Plantar pitted keratolysis: a study from non-risk groups

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Abstract

Pitted keratolysis is an acquired, superficial bacterial infection of the skin which is characterized by typical malodor and pits in the hyperkeratotic areas of the soles. It is more common in barefooted people in tropical areas, or those who have to wear occlusive shoes, such as soldiers, sailors and athletes. In this study, we evaluated 41 patients who had been diagnosed with plantar pitted keratolysis. The patients were of high socioeconomic status, were office-workers, and most had a university degree. Malodor and plantar hyperhydrosis were the most frequently reported symptoms. The weight-bearing metatarsal parts of the feet were those most affected. Almost half the women in the study gave a history of regular pedicure and foot care in a spa salon. Mean treatment duration was 19 days. All patients were informed about the etiology of the disease, predisposing factors and preventive methods. Recurrences were observed in only 17% of patients during the one year follow-up period. This study emphasizes that even malodorous feet among non-risk city dwellers may be a sign of plantar pitted keratolysis. A study of the real incidence of the disease in a large population-based series is needed.

Introduction

Pitted keratolysis is an acquired, superficial bacterial infection of the skin. The characteristic features of the disease are multiple crateriform pits (usually in the weight-bearing areas of the soles), maceration (mostly because of hyperhydrosis), a typical unpleasant smell, and slininess of the feet. Pitted keratolysis has a worldwide distribution, but the disease is more common among barefooted people living in tropical regions. No race or sex predilection has been reported. In this study, we documented clinical and demographic data of 41 plantar-pitted keratolysis patients who were admitted to a private hospital in Ankara, Turkey.

Materials and Methods

The study included all patients diagnosed with plantar-pitted keratolysis in a 2-year period among the patients of the dermatology department of a private hospital in Ankara. An unproblematic clinical diagnosis of pitted keratolysis was made in almost all of the 41 patients with the help of the unique malodor of the disease. In 11 of the patients, Gram’s staining was performed to show the rod like organisms confirming the diagnosis of pitted keratolysis. However, mycotic investigations and wood light examination were carried out in every patient to exclude tinea pedis and erythroasma. In some suspected patients, bacteriological cultures or histopathological examinations were carried out to exclude other bacterial infections and some keratodermas. Patients with a diagnosis other than pitted keratolysis were excluded from the study, but 4 of the patients who concomitantly had both tinea pedis and pitted keratolysis were included. Patients were investigated with a special emphasis on the triggering factors and the results were recorded.

Results

Of the 41 pitted keratolysis patients included in this study, 24 were male (58.6%) and 17 were female (41.4%). Patients were between 18-56 years of age (mean 38.95 years). Most of the patients were office workers of a high socioeconomic status and had a university degree (n=24, 58.6%). Thirteen patients (31.7%) had university degree and reported prolonged use of occlusive footwear for wear. Three patients were students (7.3%) and one was not educated (2.4%).

Patients mostly complained about malodor (n=41, 100%), wet feet (n=27, 66%), sliminess of the feet (n=11, 26.8%), pain and burning sensation in the feet (n=11, 26.8%) and pruritus (n=14, 2.4%). None of the patients reported a seasonal change in their condition. None of the patients reported involvement of the palms of their hands. Weight-bearing metatarsal regions of the feet were most commonly involved areas (n=39, 95.1%).

Physical examination mostly revealed malodor (100%) and hyperkeratosis (58.6%) of the soles. Maceration due to hyperhydrosis was found in 31.7% of patients, whereas fissures and erythema were seen in 14.6% and 2.4% of cases, respectively.

Four of the patients had concomitant tinea pedis (9.7%). Plantar warts and corns were observed in 7.3% and 2.4% of cases, respectively. No corynebacterial triad (pitted keratolysis, erythroasma and trichomycosis) was seen in any of the patients in the present study.

As there is no system for scoring the severity of plantar pitted keratolysis, treatment was planned according to the clinical appearance of lesions, depending on the anatomic extension of lesions, the hyperkeratosis and depth of the pits. Only topical treatment with 4% erythromycin gel was applied in 9 patients (21.9%) who had malodor and slight pits. Patients (n=32, 78.1%) with more severe clinical appearance (malodor, hyperkeratosis deep pitted lesions and maceration) needed both systemic and topical treatment. Roxitromycine 300 mg/day was used as a systemic antibiotic. Patients (n=19, 46.4%) who had malodor and hyperkeratosis and deeper pitted lesions were treated with 10% salicylic acid, including creams in addition to erythromycin gel. In patients with severe maceration, 0.01% KMON4 solution was used also for its astringent and drying properties (Table 1). Patients were controlled weekly and topical treatments were continued until symptoms had completely disappeared. All patients reported strict adherence to treatment and kept their checkup appointments. Treatment lasted between one and eight weeks (mean 19 days).

During the treatment period, patients used cotton socks and followed suggestions for changes in their daily habits. They did not wear the same shoes for two consecutive days. During the 1-year follow up, recurrence was observed in 7 (17%) patients. Time to recurrence was 4-12 months. The common feature of these patients was the highly hyperkeratotic tissue of the sole; one was in severe depression and one was deeply immunosuppressed.

Discussion

Pitted keratolysis is a skin disorder charac-
Malodor-hyperkeratosis-deeper pits

Table 1. Treatment modalities according to clinical appearance.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>N (%)</th>
<th>Topical treatment</th>
<th>Systemic treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malodor-pits</td>
<td>9 (21.9)</td>
<td>Erythromycine gel</td>
<td>-</td>
</tr>
<tr>
<td>Malodor-hyperkeratosis-deeper</td>
<td>19 (46.4)</td>
<td>Erythromycine gel</td>
<td>Roxytromycine 300 mg/day</td>
</tr>
<tr>
<td>pits</td>
<td></td>
<td>10% salicylic acid cream</td>
<td></td>
</tr>
<tr>
<td>Malodor-hyperkeratosis-deeper</td>
<td>13 (31.7)</td>
<td>Erythromycine gel</td>
<td>Roxytromycine 300 mg/day</td>
</tr>
<tr>
<td>pits-maceration</td>
<td></td>
<td>10% salicylic acid cream 0.01% KMNO4 Solution</td>
<td></td>
</tr>
</tbody>
</table>

Plantar pitted keratolysis is a disease mostly affecting the soles of the feet. It is a bacterial infection and usually occurs because of prolonged use of occlusive footwear. Although a lot of people have smelly feet there are not many reports about the real incidence of plantar pitted keratolysis. The only reports concern high-risk groups. Our study showed that the incidence of pitted keratolysis might be more common than suspected. Instead of seeking medical help, people with foot odor might be using over the counter products which mostly contain anti-fungals and anti-perspirants or sometimes ointments which may aggravate maceration.

Conclusions

Table 1. Treatment modalities according to clinical appearance.

References


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