

An Ayurvedic insight into managing Multi-Drug-Resistant Tinea w.s.r. to Dadru - A Case Series

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Skin, the largest organ of human body acts as a shield for external agent. But in today's modern world, a remarkable increase in the prevalence of skin is witnessed with dermatophytes infection alone accounting for 20-25% of world population. Dermatophytes are fungi that invade and multiply within keratinised tissues (skin, hair and nails) causing infection. Inappropriate, inadequate and overuse of tropical antifungal and corticosteroids drugs results in altered clinical presentation with extensive lesions, ultimately giving rise to a condition unresponsive to conventional treatment and thereby developing resistance. Multi-drug-resistant tinea, over past few years, has become a major health concern, especially in India. To address this need, Ayurveda is looked upon as a safe and effective treatment option. Dadru Kustha, on the basis of clinical presentation shows significant similarities with Tinea infection. In this context, 5 patients of multi-drug-resistant tinea infection with extensive lesions and history of reoccurrence were selected from the OPD of Kaya Chikitsa. Classical Virechan Karma with Trivrit Avaleha followed by Shaman Aushadhi (Aragvadhadi Kashayam, Gandhak Rasayan and Panchatiktaghrita Guggulu Vati), External application (Siddharthak Snan Churna and Brihat Marichyadi Taila with Tankan Churna) and Lifestyle modification were prescribed. After completion of treatment, significant improvement was noted in Subjective criteria {Kandu (itching), Raga (erythema), Pidika (eruptions) & Utsanna Mandala (elevated circular lesion)} and pictorial representation with no signs of reoccurrence during the 1-month follow-up. Panchakarma therapy and Samana Aushadhi (both external and internal) along with lifestyle modification provides a safe and effective treatment option for multi-drug-resistance tinea, highlighting the potential of Ayurvedic interventions in dermatology.

Keywords: Dadru, Dermatophytes, Multi-drug-resistant tinea, Ayurveda

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Introduction

The human skin is the biggest organ in the body. It is vulnerable to a wide range of illnesses due to its size and external position. Skin diseases are seen to be a serious health issue for all.

In tropical and developing nations like India, the prevalence of skin disorders has significantly increased recently for a variety of reasons, including pollution, inadequate sanitation, poverty, and unclean living conditions. According to *Ayurveda*, all skin diseases fall under the general category of *Kustha*, which are separated into *Kshudra Kustha* and *Maha Kustha*.

Acharya Charaka has described Dadru as a *Kshudra Kustha*[1] whereas Acharya Sushruta & Vagbhatta has described Dadru as a *Maha Kustha*. [2,3] Tinea or Ringworm infections are group of highly contagious segmented fungal infections, characterized by circular lesions which are usually having sharp margins with raised edges, where related fungi are dermatophytes.

In today's modern world, a remarkable increase in the prevalence of skin is witnessed with dermatophytes infection alone accounting for 20-25% of world population. The prevalence of tinea infections in India is considered very high, range from 36.6-78.4% of population affected by dermatophytosis, where tinea corporis being the most common presentation.

This high prevalence is likely due to warm and humid climate in most parts of the country, contributing to favourable conditions for the fungal growth.[4]

The *Kushta* having the *Lakshanas* of *Kandu* (itching), *Raga* (erythema), *Pidaka* (eruption) and *Utsanna Mandala* (elevated circular lesion) is called as *Dadru*. Mainly *Kapha* & *Pitta Dosha* predominant.

Materials and Methods

Case Reports

5 patients with chief complaints of severe itchy hyper pigmented round skin lesions over different parts of their bodies and having history of reoccurrence after intake and external application of contemporary medicine were selected from the Kayachikitsa OPD of I.P.G.A.E&R, Kolkata.

Table 1: Inclusion and exclusion Criteria

Inclusive criteria	Exclusive criteria
■ Age between 18 to 70 years	■ Age <18 years and >70 years
■ Subjects presenting with classical features of Dadru Kustha	■ Immune-compromised patients – HIV, HBV
■ Both male and female	■ Diabetes mellitus, Congestive cardiac failure, chronic kidney disease
■ History less than 3 years of origin	■ Pregnant and Lactating mother

Patient's information

Table 2: Showing Patient's information of all 5 cases

	Case 1	Case 2	Case 3	Case 4	Case 5
OPD No.	5924	6286	6743	7009	7528
Name	SK	BS	GP	HR	NK
Age	53 yr	57 yr	23 yr	56 yr	46 yr
Sex	Male	Male	Male	Male	Female
Religion	Islam	Hinduism	Hinduism	Islam	Islam
Occupation	Businessman	Shopkeeper	Student	Businessman	Housewife
Socio-economic status	Middle	Middle	Lower middle	Lower middle	Lower middle
Marital status	Married	Married	Unmarried	Married	Married
Past History					
Medical	HTN	N.S	N.S	N.S	N.S
Surgical	N.S	N.S	N.S	N.S	N.S
Family	N.S	N.S	N.S	N.S	N.S

Personal history

Table 3: Showing Personal history of all 5 cases

	Case 1	Case 2	Case 3	Case 4	Case 5
Appetite	Poor	Poor	Normal	Normal	Poor
Bowel	Constipated	Constipated	Unsatisfactory	Normal	Constipated
Bladder	Normal	Normal	Normal	Normal	Normal
Sleep	Disturbed	Disturbed	Normal	Disturbed	Disturbed
Addiction	No such	Tobacco	No such	No such	No such
Dietary	Mix	Mix	Mix	Mix	Vegetarian
Rasa	Amla, Lavan, Katu	Amla, Lavan	Amla, Lavan	Amla, Katu	Amla, Lavan
Guna	Ushna, Snigdha	Snigdha	Snigdha	Ushna	Ushna, Snigdha
Agni	Mandagni	Vishamagni	Vishamagni	Mandagni	Mandagni
Kostha	Krura	Krura	Madhyam	Mridu	Krura

Local Examination

Table 4: Showing Local Examination of 5 cases

Patches	Case 1	Case 2	Case 3	Case 4	Case 5
Location	Chest	Groin, Leg	Back	Axilla	Buttock
Shape	Circular	Ovoid	Circular	Ovoid	Circular, ovoid
Number	1	5-6	1	2	2
Colour	Erythematous	Erythematous	Blackish	Erythematous	Blackish
Border	Well demarcated	Well demarcated	Well demarcated	Well demarcated	Well demarcated
Texture	Elevated, Rough	Elevated, Rough	Elevated, Rough	Elevated, Rough	Elevated, Rough
Distribution	Symmetrical	Symmetrical	Symmetrical	Symmetrical	Symmetrical

Assessment criteria of Subjective parameters as per PARGOTRA et al. 2011

SN	Parameters	Findings	Arbitrary score
1.	Kandu (Itching)	Absent	0
		Mild occasional itching	1
		Moderate itching	2
		Severe itching	3
2.	Raga (erythema)	Absent	0
		Mild redness	1
		Moderate redness	2
		Deep red coloration	3
3.	Pidika (eruptions)	Absent	0
		1 to 3 in number	1
		4 to 7 in number	2
		> 7 in number	3
4.	Utsanna mandala (elevated circular lesion)	Absent	0
		Mild elevated	1
		Moderate elevated	2
		Severe elevated	3

Timeline of Therapeutic Intervention

Table 5: Showing timeline of therapeutic intervention

SN	Karma	Drug & Dose	Duration
1.	Deepana and Pachana	Panchakola Churna 5 gm twice daily before meal with luke warm water (L.W.W)	5 days
2.	Snehapana	Mahatikta Ghrita (D1-30ml, D2-60ml, D3-90ml, D4-120ml, D5-150ml)	5 days
3.	Sarvanga Abhyanga	Neem Taila (Q.S)	3 days
4.	Sarvanga Bashpa Swedana	Dasamoola Kwath for 10 minutes	3 days
5.	Virechana Karma	Trivritavaleha 100 gm with L.W.W	1 day
6.	Samsarjana Krama	As per classics	5 days
7.	a. Kwath	Aragwadhadhi Kashaya 20 ml twice daily after meal with L.W.W	30 days
	b. Vati	Gandhak Rasayan 250 mg twice daily after meal with L.W.W	30 days
		Panchatikta Ghrita Guggulu 500 mg twice daily after meal with L.W.W	30 days
	c. External application	Brihat Marichyadi Taila with Tankan Churna twice daily	30 days
		Siddharthak Snan Churna once daily	30 days

Pathyapathya

Table 6: Showing Pathya-Apathya of Kustha

Pathya	Apathya
Karvellaka	Amla, Lavan Rasa
Mudga	Dadhi
Nimba Patra	Guda
Nitya Snan	Anupa Mamsa
Mridu Vastra Dharana	Suktha
Vegadharan Varjana	Ati Snigdha Anna
Matravat Asana	Virudhasana

Precautions

1. Wash clothes & towels in hot water daily.
2. Change socks and wash feet regularly.
3. Do not share towels, soaps, clothes & combs.
4. Do not walk barefoot, especially in wet places.
5. Avoid wearing tight and sweaty innerwear.

Observations and Results

Table 7: Showing number of Virechan Vega 5 cases

	No. of Vega
Case 1	16
Case 2	19
Case 3	18
Case 4	17
Case 5	18

Table 8: Showing BT-AT comparison of Subjective Parameters

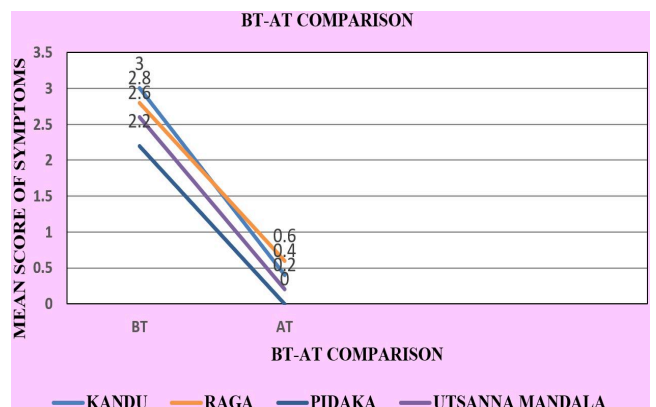
Case	Kandu		Raga		Pidika		Utsanna Mandala	
	BT	AT	BT	AT	BT	AT	BT	AT
Case 1	3	0	3	1	2	0	2	0
Case 2	3	0	3	1	2	0	2	0
Case 3	3	0	2	0	3	0	3	0
Case 4	3	1	3	0	2	0	3	0
Case 5	3	1	3	1	2	0	3	1

Table 9: Showing results of Subjective Parameters

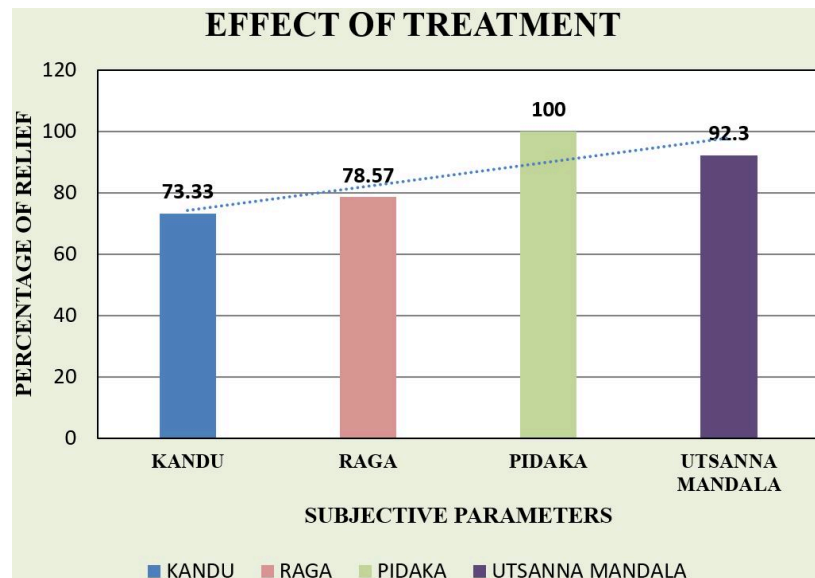
Parameter	n	Mean score		Mean difference	S.D	S.E	t value	% of relief	p value
		BT	AT						
Kandu	5	3	0.40	2.60	0.54	0.24	10.83	73.33	0.001
Raga	5	2.80	0.60	2.20	0.44	0.19	11.57	78.57	0.001
Pidika	5	2.20	0	2.20	0.44	0.19	11.57	100	0.001
Utsanna mandala	5	2.60	0.20	2.40	0.54	0.24	10	92.30	0.001



Picture 1: Pictorial assessment of the study



Graph 1: Showing BT-AT comparison on Subjective parameters in patients



Graph 2: Showing effect of treatment on Subjective parameters in Patients

Follow Up and Outcome

After completion of treatment there was significant improvement in signs & symptoms i.e., *Kandu* (itching), *Raga* (erythema), *Pidika* (eruption) and *Utsanna Mandala* (elevated circular lesion) along with Pictorial changes. On follow-up after one-month patients were satisfied with the multi modal *Ayurvedic* management.

Probable Mode of Action of Treatment Modalities:

Table 10: Showing Probable mode of action of treatment modalities

Treatment modality	Drug used	Main ingredients	Mode of action
1. Deepana-Pachana	Panchakola Churna[5]	Pippali, Pippali Mula, Chavya, Chitrak, Nagara	Enhances secretion of digestive enzymes like amylase, lipase and protease facilitating the breakdown and absorption of nutrients. Prevents indigestion and promotes intestinal motility.
2. Snehapana	Mahatikta Ghrita[6]	Chandan, Yastimadhu, Sariba, Khadira, Abhaya, Amlaki, Aragwadha, Saptaparna etc.	Cures diseases like Kustha, Kandu, Visphota, Pidaka due to its Tikta Rasa. It has Raktashodhak and Varnya properties. It also maintains the normal texture of skin due to its lipophilic action.
3. Sarvanga Abhyanga	Neem Taila[7]	Neem	Act on the site of disease manifestation by the virtue of fungicidal, antibacterial, antiviral, insecticidal etc. properties.
4. Sarvanga Baspa Sveda	Dasamoola Kwath[8]	Bilva, Agnimantha, Gambhari, Shyonak, Patala, Brihati, Salaparni, Prsniparni, Kantikari, Gokshura	Has potent anti-inflammatory, anti-microbial, antiseptic, anti-oxidant properties.
5. Virechana Karma	Trivrit Avaleha[9]	Trivrit	Included in Bhedaniya, Vishaghna and Asthanopaga Mahakasaya. Helps in elimination of toxins due to Adhobhagahara Guna (i.e. elimination of Dosha from lower half of the body)
6. Samsarjana Karma[10]	As per classics	Peya, Vilepi, Yusa, Rasa	Restores the deranged or weakened Agni, normalises the equilibrium of Dosha by gradually normalizing digestive process and digestive fire.
7. Kwath	Aragwadhati Kashayam[11]	Amlatasa, Neem, Guduchi, Patha, Karanja etc.	Indicated in Kaphavikar, Sodhana of Dusta Vrana. Acts as Raktasodhak, Twak prasadak. Possesses anti-pruritic, anti-microbial, anti-oxidant, anti-inflammatory properties. It enhances re-epithelialization and neo-vascularisation of skin.
8. Vati	i. Gandhak Rasayan[12]	Shuddha Gandhak, Triphala, Trijata, Sunthi etc.	Possesses Agnideepak, Ama Nasak, Vishahara, Soshak and Kriminasak properties.
	ii. Pancatikta Ghrita Guggulu[13]	Neem, Guduchi, Vasa, Patola, Nidigdhaka, Ghrita, Guggulu	It acts by the virtue of Kledaghna, Kandughna and Vranasodhak properties.

9. Bahira Parimarjan Chikitsa / Tropical application	i. Brihat Marichyadi Taila[14,15]	Chandan, Haridra, Saptaparna, Khadira, Guduchi, Daruharidra, Sirisha, Katu Taila, Haritala, Manashila, Gomutra etc.	It possesses Kandughna, Vishaghna, Varniya, Dahaprasamana, Kusthaghna properties. Majority of its ingredients are having antiseptic and anti-fungal action. Also, ingredients like Gomutra have Lekhaniya or exfoliating property helping in breaking down dead skin cells, promoting new cell growth.
	ii. Siddhartak Snana Churna[15,16]	Mustak, Madana, Triphala, Karanja, Aragvadha, Daruharidra, Saptaparna etc.	Cures Tvak Vikara by the virtue of Kandughna, Kusthaghna, Krimighna and Lehaniya properties. Majority of the ingredients are having anti-inflammatory, anti-bacterial and anti-fungal effect.

Discussion

Tinea infection is a challenging condition that has become refractory to conventional treatments due to an increase in emergence of multi- drug resistance. *Dadru Kustha* presenting clinical correlation with Tinea, is a chronic skin condition characterised by intense itching, inflammation, scaling etc. due to predominance of *Kapha* and *Pitta Doshas*. In this case series, 5 cases fulfilling the inclusion criteria were randomly selected from the *Kayachikitsa* OPD. Percentage of relief for *Kandu* was 73.33%, for *Raga* 78.57%, for *Pidika* 100% and for *Utsanna Mandala*, it was 92.3%. The p values of all the symptoms were 0.001, which shows highly significant results in all the 5 cases. *Virechan Karma* was chosen as prime *Samsodhana* (Purificatory) therapy due to its function of eliminating aggravated *Pitta Dosha* and thereby pacifying vitiated *Rakta Dosha*. It also aids in moderately eliminating aggravated *Kapha Dosha*. [17]

Deepana-Pachana Karma conducted before *Virechan Karma* helps in digestion of *Ama Dosha*, increases the *Abhyavaharana* and *Jarana Sakti*, facilitates the separation of *Dosha* from *dhatu* and prepares body for *Snehapana*. [18] *Snehapana* was done with *Mahatikta Ghrita* in ascending dose till appearance of *Samyak Snigdha Lakshana*. *Ghrita* is generally *Vata- Pitta Samak* but it has ability to transform itself so as to incorporate qualities of ingredients (Shown in table no. 10) added to it. [19] *Sneha* acts as solvent. It increases *Kleda Guna* due to an increase in *Apya Amsha* (watery or moisture content) leading to *Utklesha Avastha* and promotes *Vridhdya*, *Vishyandana* etc. factors which are required for movement of *Doshas* from *Sakha* to *Kostha*. [20] *Sarvanga Abhyanga* may help in moistening of *Dhatu* and *Srotas* by *Snigdha Guna*. *Sarvanga Baspa Swedana* applied after *Abhyanga* facilitated liquefaction of vitiated *Doshas* due to its *Ushna Guna*. It also helped in *Srotomukha Vishodhana* (clearing of channels of circulation) promoting movement of liquefied *Doshas* from *Sakha* to *Kostha*. [21]

Thereafter, administration of *Virechana Yoga* facilitates easy evacuation of aggravated *Doshas* and toxins by the virtue of its *Guna* (*Ushna*, *Tikshna*, *Suksma*, *Vyavayi*, *Vikasai*), *Virya* (through which it reaches *Hridaya*, circulates through micro & macro channels etc.), *Prabhav* (*Adhobhagahara*) and predominance of *Prithvi* and *Jala Mahabhuta*. It rectified the *Rakta Dhusti* due to its *Ashraya-Ashrayi Bhava* with *Pitta Dosha*. By eliminating the toxins and ensuring balance condition of *Dosha* and *Dhatu*, *Virechan Karma* helped in minimising the presenting symptoms by breaking the pathology of the disease. [22] *Shaman Aushadis* administered after *Sodhan Karma* acted more efficiently upon the involved *Doshas* and *Dhatus* due to the absence of *Shrota-Rodha*. *Gandhak Rasayan* possesses *Rakta Sodhak* property. It acts upon the vitiated *Kapha Dosha* due to its *Ushna Virya* and *Katu-Kashaya Rasa*. It is also having *Agni Deepana*, *Pachana* and *Kledaghna* properties which might have helped in reducing symptoms like *Kandu*, *Pidika*, *Utsanna Mandala* etc. [23] *Aragvadhadi Kashayam* contains ingredients (Shown in table no.10) promoting *Rakta Sodhan* and *Tvak Prasadana*. It also has *Kandughna*, *Vishaghna* etc. properties which pacified *Kandu*, *Daha*, *Utsanna Mandala* etc. symptoms of *Dadru*. [24] *Panchatiktaghrita Guggulu* possesses *Tikta Rasa* which acts on both vitiated *Kapha* and *Pitta dosha*. *Guggulu* acts as *Yogavahi*, *Upshoshak*, *Vranashodhak* and *Kledaghna*. By these properties it acts upon the pathogenesis of *Dadru Kustha*. [25] Along with *Shaman Aushadhi*, topical application of *Brihat Marichyadi Taila* and *Siddhartaka Snan Churna* were prescribed. Both the drugs are indicated in managing *Tvak Vikar* due to the presence of their ingredients (Shown in Table no. 10). *Siddhartaka Snan Churna* was applied in the form of *Lepa* in the affected region with the aim to pacify the *Doshas* provoked locally. It also bears *Sodhana*, *Utsadana* and *Ropana Guna* requires for overcoming the clinical presentation of *Dadru Kustha*. [26] *Siddhartaka Snan Churna* tropical application treat fungal infection like Tinea by killing the fungus or stopping it from growing, probably it targets fungal cell membrane causing destruction.

Lot of articles reviewed the efficacy of *Siddhartaka Snan Churna's* antifungal activity.[27] Topical application of *Brihat Marichyadi Taila* increases local blood flow and nutrient supply, decreases stagnation of fluid, balances moisture content, removes dead skin, eliminates waste product and fights against *Dadru* due to its antifungal and antiseptic properties, contributing to microbiological clearance. [28]

Conclusion

The present case series demonstrates the potential efficacy of multi-modal *Ayurvedic* intervention in managing multi-drug-resistant Tinea (Clinically correlated with *Dadru*). The significant improvement in all cases, including reduction in symptoms, skin lesions and fungal load, the combination of *Shodhana* (Purification) and *Shamana* (Pacification) therapies along with *Bahirparimarjana* (External) therapies confirmed the efficacy and safety of *Ayurvedic* interventions in managing multi-drug-resistant tinea where conventional treatments has failed or did not provide satisfactory effect. Further research is warranted to explore the potential benefits of *Ayurvedic* interventions in dermatology.

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