

Pitted Keratolysis successfully treated with Individualised Homoeopathic Medicine- A Case Report

V. Rekha

Assistant Professor, Department of Physiology, MNR Homoeopathic Medical College and Hospital, Sangareddy, Telangana, India

Abstract:

Irritated hyperhidrotic soles with multiple small pits, Malodour and sliminess of the skin are pathognomonic for Pitted Keratolysis (PK). The most common sites of onset of PK are the pressure-bearing areas, such as the ventral aspect of the toe, the ball of the foot and the heel. The next most common site is a friction area, the interface of the toes. In India increased incidence of pitted keratolysis is commonly found in paddy field workers in costal South India due to persistent exposure to moist environments. Diagnosis can be made easily by the unique clinical presentation of pits and recognition of characteristic odour. Homoeopathy being based on Principle of similar it not only initiates a healing response, but it encourages a respect for the body's wisdom. Well selected Homoeopathic remedies are effective for managing Pitted keratolysis. Calcarea carbonica was prescribed as an individualized homeopathic medicine on the basis of symptoms which showed a positive role in the treatment of Pitted Keratolysis. The outcome was assessed by Modified Naranjo Criteria along with the photographs.

Keywords: Calcarea Carbonica, Homoeopathy, Hyperhidrosis, Pitted Keratolysis

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***CORRESPONDING AUTHOR:**

Dr. V.Rekha

Assistant Professor, Department of Physiology
MNR Homoeopathic Medical College and
Hospital, MNR Nagar, Fasalwadi, Narsapur road
Sangareddy – 502294, Telangana
Email - rekha.patro@gmail.com

Introduction:

Pitted keratolysis is an acquired, chronic, usually asymptomatic, 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. It can rarely occur on the palms.^[1] Acton and McGuire renamed the disease "Keratolysis plantare sulcatum", since the condition in reality is a partial loss of the stratum corneum rather than a hyperkeratosis as Castellani's "Keratoma" implied.^[2]

Zaias et al, observing the erosion of the horny layer of the plantar surfaces, assigned the condition its current name, "Pitted keratolysis".^[3]

Pitted keratolysis has a worldwide distribution, but is more common among barefooted people living in tropical regions, but adult males with sweaty feet are most susceptible (97% of the cases)^[4]. It is commonly seen during summer and rainy seasons. It can affect any age^[5]. Most commonly reported among barefooted laborers/farmers, marine workers, soldiers and industrial workers wearing occluded shoes for prolonged periods.

Pitted keratolysis is caused by a cutaneous infection with *Micrococcus sedentarius* (now renamed as *Kytococcus sedentarius*)^[6] *Dermatophilus congolensis*^[7] and the *Corynebacterium* species^[8]

Although pitted keratolysis is frequently associated with excessive sweating and a foul smell, it is not caused solely by the excessive sweating. Rather, Perspiration along with tight clothing like socks creates an environment for the bacteria to grow^[9]. The organism *Kytococcus sedentarius* is a gram-positive Staphylococcus-related

bacterium; it can be grown on tryptase-soy agar. *Dermatophilus congolensis* is an aerobic gram-positive bacillus, with branching and septate filaments. They form rough, b-hemolytic colonies on horse blood agar. *Corynebacterium* species are gram-positive, catalase-positive, aerobic or facultatively anaerobic, generally non-motile rods.

Under appropriate conditions (i.e. prolonged occlusion, hyperhidrosis, increased skin surface pH), these bacteria proliferate and produce proteinases that destroy the stratum corneum, creating pits. *Kytococcus sedentarius* has been found to produce two keratin-degrading enzymes, protease P1 (30 kd) and P2 (50 kd) respectively.^[10]

The malodour associated with pitted keratolysis is presumed to be due to the production of sulfur-compound by-products, such as thiols, sulfides and thioesters^[11]

The patients with pitted keratolysis may complain of hyperhidrosis, sliminess,^[4] malodour and occasionally, soreness, itching and pain while walking^[12] Sites of involvement are pressure-bearing areas such as the ventral aspect of the toe, the ball of the foot and the heel, but are also rarely seen on the non-pressure bearing areas of the plantar surface and the palms of the hand. Interdigital intertrigo and paronychia may coexist but does not influence the onset or course of the disease. Coexistence of psoriasis has also been reported.^[4]

Diagnosis can be made easily by the unique clinical presentation and recognition of characteristic odour. Wood's ultraviolet light examination is not consistently helpful, but the affected area displays a characteristic coral red

fluorescence. The organisms may be obtained from the pitted lesions and cultured on brain heart infusion agar under nitrogen and carbon dioxide at 98.6°F (37°).^[13]

Avoiding use of occlusive footwear, reduction of foot friction with properly fitting footwear, using absorbent cotton socks, wearing open toed sandals whenever possible, washing feet with soap or antibacterial cleanser twice a day, and avoiding sharing of footwear or towels. In some cases it may be helpful to reduce any associated hyperhidrosis with the application of a roll-on antiperspirant or 20% aluminium chloride solution.^[5] Keeping the feet as dry as possible.

Conventional treatment involves antibacterial gels or creams such as clindamycin, erythromycin or mupirocin. Sometimes a physician will also prescribe a drying agent such as Drysol.⁽⁹⁾

Case History:

A girl of 13 years old student by occupation, visited on 25th December 2019, complained of holes or pits on the toes and soles of both feet right more than the left with profuse perspiration and sour odour from the feet since 5 months. The socks get wet and feet smells sour if she wears shoes for a longer period of time.

Life space investigation -Patient belongs to a middle socio economic class family, her father is a manager in a company and mother is housewife. The pt. is good in studies, interested in extracurricular activities like dancing, sports, etc. but gets easily fatigued.

She reported past history of Chicken pox, Pyrexia of unknown origin (PUO) with

heat of vertex and cold body. She was born on 2007, studying in 8th standard, attained menarche at 12 years of age. There is strong family history of Type II diabetes. Father suffering from Type II Diabetes, Mother underwent hysterectomy for Uterine Fibroid. Paternal grandfather, Paternal grandmother, Maternal grandfather has Type II Diabetes. Paternal grandmother has Hypothyroidism, HTN, Increased uric acid, Osteoarthritis and maternal grandmother has Asthma.

She is a chilly patient. She is having desire to eat sour, salty food, likes milk and milk products, aversion to bitter. Her appetite, thirst, urine and sleep are normal. Her stool is clear and change in diet caused constipation. There is profuse perspiration from soles of the feet, head and less on palms which is sour smelling. Injury heals early. She is intellectually keen scoring 90% in studies, very obstinate. She gets easily tired after little exertion. She is lazy, delays in completing the work. Lack of proper plan in completing the task.

Homoeopathic Medicinal management, Follow up and Outcome:

Selection of medicine:

Repertorisation was done using HOMPETH classic version 8.0 (Complete Repertory) giving priority to mental generals then physical generals then particular symptoms. After repertorisation, the main remedies that can be considered are Calcarea carb (20/10), Silicea (20/9), Sulphur(17/10), Arsenic album(16/9). Most of the symptoms are covered by Calcarea and Silicea but symptoms like heat of vertex, desire for sour food, covered by calcarea. After consulting homoeopathic Materia medica first prescription was done on 25/12/2019

Calcarea carb 200/3 doses. It was advised to be taken on every third day, early morning in empty stomach followed by

placebo 200 once daily (OD) for 30 days. She was asked for regular follow up (Table-1) at an interval of 30 days.

Table-1: Time line and follow-up:

Date	Observations	Medicine with doses and repetition
25/12/2019	Pits on the foot, sour odour of foot, sweat from the soles, burning sensation	Calcarea carb 200/3 doses, once every third day. Placebo 200/ OD for 30 days
23/1/2020	Size of the pits reduced, burning sensation reduced, sour odour reduced.	Calcarea carb 200/4 doses, every third day, Placebo 200/ OD for 30 days
1/3/2020	There was no further recurrence of pits on the soles, sour odour reduced, burning sensation reduced, sweat decreased.	Placebo 200/ OD for 30 days
5/4/2020	Pits disappeared, no burning sensation, sweat decreased	Placebo continued

Table 2: Assessment According to Modified Naranjo criteria:

No.	Questions	Yes	No	Not sure or N/A	Scores
1.	Was there an improvement in the main symptom or condition for which the homeopathic medicine was prescribed?	Yes			+2
2	Did the clinical improvement occur within a plausible timeframe relative to the drug intake?	Yes			+1
3	Was there an initial aggravation of symptoms?		No		0
4	Did the effect encompass more than the main symptom or condition, i.e., were other symptoms ultimately improved or changed?	Yes			+1
5	Did overall well-being improve?	Yes			+1
6 A	Direction of cure: did some symptoms improve in the opposite order of the development of symptoms of the disease?	Yes			+1
6B	Direction of cure: did at least two of the following aspects apply to the order of improvement of symptoms: • from organs of more importance to those of less importance? • from deeper to more superficial aspects of the individual? • from the top downward?		No		0
7	Did “old symptoms” (non-seasonal and non-cyclical		No		0

	symptoms that were previously thought to have resolved) reappear temporarily during the course of improvement?				
8	Are there alternate causes (other than the medicine) that solely could have caused the improvement? (e.g., known course of disease, other forms of treatment and other clinically relevant intervention)		No		0
9	Was the health improvement confirmed by any objective evidence?	Yes			+2
10	Did repeat dosing, if conducted, create similar clinical improvement?	Yes			+1

Remedy Name		Calc	Sil	Sulph	Ars
Symptom Covered		20	20	17	10
Totality		10	9	10	9
[C] [Mind]Company:Desire for:		2	1	1	3
[C] [Mind]Wearisome:		1		1	1
[C] [Mind]Obstinate, headstrong:		3	2	2	2
[C] [Mind]Postponing everything to next day:		1	1		
[C] [Generalities]Heat:Vital, lack of:		3	3	2	3
[C] [Generalities]Food and drinks:Sour, acids:Desires:		2		2	2
[C] [Generalities]Food and drinks:Milk:Desires:		2	2	1	2
[C] [Head]Perspiration, scalp:Odor:Sour:			4	1	
[C] [Head]Heat, general:Vertex:		2		4	1
[C] [Extremities]Perspiration:Foot:Sole:		2	3	2	1
[C] [Extremities]Perspiration:Foot:Profuse:			3	1	1
Symptoms		12			

Fig-1: Case Repertorisation sheet

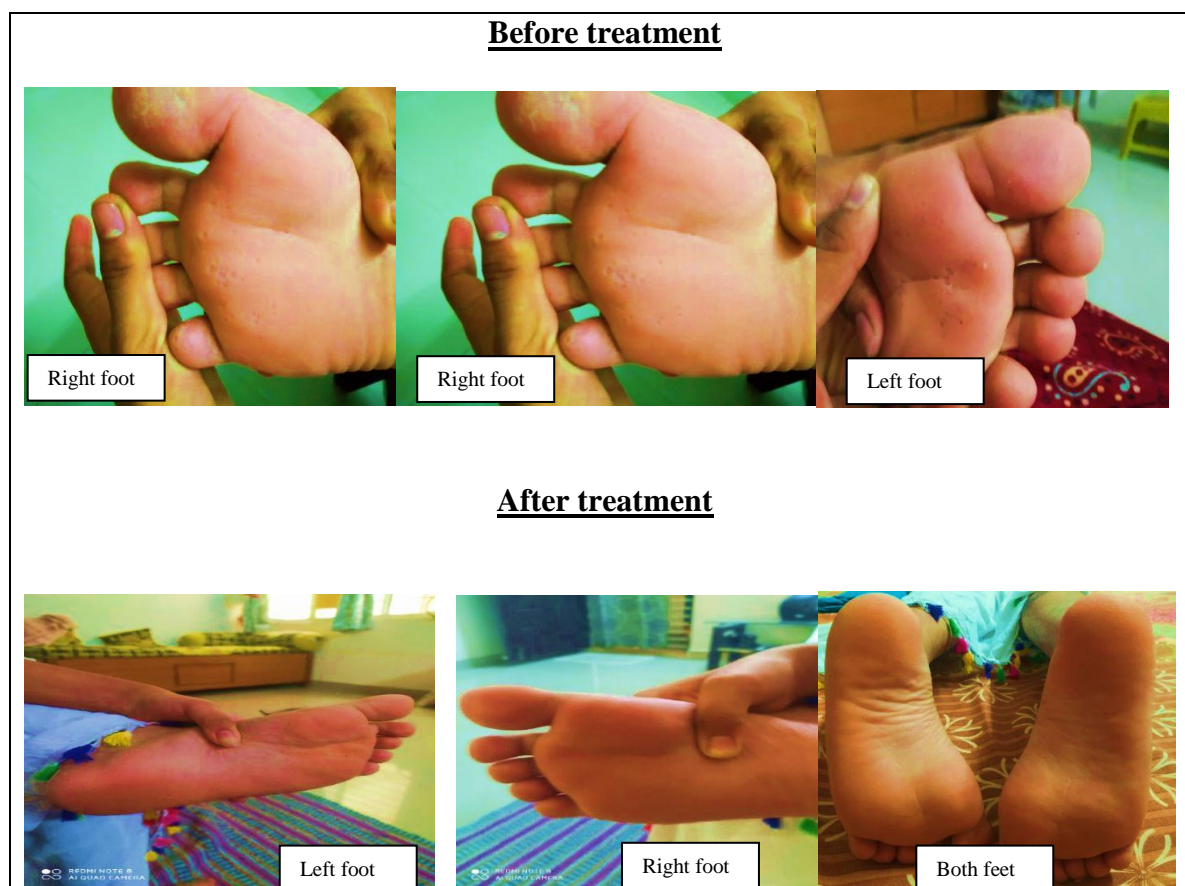


Fig-2: Clinical images

Discussion:

This is a unique case of pitted Keratolysis reported here which was successfully treated with homoeopathic medicine. Similar cases are not available in homoeopathic published case reports. As per literature evidence such cases are not published as on date. In this case patient aged 13 yrs old student was an athlete. Pitted keratolysis was evident in this case with history of prolonged usage of occlusive foot wear probably due to retention of sweat. Presence of hyperhidrosis, sour odour and occurrence of pitted lesions over pressure bearing areas on both soles were observed in the present study. Number of pits varied from 1 to 20 in number. Pits size varied from 0.5mm to 6mm and depth of the pits was

1-2 mm. Some of the pits were discrete or coalesced. The basis of selection of medicine was on strict principle of individualisation, single medicine and minimum dose. Disappearance of the pits was observed which proved the positive effect of constitutional prescription in homoeopathy. Non recurrence of symptoms after discontinuation of medicine was highly appreciative. In the 5th month visit pits disappeared completely and the pink coloured new normal skin layer started developing over the pitted area as shown in the figure. The patient was totally treated for 5 months. The observed result in this case was very promising. So evaluation of symptom is one of the key parts in the homoeopathic prescription. So every prescriber must be

keen enough to judge which symptoms to rank at which place.

The Modified Naranjo Criteria was applied for the assessment of causal attribution of changes in the patient's clinical state from the therapeutic intervention. ^[14] The patient's total score was 9. Based on the Modified Naranjo Criteria score, it can be concluded that there is definite relation between the treatment and the clinical improvement in the patient. [Definite: ≥ 9 , probable: 5-8, possible; 1-4 and doubtful ≤ 0]. (Table-2)

Conclusion:

Pitted keratolysis is the disease of the skin characterised by pits on the soles of the feet and hyperhidrosis. Thus individualized homeopathic medicine and life style management Pitted Keratolysis can be managed. Enhancing overall general health, skin immunity and confidence of no recurrence helped the promising result. Cost and care comparatively are very economical and cure with no side effects or leading to other systemic problems are the boon to homoeopathy. The findings of this case study merit a rigorous trial to test efficacy of individualized homeopathic intervention in cases of pit.

Informed consent:

The author certifies that the patient completed a consent form in which she gave her consent for her medical images and other clinical information to be reported anonymously in an academic journal. The patient understands that her name and initials will not be published and that all due efforts are made to conceal her identity.

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