckerman therapy owing to unrelated personal reasons. When she returned, her psoriasis had moderately worsened, but no lesions consistent with PMLE were observed. She was restarted on NB UVB at a significantly lower dose of 130 mJ followed by 10% coal tar application. NB UVB dose was increased by 30 mJ daily while observing for signs of recurring PMLE. By the last day of Goeckerman treatment (day 30), she tolerated up to 350 mJ without any signs of PMLE. She had 90% clearance of psoriasis and she was discharged with a maintenance regimen of topical therapies and NB UVB 3 times per week.

## Discussion

PMLE affects up to 20% of the population and is most commonly characterized by pruritic lesions, which appear a few hours to days following light exposure in the spring and summer months [1]. Lesions vary from papules to papulovesicles to plaques, and insect-bite like strophulus forms have also been reported.

PMLE is induced by various wavelengths of light. Although most patients with PMLE are sensitive to UVA light only, others are sensitive to only UVB or both UVA and UVB [2]. It has been shown that repetitive exposure to suberythral UV doses to the same skin area is necessary to provoke lesions of PMLE, which is the basis of the current diagnostic method called photoprovocation [3]. Although the exact pathogenic mechanisms of PMLE remain unknown, partial failure of UV-induced immunosuppression and subsequent delayed-type hypersensitivity response to a UV-modified skin antigen is likely a key factor. Whereas UV rays induce Langerhans cell migration out of the epidermis in healthy skin, Langerhans cells of PMLE patients are resistant to this effect [4]. Furthermore, this resistance to UV-induced immunosuppression is only observed in a narrow UV-dose response window of 1 minimal erythema dose (MED) of solar simulated UV radiation, but not 0.6 or 2 MED [5].

Treatment of PMLE includes photohardening, which is thought to provide immunosuppression without inducing delayed-type hypersensitivity [1]. Management of PMLE also includes preventative photoprotective measures.

Phototherapy is effective in the treatment of psoriasis through its immunosuppressive mechanisms. It has been shown that UVB produces maximal results when used at or near the patient's MED [6]. This is the first reported case of NB UVB-induced PMLE to date. There has been one previous case of UVA-induced PMLE for treatment of linear morphea [7]. In the present case, the patient tolerated up to 1030 mJ of NB UVB, which is likely near the patient's MED, before PMLE lesions were induced. Interestingly, she had received up to 1075 mJ a few weeks prior while undergoing phototherapy three times per week as an outpatient. This is consistent with the concept of photoprovocation and also confirms the narrow UV-dose response window that triggers PMLE. By temporarily discontinuing phototherapy and restarting at a lower dose of NB UVB after all lesions resolved off phototherapy, the patient underwent photohardening while simultaneously treating her psoriasis. Whereas the immunosuppressive effect of phototherapy for the treatment of psoriasis may not be maximal at this dose, the patient was able to achieve 90% clearance of her psoriatic lesions with the Goeckerman regimen.

Although this case is limited by lack of histologic evidence of PMLE, the morphology and behavior of the dermatosis was consistent with PMLE. The senior author has seen several similar cases of UVB phototherapy-induced PMLE in his almost 3 decades of practice in a busy phototherapy center. Like this case, all previous cases were treatable using the same strategy in which the phototherapy was discontinued temporarily. Once all of the PMLE lesions resolved, phototherapy was restarted at a dose much lower than the threshold dose that induced the iatrogenic PMLE. The senior author has never reported these previous similar cases. Although further studies are necessary, this case suggests that the co-existence of psoriasis and PMLE should not prevent the use of phototherapy; phototherapy, especially as part of the Goeckerman regimen, remains a valuable treatment option for psoriasis in patients with PMLE.

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