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Letter

Intractable prurigo nodularis successfully treated with combination therapy with a newly developed excimer laser and topical steroids

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Abstract

Prurigo nodularis (PN) is an eruption of lichenified or excoriated nodules related to intractable pruritus. A few reports have shown that a 308-nm excimer lamp/laser (EL) is effective for intractable PN. Herein, we report on two cases of intractable prurigo nodularis successfully treated with a new EL equipped with a filter to cut wavelengths shorter than 297 nm. Because this newly developed EL yields a therapeutic effect with low cumulative dosages of UV and a lower risk of DNA damage, it can be a new treatment option for intractable PN.

Key words: Prurigo nodularis, 308 nm excimer lamp, pruritus

Introduction

Prurigo nodularis (PN) is a chronic condition characterized by papulonodular pruritic papules and plaques on the extremities, especially on the anterior surfaces of the legs. An intensive itch-scratch cycle induces chronic pruritic nodules. The lesions are sometimes unresponsive to conventional treatments such as topical corticosteroids, intradermal injection of corticosteroids, cryotherapy, and narrow-band ultraviolet B (NB-UVB) therapy. A 308-nm excimer lamp/laser (EL) has been developed as a new target therapy and it has been found to be effective for palmoplantar pustulosis, plaque-type psoriasis, and atopic dermatitis [1,2]. A few reports have shown that EL is effective for intractable PN [3,4], but there could be a potential risk of side effects such as carcinogenesis because shorter wavelengths of light damage DNA [5]. Recently, a new EL equipped with a filter to cut wavelengths shorter than 297 nm exclusively has been developed. Herein, we report two cases of intractable PN treated successfully with this newly developed EL.

Case synopsis

Case 1 is an 80-year-old woman who presented to our clinic with generalized PN. Her medical history included mild hypertension and hyperlipidemia. She was started on oral corticosteroid treatment (10 mg per day for 4 months). The PN lesions on her back and upper extremities improved, but the lesions on her legs were intractable (Figure. 1A). After tapering the oral steroids, we started treatment with a 308-nm EL with an A filter (TheraBeam[®]UV308; Ushio Inc., Japan) twice a month along with a potent topical corticosteroid. The initial dose of EL was 150 mJ/cm² and it was increased by 20-30 mJ/cm² every other week until it reached 300 mJ/cm². After seven months of treatment, several PN lesions had disappeared (Figure. 1B).

Case 2 is a 33-year-old man who was admitted to our clinic with severe atopic dermatitis (AD). He had already received NB-UVB therapy for 4 months at another clinic but a few prurigo nodules on the back of his hands were intractable (Figure. 1C). Therefore, we performed EL treatment for these once a week along with potent topical corticosteroids. The initial dose of EL was 100 mJ/cm² and it was increased by 20-30 mJ/cm² every week until it reached 180 mJ/cm². After five months of treatment, several PN lesions had disappeared and his pruritus was improved (Figure. 1D).

Both of the patients had suffered from sleep disturbance and severe pruritus, which was improved prominently after the treatment with the newly developed EL.

Figure 1



Figure 1. Prurigo nodularis before and after the treatment with the excimer lamp

Case 1: Prurigo nodularis on the anterior surface of leg (A) before and (B) after 7 months of treatment with the excimer lamp

Case 2: Prurigo nodularis on the back of the hand (C) before and (D) after 5 months of treatment with the excimer lamp

Discussion

EL effectively treats resistant and localized lesions with fewer treatments and a lower cumulative UVB dose compared with NB-UVB [6]. Possible side effects of the EL and NB-UVB include erythema and photo carcinogenesis caused by DNA damage [7,8]. Kobayashi et al. reported that a filter significantly reduced the rates of cyclobutane pyrimidine dimer formation as compared with the normal-wavelength and short-wavelength ELs without a filter [5]. It is also known that the short-wavelength (< 295 nm) is erythemogenic but not therapeutic even at 10 to 50 times the minimal erythema dose [9]. Therefore, eliminating wavelengths less than 297 nm using a filter reduces the risk of side effects without decreasing efficacy. EL can be combined with other established modalities for PN treatment. Combination therapy with topical steroids can increase the efficacy of EL treatments for vitiligo [10].

The therapeutic mechanism of EL for pruritus is still unclear. UV-based therapy has been shown to reduce the number of cutaneous nerve fibers, especially in the epidermis, in patients with AD and psoriasis. Tominaga et al assessed the effects of EL on nerve growth using acetone-treated mice as an acute dry skin model. In addition, the anti-nerve growth effects of NB-UVB and EL treatments were more effective than PUVA treatment [11]. Thus, UVB irradiation may be effective for PN patients with pruritus.

Herein, we describe two patients with intractable PN successfully treated with a new EL. This newly developed EL has a good therapeutic effect with a low cumulative dosage of UV and a lower risk of DNA damage. We propose that this EL can be a new therapeutic option for intractable PN. The present study was limited to a few cases; larger scale studies are needed to evaluate the efficacy and the safety of the newly developed EL in comparison with the classic EL and NB-UVB treatments.

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