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# Managing Pitted Keratolysis through hyperhidrosis control with topical glycopyrrolate 2%

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**Disclosure statement**

No relevant financial relationships to disclose

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## Background

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Pitted keratolysis (PK), a non-inflammatory bacterial infection of the plantar stratum corneum, is characterized by crateriform pitting and superficial erosions on the pressure-bearing aspects of the soles (Figure 1). Plantar hyperhidrosis and bromhidrosis are the most commonly associated findings. The predominantly isolated microorganisms include *Corynebacterium* sp, *Kytococcus sedentarius* and *Dermatophilus congolensis*. Despite PK being a widespread foot condition, there is currently no consensus regarding its management. A combination of topical antibiotics (clindamycin, benzoyl peroxide, erythromycin, fusidic acid, mupirocin), and adjunctive measures (antiperspirants, appropriate hygiene, and footwear) is considered the mainstay of treatment. Oral antibiotics and injectable botulinum toxin have also been employed in the management of PK.

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## Objective

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Although several modalities exist, many offer temporary solutions. We thereby present three patients with PK successfully treated with topical glycopyrrolate, a muscarinic anticholinergic agent with antiperspirant properties.

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Figure 1. Clinical features of PK: Crateriform pitting and superficial erosions on the bilateral pressure-bearing aspects of the soles.

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## Methods

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The patients were followed up prospectively at the Hyperhidrosis Outpatient Clinic of Andreas Sygros Hospital in Athens, Greece. The diagnosis of PK was made based on the clinical features. All patients underwent only topical treatment with glycopyrrolate 2% cream once daily for 4 weeks. At the beginning (week 0) and after 2 and 4 weeks of treatment, a clinical evaluation was performed by the same physician.

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## Results

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Three male patients with PK aged 33, 34 and 42 years respectively were enrolled. Two of them reported plantar hyperhidrosis and one of them adjuvant axillary hyperhidrosis confirmed through the Minor's test in the department. Besides, fetidness and malodor were also noted in all cases. Regarding the efficacy of treatment, significant regression of all clinical signs and symptoms was observed after two weeks with further improvement at the end of treatment (Figure 2-a,b). No adverse events have been experienced. There was neither relapse nor recurrence during the three-month follow-up period.

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Figure 2. A 34-year old patient with PK: Multiple yellowish crateriform pits on the metatarsal region of the right sole at the initial visit (a). The plantar lesions were significantly resolved after 4 weeks of treatment with topical glycopyrrolate 2% (b).

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## Conclusions

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Although limited by the small number of patients, our experience suggests that glycopyrrolate 2% cream may represent a novel therapeutic approach in controlling PK. No known previous studies for the treatment of PK with glycopyrrolate 2% have been published to date. Recently, glycopyrrolate has been evaluated as a topical formulation of 3.75% concentration in two double blind randomized placebo control phase-3 trials for the treatment of hyperhidrosis. Although anticholinergics can be complicated by anti-muscarinic side effects (mouth and/or eye dryness, blurred vision, urinary hesitancy), our patients displayed excellent response with neither adverse events nor recurrence. A plausible explanation for the disease improvement in our case series is that glycopyrrolate-induced environmental modification via sweat reduction may lessen bacterial colonization, which comprises a determinant for the onset of PK.

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## References

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