

ORIGINAL RESEARCH ARTICLE

A Clinical Study to Evaluate Effect of *Sarjarasa Malahara Lopa* (*Sarjarasa* Ointment) in the Management of *Padadari* (Crack Heel)

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ARTICLE INFO

Article history:

Received on: 05-05-2024

Accepted on: 11-06-2024

Published on: 30-06-2024

Key words:

Crack Heel,
Fissure,
Malahara,
Padadari,
Sarjarasa,
Sarjarasa Malahara

ABSTRACT

Introduction: *Ayurveda* (science of life) considers lifestyle and cosmetic aspects. Change in lifestyle like walking excessively and wearing improper footwear's/barefoot walkers, and expose to cold water, and dirt leads to appearance of symptoms such as dryness of feet, cracks, flaring patches, itchy skin, and pain in the palms and soles. Their prevalence is experienced everywhere and cannot be considered as minor and neglected. *Padadari* (*Crack Heel*) is considered under *Kshudra Roga* (Minor ailments). Which is compared with cracked heels/heel fissures.

Methods: In the present study, 30 subjects of *Padadari* (Crack Heel) were enrolled and treated with topical application of *Sarjarasa Malahara* (*Sarjarasa* Ointment).

Results: After continuous application of *Malahara* (Ointment) from day 1st gradually cracks, it reduced from moderate to mild with significant result. Pharmacodynamics of ingredients were efficient in managing cracks.

Discussion: *Kshudra Rogas* are mentioned in *Ayurvedic* texts as minor ailments which have cause of lower magnitude and have *Lakshana* (mostly local) of lower magnitude, which can be easily cured.

Conclusion: The study yielded significant results in symptoms such as crack feet, pain.

1. INTRODUCTION

Ayurveda is the science of life which not only deals with the health and illness of human being but also considers the lifestyle and cosmetic aspects.^[1] There is lot of difference between today's life style and ancient lifestyle so Application of *Ayurvedic* principles need to be modified and applied according to disease condition. Ancient principles must be retested because pure metal regains its shiny nature by its polishing. *Ayurveda* considers certain diseases under *Kshudra Kushta*. There are so many drugs in *Ayurveda* which prove effective against *Kshudra Kushta* like *Tutha*, *Kapoor*^[2] etc. Many authors like *Acharya Charaka*, *Acharya Sushruta*, *Acharya Vagbhata* etc. mentioned few diseases under *Kshudra Rogas*.^[3] Few authors kept

Padadari (*Crack Heel*) under *Kshudraroga*. *Padadari* (*Crack Heel*) is a condition where *Vata* gets aggravated and gets *Sthanasamsraya* (site) in the foot region.^[4] It is seen in persons who are walking excessively and wearing improper footwears or barefoot walkers, expose to cold water, even unhygienic conditions like expose to dust, germs, dirt leads to appearance of symptoms like dryness of feet, cracks, flaring patches, itchy skin, pain in the palms and soles.^[5] This can be compared to cracked heels/heel fissures. When the fissures are deep, they get bleed and become painful later may get infected. It diminishes the beauty of feet. There are various treatments Principles explained like administration of drugs internally, external applications, *Padabhyanga* (Foot Massage) and all.

Many drugs like *Vranaropaka* (*Wound healing*), *Krimighna* (*Anthelmintic*), *Kushtahara* (*Skin disorders*) selected for the treatment procedure in ancient days.^[6]

External application of *Sarjarasa Malahara*^[7,8] (*Sarjarasa* Ointment) used in the case.

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1.1. Aim of Study

To evaluate the effect of *Sarjarasa Malahara* (*Sarjarasa* Ointment) in Management of *Padadari* (Crack Heel).

2. MATERIALS AND METHODS

CTRI Registration number of Trail: CTRI/2023/05/052289.

2.1. Sample Source

Patients were selected from OPD and IPD of SDMTs AMC and Padma Ayurvedic Hospital Terdal.

2.2. Drug Source

- Ingredients of preparation were procured from authenticated pharmacy.
- Sarjarasa Malahara*^[8] (*Sarjarasa* Ointment) was prepared in the pharmacy of our college under the expert guidance.

2.3. Methodology

2.3.1. Study design

This was a single arm open-label clinical study.

2.3.2. Study subjects

Thirty subjects fulfilling inclusion criteria of *Padadari* (Crack Heel) were enrolled for study.

2.4. Diagnostic Criteria

Diagnosis was made based on classical Signs and Symptoms of *Padadari* (Crack Heel).

2.5. Inclusion Criteria

The following criteria were included in the study:

- Patients age between 18 and 60 years.
- Irrespective of occupation and foot wear
- Lakshana* of *Padadari* such as:
 - Padayo Kurute Daari* (Cracks in feet)
 - Saruja* (with pain)
 - Ruksha* (dryness of feet).

2.6. Exclusion Criteria

The following criteria were excluded from the study:

- Patient with history of allergy.
- Patients with psoriasis and eczema.
- Any infection-intervening conditions were excluded.

2.7. Name of the Preparation: *Sarjarasa Malahara*^[8] (*Sarjarasa* Ointment)

2.7.1. Ingredients

Tila taila (sesamum indicum) *sarjarasa* (gummy excaudate - shorea robusta) *tuttha* *bhasma* (copper sulphate) *karpura* (cinnamum camphora) *madhuchista* (cera alba) are shown in table 1.

2.8. Method of Application

Foot bath was advised and asked to dry of feet, *Sarjarasa Malahara* was asked to apply at affected site with the help of spatula twice a day.

2.9. Post Procedure

Patient were advised to avoid exposure to dust and bare foot walk.

Quantity: QS (quantity sufficient).

2.10. Data Collection Procedure

Enrollment of subjects for trail was based on inclusion criteria and consent was taken then screening of the subject was done and the data were recorded in specially prepared CRF with complete history, examination, and necessary assessment.

2.11. Criteria for Assessment

Assessment was done based on subjective and objective parameters.^[3]

- The subjective parameters of Cracks associated with pain, cracks of feet, itching sensation and
- Objective parameters of depth of the cracks, roughness of the heel, and dryness of the feet were recorded on basis of score adopted with grading (0, 1, 2, 3, and 4).
- After completion of treatment, the assessment was done on basis of gradation (0, 1, 2, 3, and 4).

3. OBSERVATION AND RESULTS

3.1. Observations

In the present study, 40 patients were screened, of which 30 patients of *Padadari* (Crack Heel) were enrolled and treated with *Sarjarasa Malahara* (*Sarjarasa* Ointment) and all the 30 subjects completed the trail, no any drop outs. At the onset, the vital data of all the patients of this series are being oriented. Thereafter, the therapy is described.

3.1.1. Character of pain

Among 30 patients, 36.7% had mild pain, 40% had moderate pain, and 23.3% had severe pain shown in table 2.

3.1.2. Crack of feet

Among 30 patients, 36.7% had mild crack, 60% had moderate crack, and 3.3% had severe crack shown in table 3.

3.1.3. Depth of cracks

Among 30 patients maximum patient, that is, 56.7% had superficial cracks; and 33.3% had half to superficial cracks.

3.2. RESULTS

Thirty patients of *Padadari* (Crack Heel) were treated with *Sarjarasa Malahara* (*Sarjarasa* Ointment) for external application two times a day for 15 days. Its effects on the various signs and symptoms were as follows:

- Effect of *Sarjarasa Malahara* on Pain in *Padadari*:

The effect of the drug on the pain score along with statistical analysis has been shown in tables 5 to 10 and graph 1 to 3.

4. DISCUSSION

4.1. Probable Mode of Action of *Sarjarasa Malahara Lepa* in *Padadari* (Crack Heel)

The mode of action of *Sarjarasa Malahara* is as follows according to the ingredients.

Sarjarasa Malahara Lepa, the ingredients are *Tilataila*, *Sarjarasa*, *Madhuchista*, *Karpura*, *Tuttha*.

Tilataila (*Sesamum Indicum*) which is having *Madhura*, *Kashaya*, *Tikta*, *Katu Rasa*, *Guru*, *Snigdha Guna* (unctuous), *Ushna Virya* (hot), *Tridosha shamaka* and does *Snehana* (Oleation), *Vrana Shodhana* (Wound cleansing), *Vedana sthapaka* (Pain relieving), and *Sandhaniya* (Promoting union of fissured part). It contains alkaloid saponin, flavonoid, tannin, phenol, and mineral. Terpenoid presence gives antibacterial and antidiabetic properties. Tannin present in oil makes it antibacterial, antiviral, and astringent. Furthermore, it contains minerals, namely, zinc, iron, potassium, sodium, copper, lead, and manganese.

Sarjarasa (*Shorea Robusta*) which is having *Kashaya Rasa*, *Ruksha Guna*, *Sheeta Guna* and does *Vranaropaka* (Wound Healing), *Sandhaniya* (Promoting union of fissured part), *Jantughna* (Anti infection). It contains triterpenic acid, tannin acid and phenolic and antibacterial, analgesic, and wound healing effect.

Madhuchista (*Cera Alba*) is having *Snigdha*, *Mrudu guna* and does the action such as *Kushtaghna* (curing skin disease) and *Vranaropaka* (Wound Healing). It contains oleate esters and has antimicrobial property.^[9]

Tutthabhasma (*Copper Sulphate*) due to its antimicrobial and antifungal property.

Karpura (*Cinnamomum Camphora*) is having *Tikta*, *Katu*, *Madhura rasa*, *Laghu*, *Tikshna guna*, *Sheeta virya* and does the action such as *Vedanasthapaka* (Pain Relieving), *Kotha prashamana* (Soothing/mitigating). It contains safrole, acetaldehyde, D₁pentene, camphor, eugenol, eucalyptus, phellandrene, and the effect such as analgesic, antiseptic, anti-infective, and narcotic. All ingredients have antimicrobial, analgesic, and wound-healing property so help in reducing the pain, size and depth of cracks.

4.2. Discussion on Lepa (Ointment)

Lepa is one of the classical clinical-based explanations in *Shashti Upakrama* (60 Procedures); hence, *Sarjarasa Malahara Lepa* (*Sarjarasa* Ointment) was planned on *Padadari* (Crack Heel). As it contains *Tilataila* (*Sesamum Indicum*), *Sarjarasa* (*Shorea Robusta*), *Madhuchista* (Bee Wax), *Karpura* (*Cinnamum Camphora*), and *Tuttha* (*Copper Sulphate*). Pharmacodynamics of *Sarjarasa*, *Tilataila* have *Snigdha Guna* (Moisturizing/Humidifying). Pharmacodynamics of *Karpura* are like *Madhura Rasa*, *Sheeta Virya*, *Tikshna Guna* (Sharp penetrating qualities create cleansing effects on body). The *Lepa* (Ointment) does the *Snehana* (Moisturing) and *Vranaropana* (Healing) in *Padadari* (Crack Heel). So more efficacy on *Padadari*.^[10]

4.2.1. Precautions

During the period of application of *Lepa*, the patient should not indulge in barefoot walking, excessive walking, and exposure to dust, soil, and water; otherwise, it may lead to bleeding and infection.

4.3. Discussion on Result

4.3.1. Discussion on cracks

Rukshata (Dryness) is one of the causes for development of cracks which is caused by *Vata Prakopa*. As *Sarjarasa Malahara* contains *Tilataila* (*Sesamum Indicum*), *Sarjarasa* (*Shorea Robusta*), *Madhuchista* (Bee Wax), *Karpura* (*Cinnamum Camphora*) and *Tuttha* (*Copper Sulphate*). Pharmacodynamics of *Sarjarasa*, *Tilataila* have *Snigdha Guna* (Moisturizing/Humidifying), *Vranaropaka* (Wound Healing), *Sandhaniya* (Approximation), *Snehana* (Lubrication) which help for reducing the cracks.

Among 30 patients, 11 patients (36.7%) were having mild cracks, 18 patients (60.0%) were having moderate cracks, patient (3.3%) have severe cracks. After continuous application of *Sarjarasa Malahara* from the day one gradually Cracks were reduced from moderate to mild with significant result.

4.3.2. Discussion on pain

Vedana (pain) in *Padadari* is due to *Rukshana* (Roughness) due to *Prakopa of Vata Dosha*, properties of *Malahara* (Ointment) such as *Snehana* (lubrication), *Ropana* (healing) and *Vedanasthapana* (Mitigate Pain) helped in reducing the pain.

4.3.3. Discussion on depth of cracks

Due to continues exposures to *Nidana* (Causative), cracks may go in depth and further may cause bleeding so to reduce the crack *Sarjarasa Malahara* (*Sarjarasa* Ointment) is used as it has property of *Sandhaniya* (wound Approximation) and *Vrana Ropaka* (wound Healing), it helps in pacifying *Vatadosha* and reduces the depth of cracks.

5. CONCLUSION

On the basis of study, the following conclusion may be drawn: *Padadari* (Crack Heel) is disease described in detail in *Ayurvedic Classics* Palliative Management: More afflictions were observed among the age group 18–31 years. People having habit of bare foot walk, exposure to soil, dust, and water are prone to get *Padadari*. Within single group analysis *Sarjarasa Malahara Lepa* (*Sarjarasa* Ointment) shown significant improvement in reducing the pain, depth of the cracks, and dryness of feet. *Malahara* (Ointment) has a properties such as *Snehana* (Oleation), Cleansing, *Ropana* (Healing), *Lekhana* (scraping), and *Varnya* (Beautifying).

In this present study, *Snigdha Guna* (Moisturizing/Humidifying), *Vranaropaka* (Wound Healing), *Sandhaniya* (Approximation), and *Snehana* (Lubrication) which help for reducing the cracks. *Sarjarasa Malahara* has property like *Snigdha Guna* (Moisturizing/Humidifying), *Vranaropaka* (Wound Healing), *Sandhaniya* (Approximation), *Vrana Shodhana* (wound Cleansing), *Snehana* (Lubrication) so it helps to alleviate the *Vata* and reduces the roughness and dryness. *Sarjarasa Malahara* (Ointment) was helpful in reducing *Padadari* (Crack Heel) and its late complications. Therefore, this is to conclude that in the management of *Padadari* (Crack Heel), *Sarjarasa Malahara* (*Sarjarasa* Ointment), when applied locally, provided statistically significant results in symptoms such as cracks ($P < 0.000$), pain ($P < 0.000$), depth of cracks ($P < 0.000$), dryness and roughness ($P < 0.000$). No adverse reaction was observed during treatment.

Therefore, *Sarjarasa Malahara Lepa* (*Sarjarasa* Ointment) is effective in the management of *Padadari* (Crack Heel).

6. ACKNOWLEDGMENTS

Nil.

7. AUTHORS' CONTRIBUTIONS

All the authors contributed equally in design and execution of the article.

8. FUNDING

CCRAS New Delhi

9. ETHICAL APPROVALS

Ethical approval was taken from the institutional ethics committee of the institute with CTRI Registration number of Trail: CTRI/2023/05/052289

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

12. PUBLISHERS NOTE

This journal remains neutral with regard to jurisdictional claims in published institutional affiliation.

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How to cite this article:

Waddar SB, Waddar SB, Chalageri CC. A Clinical Study to Evaluate Effect of *Sarjarasa Malahara Lepa* (*Sarjarasa* Ointment) in the Management of *Padadari* (Crack Heel). IRJAY. [online] 2024;7(6):14-19.

Available from: <https://irjay.com>

DOI link- <https://doi.org/10.48165/IRJAY.2024.70603>

Drug name ^[2]	Scientific name ^[2]	Quantity required
<i>Tila Taila</i>	Sesamum Indicum	16 parts
<i>Sarjarasa</i> (gummyexcaudate)	Shorea Robusta	4 parts
<i>Tuttha Bhasma</i>	Copper Sulphate	1 part
<i>Karpura</i>	Cinnamum Camphora	1 part
<i>Madhuchista</i>	Cera Alba	1 part

Table 2: Distribution of patients as per cracks of 30 patients of *Padadari*

Cracks of feet	No. of patients	Percentage
Mild (1-7)	11	36.7
Moderate (8-15)	18	60.0
Severe (16-23)	01	3.3

Table 1: Distribution of patients as per character of Pain of 30 patients of *Padadari*

Character of pain	No. of patients	Percentage
Mild	11	36.7
Moderate	12	40.0
Severe	07	23.3

Table 3: Distribution of patients as per depth of cracks of 30 patients of *Padadari*

Depth of cracks	No. of patients	Percentage
Half to superficial	10	33.3
Few superficial	17	56.7
Deep cracks but no bleed	03	10

Table 4: Effect of *Sarjarasa Malahara* on Pain of *Padadari*: Posthoc test – Wilcoxon signed rank test (P=0.01)

Parameters	Negative ranks			Positive ranks			Ties	Total	Z-value	P-value	Remarks
	N	MR	SR	N	MR	SR					
Pain Before Treatment - After Treatment	18	9.50	171.00	0	0.00	0.00	12	30	-3.906	0.000	S

Table 5: Effect of *Sarjarasa Malahara* on Cracks of *Padadari*

Parameters	Negative ranks			Positive ranks			Ties	Total	Z-value	P-value	Remarks
	N	MR	SR	N	MR	SR					
Crack of feet Before Treatment - After Treatment	19	10.00	190.00	0	0.00	0.00	11	30	-4.264	0.000	S

Table 6: Effect of *Sarjarasa Malahara* on itching sensation in *Padadari*

Parameters	Negative ranks			Positive ranks			Ties	Total	Z-value	P-value	Remarks
	N	MR	SR	N	MR	SR					
Itching sensation of feet Before Treatment - After Treatment	3	2.00	6.00	0	0.00	0.00	27	30	-1.732	0.83	NS

Table 7: Effect of *Sarjarasa Malahara* on Depth of crack in *Padadari*: Posthoc test – Wilcoxon signed rank test (P=0.01)

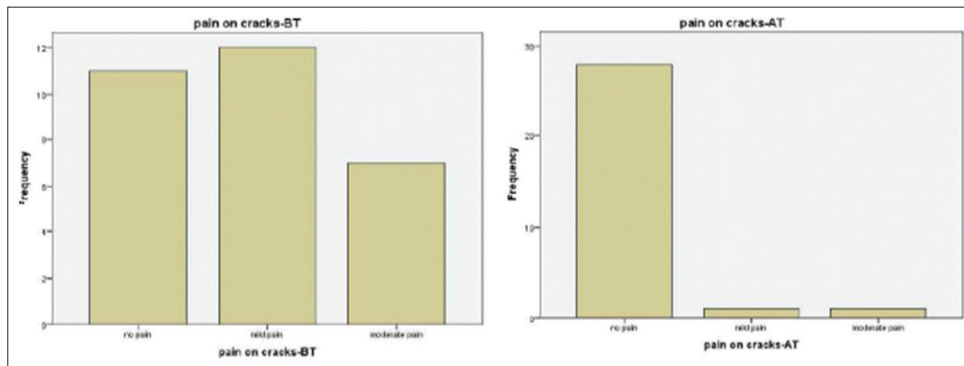
Parameters	Negative ranks			Positive ranks			Ties	Total	Z-value	P-value	Remarks
	N	MR	SR	N	MR	SR					
Depth of crack Before Treatment - After Treatment	20	10.50	210.00	0	0.00	0.00	10	30	-4.234	0.000	S

Table 8: Effect of *Sarjarasa Malahara* on Roughness of heel in *Padadari*: Posthoc test-Wilcoxon signed-rank test (P=0.01)

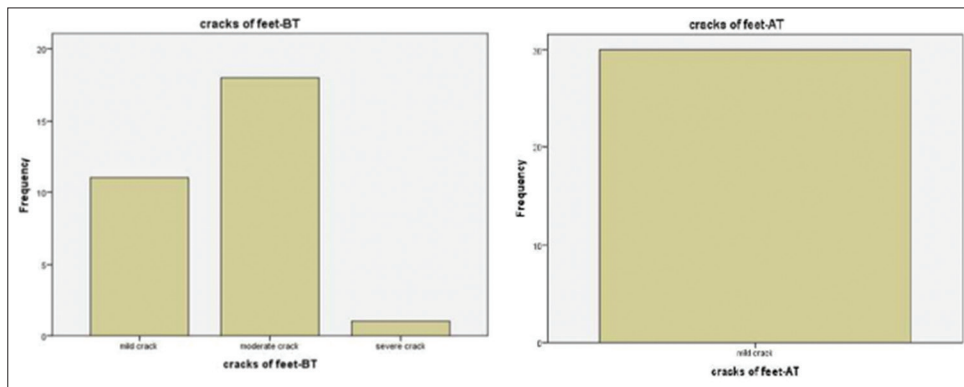
Parameters	Negative ranks			Positive ranks			Ties	Total	Z-value	P-value	Remarks
	N	MR	SR	N	MR	SR					
Roughness of heel Before Treatment - After Treatment	12	7.25	87.00	1	4.00	4.00	17	30	-2.959	0.003	NS

Table 9: Effect of *Sarjarasa Malahara* on Dryness of feet in *Padadari*: Posthoc test -Wilcoxon signed rank test with Bonferroni correction (P=0.01)

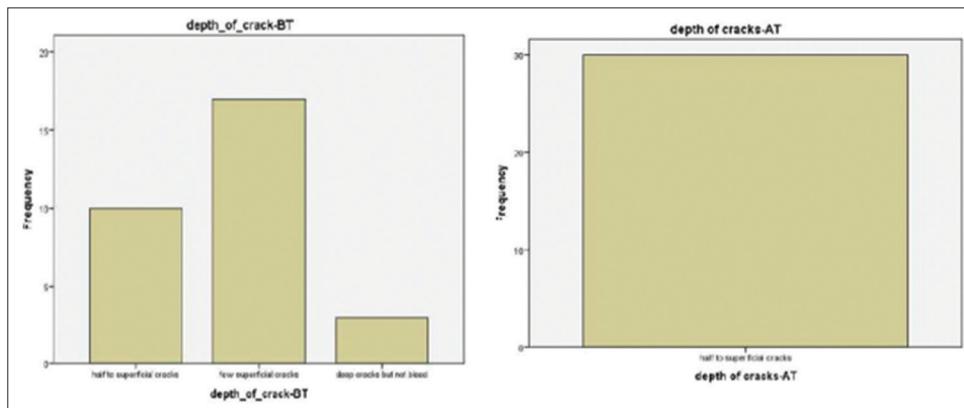
Parameters	Negative ranks			Positive ranks			Ties	Total	Z-value	P-value	Remarks
	N	MR	SR	N	MR	SR					
Dryness of feet Before Treatment - After Treatment	17	9.00	153.00	0	0.00	0.00	13	30	-3.750	0.000	S



Graph 1: Distribution of 30 patients according to character of pain before and after treatment



Graph 2: Distribution of 30 patients according to cracks of feet both before and after treatment



Graph 3: Distribution of 30 patients according to depth of cracks both before and after treatment