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CASE REPORT

Ayurveda Treatment Protocol in the Management of Relapse of Palmo-Plantar Pustulosis (PPP) - A Case Report

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Abstract

Background: Palmo-Plantar Pustulosis (PPP) is one of the debilitative skin disorders having a prevalence of 0.050 to 0.12 % worldwide, which is hallmarked by sharply demarcated erythematous pustular lesions over the body. Modern treatment provides certain moisturizers, topical steroids, light therapy, and systemic therapies in the long run, but recurrent crops of pustular lesions are the main problem. Here a case of PPP treated with Ayurvedic protocol is discussed. A 65-year old female patient complained of blackish-red pustular desquamative lesions over the upper and lower limb associated with occasional oozing after itching with extreme hardness and rough texture over the affected area for three years. The ailment was diagnosed as *kitibha* (a type of psoriasis), and the treatment was organized accordingly. The patient received continuous *virechana* (purgative therapy) for three months at a rate of six days per month, followed by *pathya* (wholesome food), topical application, and internal medications. Auspitz signs and PASI (Psoriasis Area and Severity Index) assessment, along with symptomatic improvement in signs and symptoms, were used to quantify the outcome of the disease. After receiving the initial bowel cleansing medications such as Patolakaturohinyadi Kashaya, Saribadyasava, and Manibhadragula, the patient claimed complete recovery from the acute phase. The second phase was followed by continuous *virechana* (purgation therapy) for three months at a rate of six days per month, which showed no signs of relapse for three consecutive months in the affected areas. Even though PPP is incredibly challenging to treat, shodhana (purificatory therapy) for six consecutive months can potentially prevent relapse. This opens up the future scope for structured clinical trials in the treatment of disease.

Keywords: Ayurveda, Case Report, Palmo-Plantar Pustulosis, Purgation Therapy, Relapse

1. Introduction

Palmo-Plantar Pustulosis (PPP) is a bilateral, recurrent pustular dermatitis having a prevalence of 0.050 to 0.12 %. Females in the age group of 50 and 69 were more likely to develop PPP. Clinically, manifests as a pustule on an erythematous and desquamative background. Additionally, patients may have various nail abnormalities. Other co-morbidities, including psychiatric disorders, thyroid disease, obesity, and gluten sensitivity disorder have been linked to PPP. Smoking, heavy metal allergies, oral tonsillitis, and other environmental aggravating factors also hasten the onset of PPP. Genetic predisposition also acts as a triggering factor for PPP[1]. A few pathogenic concepts have been identified in PPP patients, including anomalies in the function of the eccrine sweat glands in the palmoplantar region, an increase in the number of Langerhans cells surrounding the eccrine sweat ducts, and serum levels of TNF, IL-17, and IL-22. Extended

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therapy in the long run is necessary because it has a significant impact on quality of life, which adds to the uncertainty over the best course of treatment.

In Ayurveda classics, *kitibha* is characterized by *shyava* (bluish-black discoloration), *kina sparse* (surface of the lesion is rough resembling healed wound), *khara sparsa* (irregular lesions), *parusha* (hard lesions), *kandu* (itching), *ashitha* (blackish discoloration), *druda* (well defined), *punah prasravanti* (oozing), *roodhanvi tam cha* (separation of lesions), *vardhate cha samutpannam* (the lesions extend after manifestation), *aruna* (reddish brown), *vriddhimanthi* (spreading in nature), *guruni* (rugged lesions), *prashantani cha punarutpadyante* (subsides and recurs)[2-5]. *Samshodhana* (purificatory therapy) is considered as the foremost treatment modality for the treatment of *kushta* (skin disorder). Acharya Charaka elicits the potential of panchakarma therapy (five bio-purificatory therapies) in kushta by stating that an ailment treated with shodhana will never recur, whereas a disease treated with shamana (pacificatory therapy) will evolve over time[6]. Repeated *shodhana* in *kushta* is authorized in the treatment protocol; since it can reduce flare-ups and relieve morbidity. Based on this treatment principle, the present case received *virechana* according to the classical guidelines. Here highlights the enormous potential of Ayurveda in treating such a persistent and distressing sickness. Therefore, this case was undertaken to comprehend the efficacy of the repeated *shodhana* technique described in the classics of Ayurveda.

2. Patient Information

A 65-year old female patient visited the OPD on 20/01/2022 with complaints of blackish-red pustular lesions over both extensor and thenar surfaces of the hand, and forearm as well as the dorsal and plantar surfaces of both the foot, associated with occasional oozing after itching with extreme hardness and rough texture over the affected area for three years. She had discovered the symptoms three years before on her palms and soles with the rough and rugged surfaces over lesions. Later the affected area gets thickened with an erythematous and desquamative background. Gradually oozing after itching developed over the lesions. She had no previous history of arthralgia or concurrent Pustulosis Osteitis (PAO). Since her symptoms aggravated, she approached a higher medical centre for treatment, where she was diagnosed with palmoplantar pustulosis and treated with topical steroids. The pedigree chart reveals no history of illness, and the patient had no prior history of diabetes mellitus, hypertension, or other metabolic disorders. The patient was the second gravida with two male and one female child, FTND with regular menstruation.

3. Clinical Findings

On general examination, her build and nourishment were moderate, with normal vitals. For two months, the patient had experienced irregular, unsatisfactory bowel evacuation with normal appetite, thirst, micturition, and disturbed sleep. On systemic examination, erythematous desquamative pustular lesions were observed in both the upper and lower limbs. Except for the integumentary system, other systemic tests and vitals were regular. Local examination revealed the intractable condition of both the upper and lower limb. 8-fold diagnosis (*Ashtasthana pariksha)* and 10-fold diagnosis *(Dashavidha pariksha),* as shown in Tables 1 and 2.

4. Diagnostic Assessment

The reports of blood investigations such as the CBC with ESR, urine routine, microscopic, BSL random, RA factor, uric acid, and C-reactive protein were

Table 1. Findings on 8-fold diagnosis *(Ashtasthana Pariksha)*

1.	*Nadi* (pulse)	78/min
2.	*Mala* (stool)	*Asamyak, badha* (constipation, unsatisfactory bowel habits)
3.	*Mutra* (urine)	*Samyak*(clear)
4.	*Jihwa* (tongue)	*Liptha* (coated)
5.	*Shabda* (speech)	*Spashta* (clear)
6.	*Sparsha* (skin)	*Ruksha* (dry)
7.	*Druk* (vision)	*Avara* (not clear)
8.	*Akruthi* (built)	Madhyama (moderate)

Table 2. Findings on 10-fold diagnosis *(Dashavidha Pariksha)*

1.	*Prakriti* (constitution)	*Vata-kapha*
2.	*Vikruthi* (state of disease)	*Vata-kapha*
3.	*Saara* (systemic strength)	*Asthisaara* (enriched bone tissue)
4.	*Samhanana* (compactness)	*Madhyama* (medium)
5.	*Satmya* (suitability)	*Sarvarasa satmya* (homologation for all taste)
6.	*Satva* (mental status)	*Avara satva* (low mental status)
7.	*Aahara S*hakthi (digestive capacity)	*Madhyama* (moderate)
8.	*Vyayama Shakth*i (power of exercise)	*Avara S*hakthi (low)
9.	*Agni* (digestive power)	*Madhyama* (moderate power of digestion)
10.	*Vaya* (age)	*Vridhavastha* (old age)

determined to be within normal ranges and were negative for fungal infection which is elicited through clinical symptoms. The patient was assessed on subjective criteria, which included *kina kara sparsha* (rough lesions resembling healed wound), *srava* (oozing), *kandu* (itching), *parushatwa* (hardness), *shyava* (blackish-red discoloration) as shown in Table 3. The golden standard PASII (Psoriasis Area and Severity Index) is used to grade the severity of the objective criteria of PPP by measuring the average erythema, induration, and desquamation of both the affected limbs. Additionally, Auspitz signs were employed to assess the degree of bleeding in the afflicted area, as shown in Table. Considering the etiopathogenesis of *kitibha*, the prognostic assessment is *krichrasadhya* (difficult to cure).

5. Therapeutic Intervention

Virechana every month is vital for skin disorders[7]. The treatment protocol adopted here consists of three sessions, such as initial bowel cleansing medications for alleviating the vitiated humour in the body. The second session was followed by the procedure for preventing the disease relapse, and the last phase was to monitor the deterioration of the condition without any internal and external medication. Safe

Table 3. Subjective criteria

Sl No.	Criteria	Grade	Symptom
1.	*Kinakara sparsha* (rough lesions resembling healed wounds)	0 1 2 3	Normal skin texture Mild irregular lesions on the touch Moderate irregular lesions on touch Severe rare lesions on contact with scaling
2.	*Kandu* (itching)	0 1 2 3	No itching 1-2 times a day Frequent itching Itching disturbs the sleep
3.	*Srava* (oozing)	0 1 2 3	No *srava* Occasional *srava* after itching Mild *srava* after itching Profuse *srava* making clothes
4.	*Parushatwa* (hardness)	0 1 2 3	Normal skin Mild hardness of lesion The moderate hardness of lesions The severe hardness of scaling
5.	*Shyava* (blackish-red discoloration)	0 1 2 3	Normal skin color Brownish red discoloration Blackish red Blackish

Table 4. Objective criteria

Criteria	Score	Grade
Auspitz sign	Absent Improvement present	0 1 2
PASI Score	Score before treatment Score after treatment	- -

treatment modalities are highly essential for the prevention of relapse in skin disorders. Formulations like *Patolakaturohinyadi Kashaya*[8], *Saribadyasava*[9], *Manibhadragula*[10], were initially administered for clearing the bowel, thereby improving the digestive power. *Khadira* (Acacia catechu) boiled water was advised as drinking water. Winsoria oil was externally applied for the last month of the first session to reduce the itching over the affected area[11]. After the initial management, the patient was advised to take continuous *virechana* with *Patolamooladi kashaya* for three months at a rate of six days per month, followed by *peya* (gruel) with *mamsa rasa* (meat soup) as *pathya* (wholesome food) to prevent the relapse[12]. Last phase of 3 months was taken for the follow-up to check the recurrence of the disease without any medication intake. The treatment was accomplished as shown in Tables 5 and 6.

6. Timeline

Details of the timeline, treatment protocol, and clinical outcome have been mentioned in Table 7.

7. Follow-Up and Outcomes

PASI Score, Auspitz sign, and symptomatic relief were used to determine the disease's course and prognosis. There was an arrest in the progression of erythematous and desquamative lesions over the affected limbs. During the treatment, there was a noticeable reduction in the lesions associated with the pustular formation and blackish-red discolouration over the afflicted area. There was marked relief of hardness and rough texture, but itching persisted. Then the itching was considerably reduced by the external application of Winsoria oil for the last month of the first session. The promising outcome of this present case showed the effect of continuous purgation therapy for three months at a rate of six days per month, followed by *peya* with *mamsa rasa* as *pathya* during the second session. No adverse events

Table 5. First session of treatment

Sl No.	Formulation	Dose, Frequency, and Time	Adjuvant	Duration
1.	*Patolakaturohinyadi Kashaya*[8] (Herbal decoction)	20ml of *kashaya*, twice daily; before meals	50ml of lukewarm water	Two months of the initial session
2.	*Saribadyasava*[9] (Herbal fermented liquid)	20ml of *arishta*, twice daily after meals	50ml of normal water	Two months of the initial session
3.	*Manibhadragula*[10] (Medicated ghee)	One and a half tablespoons at bedtime	Warm water	Two months of the initial session
3.	Winsoria oil[11] (Herbal coconut base oil)	Twice a day, topical application on the affected area	-	Last month of the initial session of treatment

Table 6. Second session of treatment

Sl No	Formulation	Dose, Frequency, and Time	Adjuvant	Duration
1.	*Patolamooladi Kashaya*[12] (Herbal decoction)	20ml of *kashaya*, twice daily; before meals	50ml of lukewarm water	For the last three months at a rate of six days per month; followed by *peya* and *mamsa rasa*

Table 7. Timeline, treatment protocol, and clinical outcome

Medication	Timeline	Dates	Treatment Protocol	Clinical Outcomes
The first session of treatment	Onset of treatment	20/01/2022	As per Table 5	Treatment started.
	Visit 1	21/02/2022	As per Table 5	Arrest in the progression of erythematous desquamative appearance; itching persisted.
	Visit 2	22/03/2022	As per Table 5, the topical application started. [End of the first session of treatment]	Reduction in the pustular lesion and blackish-red discoloration over both the limbs; roughness and hardness over the lesions also reduced.
The second session of treatment	Visit 3	23/04/2022	As per Table 6; Purgation therapy started	Itching and oozing after itching are also reduced by the first treatment session.
	Visit 4 (telephonic conversation)	24/05/2022	As per Table 6	Significant reduction in signs and symptoms No recurrence found
	Visit 5	25/06/2022	As per Table 6	
	Visit 6	26/07/2022	Purgation therapy stopped	No relapse in any signs and symptoms; PSAI score reduced to 1.6 Auspitz sign: Negative No recurrence found
	Visit 7	27/08/2022	No internal or external medication	No signs of relapse
	Visit 8 (telephonic conversation)	28/09/2022	No internal or external medication	No relapse
Follow up period	Visit 9	29/10/2022	No internal or external medication	

Table 8. PASI score assessment before and after treatment

PASI Score Before Treatment		
Limb	**Score**	**Total score**
Upper limb	Erythema- severe Induration- severe Desquamation- moderate % Of upper limb affected -1-9%	1.6
Lower limb	Erythema-severe Induration- severe Desquamation- moderate % Of lower limb affected -1-9%	3.2
		Total score = 4.8
PSAI Score After Treatment		
Limb	**Score**	**Total score**
Upper limb	Erythema- moderate Induration- none Desquamation- none % Of upper limb affected - 1-9%	0.4
Lower limb	Erythema- slight Induration- slight Desquamation- slight % Of lower limb affected - 1-9%	1.2
		Total score = 1.6

were witnessed during the treatment. The assured result of this case study was evident from the complete absence of relapse during the last phase of 3 months follow-up without any internal and external medication.

Assessment of the PASI Score is shown in Table 8, and the evaluation of subjective and objective criteria is shown in Table 9.

Table 9. Subjective and objective assessment of before and after treatment

Sl No.	Type of Assessment	Before Treatment	After Treatment
1.	*Kinakara sparsha* (rough lesion resembling healed wound)	3	0
2.	*Kandu* (itching)	3	0
3.	*Srava* (oozing)	2	0
4.	*Parushtwa* (hardness)	3	0
5.	*Shyava* (blackish discolouration)	3	1
6.	PSAI Score	4.8	1.6
7.	Auspitz sign	2	0

Photographs before and after the treatment were taken with the consent of the patient (Figures 1 and 2) are attached below:

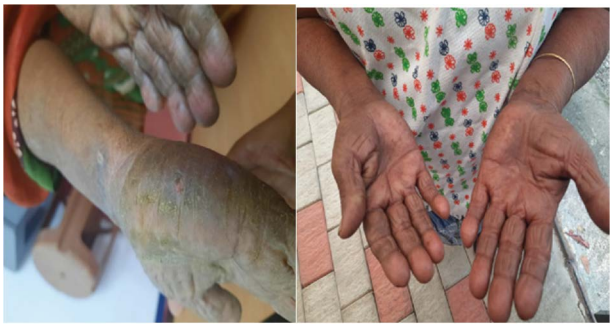

Figure 1. Before and after the treatment of upper limbs.

Figure 2. Before and after the treatment of lower limbs.

8. Discussion

Due to the preponderance of doshas and dhatus and the protracted character of *kushta*, *shodhana* has a sovereignty in the treatment strategy. Repeated purification based on the *rogabala* (severity of the disease) and *rogibala* (strength of the individual) played a pivotal role in preventing the signs of relapse. In Ayurveda, *kushta* comes under the entity called *rakthapradoshaja vyadhis* (Blood predominant diseases). There exists a resident relationship between *pitta* and *raktha* which precipitates pitta as the dhathu mala (metabolic waste) of *raktha*. Since pitta is the end product of *virechana* therapy, the *raktha* also gets detoxified which in turn ameliorate the *rakthapradoshaja vyadhis* like *kushta*[13]. So, Purgation is the most effective purifying method to prevent the ailment from recurrence.

8.1 The Rationale Behind Ayurvedic Intervention

Patolakaturohinyadi kashyam is a polyherbal Ayurvedic formulation mentioned under *shodanadi gana* (groups of herbal drugs used in cleansing therapies) showed significant effect in *kushta, jwara, visha*. Since this formulation is augmented with *tiktha rasa* (Bitter taste), it can detoxify the *raktha* and thereby aids in the healing of skin disorders[14].

The composite potential of *saribadysava* is evident from the alleviation of signs and symptoms of *kushta*. *Sariva* is considered an excellent drug of choice due to its multidimensional properties like *raktha shodhaka* and *raktha prasadaka.* The role of *saribadyasava* in enhancing skin health is depicted by the presence of *shothahara* drugs like *sariva, mustaka* (*Cyperus rotundus*), *nyagrodha* (*Ficus benhalensis L*), *ashwatha* (*Ficus religiosa L*), *ananta* (*Hemidesmus indicus R. Br.*), *shati* (*Hedychium spicatum SM*), *padmaka* (*Prunus cerasoides D*), *usheera* (*Vetiveria zizanioides)*, *raktha Chandana* (*Pterocarpus santalinus)*, *yavani* (*Trachyspermum ammi*), *kushta* (*Saussurea lappa C.B.Clarke*) and *swarnapatri* (*Cassia angustifolia*) which alleviates the erythema, the foremost symptom of PPP. The wound healing property of *saribadyasava* played a prominent role in PPP, due to the presence of *Nyagrodha, llodhra* (*Symplocos racemose Roxb*), *Ashwatha, anantha* (*Hemidesmus indicus R. Br.*), *Haritaki (Terminalia chebula Retz*), *Draksha (Vitis vinifera Linn)* and *Patha (Cyclea peltate Lam)*[15].

The jaggery based preparation *Manibhadraguda* exhibits *shodhana* effect due to the presence of *trivrut* in the formulation. Due to the dynamic effect of kushtahara (anti-psoratic) and rasayana (immune-modulatory) property, significant reduction of signs and symptoms of this debilitative disorder was evident[16].

In this present case, winsoria oil is used for topical application on the afflicted area. The coconut oil-infused preparation is incorporated with *Vidaphala (Wrightia*

tinctoria R. Br.), *Manjishta (Rubiacordifolia Linn.),* and *Sariva (Hemidesmus indicus R. Br.)* have reported their anti-psoratic and anti-dandruff properties. The healing of the lesions and mitigation of itching in PPP was aided by inhibitory effect of cocunut oil on inflammatory markers and the presence of wound-healing property of Manjishta[11].

The bark of *Khadira* (Acacia catechu) exhibits antihelminthic, antipyretic, and anti-inflammatory activity. Due to the free radical scavenging properties of catechins, rutin, and isorhamnetin, it is used to treat bronchitis, ulcers, psoriasis, anaemia, and gum problems. So, *Khadira* boiled water also helped in attenuating the signs and symptoms[15].

According to Bhavaprakasha nighandu, *Patola (Trichosanthes dioica)* causes mild purgation[17]. *Patola (Trichosanthes dioca)* has a well-known anti-ulcer action and has been successful in treating skin conditions. It has been demonstrated that the cucurbitacin B found in *T. dioca* possesses antibacterial and anti-inflammatory properties. So, the mild laxative power and anti-inflammatory property of *Patola* (*Trichosanthes dioca*) helped in the complete healing of lesions with no further signs of relapse[18].

In this case, the treatment protocol focused on the complete absence of PPP from the relapse. Apart from the external and internal medication, a continuous course of the *shodhana* procedure at a rate of six days per month attenuates the recurrence of this disease. In light of this, this case marks a significant advancement in managing palmoplantar pustulosis.

9. Patient Perspective

The patient shared her perspective about the overall treatment result in her local language. This treatment alleviated the emotional burden associated with the disease's relapse and the pain and agony faced before the therapy, evident by the patient's words.

10. Informed Consent

The patient provided written informed consent for the treatment to be performed, for the photographs to be taken before and after the treatment, and for the publication purpose.

11. Author Contribution

All the authors contributed equally in treating the case, documenting it, and structuring the manuscript.

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