

# Dermatoscopic Findings of Palmar Pitted Keratolysis Due to Battery Heated Hand Warmer

Pilli El Isıtıcısına Bağlı Palmar Pitted Keratolizde Dermatoskopik Bulgular

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Pitted keratolysis is a superficial bacterial infection of the skin. Corynebacteria infection of the skin is generally the cause although other bacteria have been isolated. Clinically there are many skin coloured, punched out depressions measuring 2 to 30 mm in diameter. The most common localization is the plantar skin where pressure bearing areas, are most involved. Palmar lesions are very rare. Here we report a patient with pitted keratolysis associated with palmar hyperhidrosis developing after using battery heated hand warmer. Dermatoscopic examination revealed numerous black circles in a parallel pattern on the ridges of the skin markings. To our knowledge, the dermatoscopic features of pitted keratolysis have not been described previously.

**Key Words :** *Dermatoscopy, hyperhidrosis, pitted keratolysis*

Pitted keratoliz derinin yüzeysel bakteriyel enfeksiyonudur. Derinin korinebakteriyel enfeksiyonu genellikle etken patojen olup, başka bakteriler de izole edilmiştir. Klinik olarak çok sayıda, 2-30 mm çapında çukurcuklar mevcuttur. En sık, daha fazla basınca maruz kalan ayak tabanı tutulur. Palmar lezyonlar çok nadirdir. Burada, pilli el ısıtıcısı kullanımı sonrası palmar pitted keratoliz gelişen bir olgu sunulmaktadır. Dermatoskopik incelemede deri çizgilerinin sırt kısımlarında, çok sayıda, paralel dağılım paterninde, siyah daireler gözlenmiştir. Bilgilerimiz dahilinde, bugüne kadar pitted keratolizisin dermatoskopik bulguları bildirilmemiştir.

**Anahtar Sözcükler:** *Dermatoskopi, hiperhidrozis, pitted keratoliz*

Pitted keratolysis (PK) is generally a disorder of the soles caused by a series of gram positive bacteria, in particular several *Corynebacterium* spp(1-3). All share a common feature, which enables them to open small tunnels in the stratum corneum. Prolonged occlusion with shoes associated with hyperhidrosis or not, is a triggering factor. Involvement of the palms has rarely been reported(3).

The diagnosis of PK is made on clinical grounds. Bacterial culture is not clinically pertinent due to the presentation of multipl bacterial species(4). Dermatoscopy is a noninvasive technique that has been used to enhance the diagnostic accuracy of pigmented skin lesions. However, newer use of fields, are being continually explored. In this report, a case of PK associated with palmar hyperhidrosis is discussed together with its dermatoscopic findings.

## Case Report

A 10-year-old boy presented with a one-month history of increased sweat production on his palms. Hyperhidrosis was induced after using battery heated hand warmers for a period of two weeks. Afterwards superficial depressions were accompanied on the palmar surface of the hands (Figure 1). Physical examination revealed focal macerated areas of the palmar region with



**Figure 1:** Focal macerated areas of the palmar region with numerous depressed microspots.

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**Figure 2:** Numerous black circles in a parallel pattern on the ridges of the skin markings (documente by DermLite foto)

numerous depressed microspots. The affected skin shows coral red fluorescence upon Wood's light examination. The starch iodine test performed on the palmar surfaces of the hands and was immediately and strongly positive. PK with palmar hyperhidrosis was diagnosed. Dermatoscopic examination revealed numerous black circles in a parallel pattern on the ridges of the skin markings (Figure 2). Treatment with topical aluminium hydroxide and topical erythromycin lead to resolving of the lesions.

## Discussion

PK is a non-inflammatory, superficial bacterial infection of the skin, confined to the stratum corneum of the soles, characterized clinically by multifocal, discrete, superficial crateriform pits and superficial erosions. The cause is usually attributed to a member of *Corynebacterium* species, *Micrococcus sedentarius* (now renamed as *Kytococcus sedentarius*), and *Dermatophilus*

*congolensis*(3,5-7). All of these share a common feature, which enables them to open small tunnels in the stratum corneum.

PK is reported to be more common among barefooted laborers/farmers, marine workers, soldiers and industrial workers wearing occluded shoes for prolonged periods. The disease is mostly confined to the stratum corneum of the soles. It can rarely occur on the palms(3). Our patient developed palmar hyperhidrosis after using battery heated hand warmer. Here, heat and humidity produce a microenvironment that predisposes to PK. Hyperhidrosis is reported the commonest symptom of PK reported by 70% of the cases(3).

The diagnosis of PK is made on clinical grounds. Bacterial culture is not clinically relevant as multiple bacterial species are usually present(4). Skin biopsies are not performed routinely, as the diagnosis can be made easily by the unique clinical presentation. Histological evaluation reveals a crater limited to the stratum corneum. Filaments and coccoid organisms may be seen in the base and margin of the same with H/E stain, however, the organisms can be detected more easily with special stains like Gram stain, Periodic acid-Schiff (PAS), or methenamine silver stains(8). Wood's ultraviolet light examination is not consistently helpful, but the affected area displays a char-

acteristic coral red fluorescence due to water soluble coproporphyrin III produced by the organisms. In the present case the affected skin shows coral red fluorescence under Wood's light.

To our knowledge, dermatoscopic findings of PK have not been reported. Dermatoscopy revealed numerous black circles in a parallel pattern on the ridges of the skin markings. Craters limited to the stratum corneum explain the circles seen by dermatoscopy. Some bacteria produce pigments which can be seen after they grow into colonies. Here, the pigment seen as black circles by dermatoscopy may correspond to the pigment produced by coccoid organisms. Although in the present case, a proof of infectious agents which justify the diagnosis of a pitted keratolysis was not conducted and also numerous black circles seen by dermatoscopy could be similar in other cornification disorders like seborrheic keratosis and linear epidermal nevus, typical clinical appearance and rapid healing of the lesions with topical aluminium hydroxide and topical erythromycin led us to consider pitted keratolysis in the diagnosis.

In conclusion, dermatoscopy may add additional information to the clinical examination in PK. However, we would recommend further investigations with histopathological correlation in patients with PK to confirm this dermatoscopic sign.

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