Case report: photo-onycholysis after PUVA treatment for hypopigmented mycosis fungoides with response to topical steroid

Paul Jie Wen Tern & Julia Gass

School of Clinical Medicine, University of Cambridge, Cambridge, UK
Department of Dermatology, Addenbrookes Hospital, Cambridge, UK

Correspondence
Paul Jie Wen Tern, Emmanuel College, St Andrew’s Street, Cambridge CB2 3AP, UK.
Tel: +44 7746343461; Fax: +44(0)1223 336709; E-mail: paul.tern@gmail.com

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We report an unusual case of a 16-year-old male patient with skin type VI with onycholysis following PUVA treatment for hypopigmented mycosis fungoides. Symptoms resolved during application of clobetasol propionate scalp formulation under the free edge of the nail.

Case Report
An Afro-Caribbean boy first presented at age 6 with widespread hypopigmented patches with fine scaling over his trunk, limbs, buttocks, and neck. Skin biopsy confirmed a diagnosis of Stage 1B CD8+ hypopigmented mycosis fungoides. Human T-lymphotropic virus type 1 and 2 screening and lymphocyte subsets were negative or normal. At the age of 14, he tolerated oral PUVA with a total dose of 173.5 J, achieving a good response with no reported side effects from the treatment. Eighteen months later, he had a recurrence of hypopigmented patches on his lower legs, gluteal fold, and arms and was again treated with cabinet PUVA phototherapy with oral 5-methoxypsoralen. Three weeks after completing 29 sessions of PUVA (max dose 13.25 J, total 173.6 J), he developed onychodynia followed by onycholysis of the distal third of all fingernails, with relative sparing of the thumbs (Fig. 1). He was on no systemic medication, and thyroid function tests were normal.

He was treated for a phototoxic reaction to PUVA with clobetasol propionate scalp application dribbled under the free edge of the nail daily. After a month, he reported that the discomfort had resolved and onycholysis stabilized.

Discussion
Onycholysis is a well-known complication of PUVA phototherapy [1], having been first described in the English literature by Mackie in 1979 [2]. However, there have been few reports in the last 25 years, and none reported in pediatric patients being treated for mycosis fungoides. It is believed that the nail acts as a convex lens, focusing the UVA rays onto the nail bed [3]. The sparsity of melanin, the absence of sebaceous glands, and relative lack of stratum granulosum have all been suggested to play a role in favoring ultraviolet penetration in the nail bed [3]. Whilst the human nail transmits short wavelengths of light poorly, thus blocking out most UVB
radiation (280–320 nm), it allows some transmission of UVA (320–400 nm) [4]. This includes wavelengths between 340 and 360 nm, to which the skin is sensitized by psoralens.

It has been suggested that the melanin in the nail bed in patients with a dark skin type may afford some protection against photo-onycholysis [5]. Baran et al. [6] previously reported spontaneous photo-onycholysis in a West Indian with type V skin, where biopsy demonstrated significant regions of subungual tissue lacking a protective melanin shield. It is interesting that our patient developed this complication despite his skin type, and we speculate that this may be due to a decrease in melanocytes in hypopigmented mycosis fungoides.

Previous authors have reported that shielding the nails with opaque light shields [1, 7] or nail varnish [8] can aid recovery and allow nail reattachment. In our patient, as the course of PUVA treatment had already been completed, we prescribed clobetasol propionate scalp formulation to be dribbled under the free edge of the nail.

This case highlights that patients with darker skin types may still be susceptible to PUVA photo-onycholysis. Topical steroids may provide symptomatic relief.

**Authorship**

This case report was written by Paul Tern and edited by Julia Gass.

**Conflict of Interest**

None declared.

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