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CORRESPONDENCE

A case of Kyrle's disease successfully treated with topical benzoyl peroxide

Perforating dermatoses consist of heterogeneous skin disease entities characterized by transepidermal elimination of various dermal materials. Classical perforating dermatoses are divided into four types: acquired reactive perforating collagenosis, elastosis perforans serpiginosa, Kyrle's disease, and perforating folliculitis.[1] There is no standard therapeutic protocol for perforating dermatoses, although various therapies have been tried. Here, we report a case of Kyrle's disease successfully treated with topical benzoyl peroxide (BPO).

A 46-year-old Japanese man was referred to us with itchy papules and nodules on the extremities. The skin lesions appeared 20 months before the first visit and were diagnosed as folliculitis. Physical examination revealed pruritic hyperpigmented papules and nodules with central umbilication and keratotic plugs on the extremities and buttocks (Figure 1A-C). These skin lesions were also observed to have a linear distribution on the trunk, suggesting the existence of the Köbner phenomenon (Figure 1B). His medical history included type 1 diabetes mellitus, diabetic nephropathy, and renal failure, and he had undergone hemodialysis. Histopathology of a biopsy specimen from a papule in one of his lower extremities showed acanthosis and hyperkeratosis with a keratin plug and inflammatory debris composed mostly of neutrophils filling an epithelial invagination (Figure 1D,E). Elastica van Gieson staining did not reveal collagen

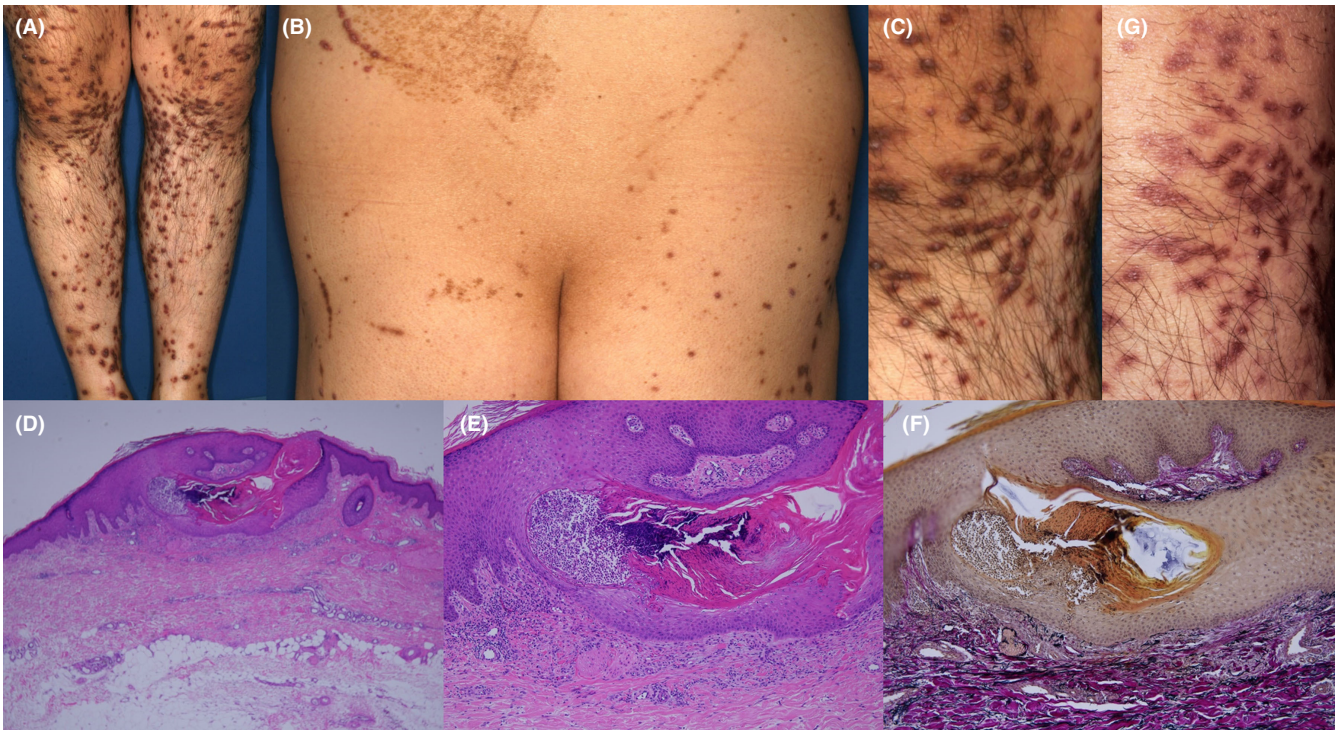

FIGURE 1 (A-C) Pruritic hyperpigmented papules and nodules with central umbilication and keratotic plugs on the extremities and buttocks. (D, E) Histopathology, showing acanthosis and hyperkeratosis with a keratin plug and inflammatory debris (hematoxylin and eosin staining; [D] ×40, [E] ×100). (F) Transepidermal elimination of abnormal keratin (Elastica van Gieson staining). (G) Five months after topical benzoyl peroxide therapy.

or elastic fibers (Figure 1F). A definitive diagnosis of Kyrle's disease was established. The patient's skin lesions were partly accompanied by folliculitis, and coagulase-negative *Staphylococcus* was isolated using swab culture. BPO and topical ozenoxacin were administered based on the standard treatment for inflammatory acne. These topical agents improved inflammatory findings for 4 weeks, and topical ozenoxacin was discontinued. Topical BPO was administered because the skin lesions gradually flattened. After 5 months, the skin lesions had almost resolved, with post-inflammatory hyperpigmentation (Figure 1G).

Kyrle's disease commonly manifests as pruritic, red-brown papules, and nodules with central keratin plugs. The Köbner phenomenon, which occurs secondary to scratching, has often been observed. To date, treatments for Kyrle's disease that have been reported in the literature include antibiotics, immunosuppressants, phototherapy, topical/systemic retinoids, and topical keratolytics, as well as multiple combination regimens that incorporate the use of oral/topical/injectable steroids, emollients, and/or antihistamines.[2] Kyrle's disease is associated with underlying systemic disorders, such as chronic renal failure and diabetes mellitus, and the proper management of underlying systemic disorders is also required to control the itch-scratch cycle. However, no guidelines or evidence-based regimens have been developed, and no definitive recommendation can be made.[2] There has been only one case of acquired reactive perforating collagenosis that was refractory to topical corticosteroid and oral antihistamine but responded satisfactorily to topical BPO.[3] Benzoyl peroxide acts as antibacterial agents suppressing *Propionibacterium acnes* in the sebaceous follicle and as anti-inflammatory agents in the treatment of acne.[4] It still remains unclear whether BPO has anti-inflammatory or anti-itch effects in the treatment of Kyrle's disease. However, BPO penetrated the skin pores and removed the keratin plugs, which led to clinical improvement in our case. Further case studies are required to confirm the efficacy of BPO in the treatment of Kyrle's disease.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, Koji Kamiya, upon reasonable request.

ETHICS STATEMENT

Approval of the research protocol: No human participant was involved in this study.

Informed Consent: The Patient has provided informed consent for the publication of the images submitted with this article.

Registry and the Registration No.: N/A

Animal Studies: N/A

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