

Ayurvedic management of plantar keratoderma: A case report

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Introduction

Palmoplantar keratoderma (PKD) is characterised by hyperkeratosis of palms and soles and represents a heterogeneous group of disease. They are either inherited or acquired and presents as three major clinical variants; diffuse, focal and punctate forms. Acquired plantar keratoderma may arise due to changes in a person's health or environment. Inherited PKD is caused by genetic changes that result in abnormalities of keratin, and follows an autosomal dominant or autosomal recessive pattern of inheritance. The causes of acquired variety being infective either bacterial or fungal and secondary to certain skin ailments like psoriasis, dermatitis, lupus erythematosus and lichen planus. Arsenic poisoning is also reported to be a potent cause for this condition. Diffuse hyperkeratosis in palm and soles are prominent clinical feature of this condition. Ayurveda considers all skin disorders under the umbrella terminology of Kushta. They are considered to be arising from the dis-equilibrated bodily humours (Tridosha). Based on the morphology of the lesions, diagnosis can be vipadika, which is a kshudra kushta. This case report of showcase a non-transgradient plantar keratoderma successfully treated with Ayurvedic management protocols

Case Report

A 34 years old non diabetic and non-hypertensive lean man born of non-consanguineous parents residing at Kottakkal, Malappuram Kerala came to Agad Tantra OPD of VPSV Ayurveda College, Kottakkal on 10th August 2022 with complaints of thickening of skin over both soles associated with deep fissures and occasional foul smell and pain.

He was a manual labourer and was a heavy smoker since 15 yrs. He had multiple corns over both feet since childhood. 10 years back he had done corn extraction. As part of his job, he used to stand on concrete for prolonged hours. Gradually he noticed thickening and fissuring of both soles. Initially he ignored it and later he used to excise the thickened skin using blade. 10 years back

he shifted his job and started betel cultivation. Continuous working in damp soil produced foul smell from the lesions. Gradually the condition got worsened and severe deep fissures along with ulceration occurred over right sole. He consulted tertiary care hospital and took biopsy and diagnosed as plantar keratoderma. He underwent repeated surgical debridement of the lesions with no sustaining beneficial results.

On history taking patient revealed of long hours of standing on damp soil without wearing proper footwear. His vitals were within normal limits with no other pathologies evident on systemic examination. On examination the heels of both lower limbs showed thick hyperkeratosis with two large fissures across the heels associated with keratolysis revealing dirty looking spongy corneal tissue. Hyperkeratosis extends distally through the lateral longitudinal arch towards the anterior lateral eminence. Two cornified hyperkeratotic circumscribed plaques with a central punctum seen above the anterior transverse sulcus opposite the 3rd and 5th toes. The medial aspect of the pulp of the big toe also shows pronounced hyperkeratosis with moderate amount of adherent scales.

Treatment was planned as per the general line of management of kushta as mentioned in Ayurvedic scriptures. Kushta is considered as resulting from the vitiation of the three humours (vata, pitta and kapha) with the concomitant increase of kleda in the dhatu and their respective srotas. The primary

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objective of the treatment is to remove the vitiated pathological elements by snehana followed by swedana and finally eliminating from the body by vamana, virechana or vasti based on the fitness of the patient. This case was also managed based on the above-mentioned protocol. Considering the involvement of genes in the management of this condition, Rasayana therapy was also added to the regimen. Local treatments to erode the hyperkeratotic tissue was adapted with the help of drugs with lekhana property. The treatment schedule followed in this study is given in Table 1.

Treatment responses are shown in Figure 1 to 7. Patient reported with a sustained reduced hyperkeratosis with normal skin texture. Associated symptoms were also reduced significantly. Patient is able to walk normally. Patient regularly reviewed to the out-patient department for 4 months. The patient does not report any exacerbation of the symptoms till then.

Table 1

TREATMENT SCHEDULE

1	Rookshana Takrapanam with Bruhath Vaiswanara choornam
2	Snehapana Aaragwadamahatikthaka gritha Arohanakramam
3	Swedana Abhyanga with Eladi kera & Ushma sweda
4	Sodhana 1. Virechanam with Avipathy choornam 2. Matravasthi with Guggulutikthaka gritha+ Varanadi gritha 3. Erandamooladi Kashaya vasthi
5.	Samana 1. Punarnvadi kashayam 2. Kaisora guggulu 3. Kalyanagulam 4. Vilwadi gulika
6.	Avagaha Manjishtadi Kwatha
7.	Lepa Kalyanakshara+Triphala choorna+Haridra churna
8.	Rasayana Dasamoola hareetaki lehya



10/08/2022 Fig 1



10/08/2022 Fig 2



09/2022 Fig 3



06/09/2022 Fig 4



17/10/2022 Fig 5



14/11/2022 Fig 6



05/12/2022 Fig 7

Assessment of major subjective symptoms during treatment

Sl. No.	Before treatment	After first follow up	After second follow up	After third follow up
1	Fissures	+++++	+++	-
2	Pain	+++	+	-
3	Foul smelling	+++++	-	-
4	Roughness	+++++	+++	+

Discussion

The skin over the palms and soles are characteristic due to the dermatoglyphic pattern of alternating ridges and grooves, highest preponderance of eccrine sweat glands, a differential expression profile of keratin and absence of pilosebaceous units which makes them suitable for the preferential localization of plantar keratoderma. Plantar hyperkeratosis develops as a compensatory mechanism of hyperproliferation of stratum corneum against the excessive activation of the mutated genes encoding for keratin resulting in altered cornification of skin. Plantar keratoderma clinically manifests as diffuse, focal, striate and punctate forms. Polygenic inheritance with phenotypic heterogeneity is involved with PKD makes it difficult to manage conservatively. Morphologically PKD can be correlated to Vipadika as per the disease terminology adopted in Ayurveda. Though a disease detailed with minimal severity of symptoms (Kshudra kushta), the treatment described in that context alone will not be sufficient considering the genetic involvement and phenotypic variability. Hence the case was managed as if a Mahakushta. All procedures intended to liquify the vitiated dosha and expel them out of the body through purificatory procedures have been adopted. Thus, a significant reduction in the severity of the disease has been obtained by adopting Ayurvedic treatment modalities. The effect of the drugs at the molecular level, by down-regulating the genes involved may be a worthy hypothesis in this regard. Rasayana administration to counteract

the still undergoing inflammatory processes might have contributed to the normalisation of the corneocyte turnover. The involvement of the genetic component in this disease also reminds of the repeated relapses that can occur. It also reminds us of the necessity of periodic repeated sodhana procedures to be adopted as detailed in kushta chikitsa.

Conclusion

Palmoplantar keratoderma (PKD) is an inherited hyperkeratosis involving the stratum corneum and disease of polygenic inheritance and multiple phenotypic presentation. Ayurvedic treatment modalities proved effective in managing this condition. The nomenclature of such diseases with Ayurvedic disease terminology alone will not be sufficient to adopt the treatment procedures of that disease. A thorough understanding of pathology underlying the disease is essential, adopting the effective treatment that gives beneficial results. Periodic supportive interventions might be required to keep the disease under good control.

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