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An observational clinico etiological study of *Kushta* with specific reference to *Tinea corporis*

Abhitha A¹, Arunkumar M², Nagaraj S³, Sandesh Kumar Shetty⁴

¹Post Graduate Scholar, ²Associate Professor, ³Professor & HOD, Department of PG and PhD studies in Roga Nidana Evum Vikruti Vigyan, Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital, Udupi, Karnataka, India.

⁴Associate Professor, Department of PG and PhD studies in Swasthavrittam, Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital, Udupi, Karnataka, India.

ABSTRACT

Background: Skin diseases are among the most common health problems worldwide and are associated with considerable burden. In *Ayurveda* classics, skin disorders are termed in general as *Kushta* and are caused with involvement of *Vata*, *Pitta*, *Shleshma* and *Krimi*. Among the diversified etiological factors *Krimi* has a great importance. So, here an attempt is made to evaluate the clinical types, to isolate the common fungal species, etiological factors and to identify probable risk factors of *Krimijanya Kushta* in the present population. **Objectives:** To evaluate the clinical types, etiological factors and to identify probable risk factors of *Krimijanya Kushta* with special reference to *Tinea Corporis* and to isolate the prevalent causative fungal species. **Materials and Methods:** A total of 30 patients clinically diagnosed with *tinea corporis* and fulfilling the inclusion criteria were taken for the study. **Results:** Among 31 patients studied percentage of growth of different species of dermatophytes in culture study are given as follows, 48.4% are *Trichophyton*, 6.5% were *Trichosporon*, 3.2% were *Microsporum Gypseum*, 19.4% were *Epidermophyton*, 16.1% were *Candida*, 3.2% were *Aspergillus*, 3.2% were found no growth. **Conclusion:** *Aharaja* and *Viharaja Nidana* mentioned in *Kushta Nidana* as well as *Krimi Nidana* were found to have *Madhura*, *Amla*, *Lavana Rasa*, *Guru Guna*, *Vidahi*, and *Kledakaraka* property which cause *Swedaavarodha* and is crucial for *Kushta Utpathi* as well as *Krimi Utpatti*. The prevalent causative fungal species found in the study were *Trichophyton*, *Epidermophyton*, *Aspergillus*, *Trichosporon*, *Microsporum gypseum*. Clinically to approach *Kushta*, better to be done through culture study.

Key words: *Tinea corporis*, *Krimi*, *Kushta*, *Kleda*

INTRODUCTION

Kushta one among the *Ashtamahagada* classification denotes for all the skin diseases.^[1] *Madhavakara* describes the disease in which vitiated *Dosha* destroys the *Dhatu*, *Upadhatu* produces discoloration and putrefaction forming *Kotha* is called *Kushta*.^[2]

Address for correspondence:

Dr. Abhitha A

Post Graduate Scholar, Department of PG and PhD studies in Roga Nidana Evum Vikruti Vigyan, Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital, Udupi, Karnataka, India.

E-mail: abhithaa0@gmail.com

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In medical science the skin diseases have gained their magnitude as a multidimensional concept which encompasses psychological, social and financial consequences of the skin disease on the patients, their families and on society. The study of Indian literature reveals that skin diseases were considered as one of the major propositions; speaking, any affection of skin was considered as a serious problem which is evident from its extensive description under the heading of *Kushta*. *Aharaja* as well as *Viharaja Nidana* of along with *Krimi Nidana* can cause *Tridosha Prakopa* along with *Twak Rakta Mamsa* and *Lasika* causes *Kushta*.^[3] *Acharya Susrutha* mentioned *Krimi* as *Nidana* and *Upadrava* of *Kushta*. *Acharya Sushruta* has categorised under *Kushta* are contagious or transmitted due to touching, sharing the bed, eating in same vessel, wearing same clothes, or through exhalation of air, common use of garlands, physical contact, sexual intercourse, are the media of transmission of disease

from one person to other. The description of *Krimijanya Kushta* closely resembles the features of tinea corporis. Tinea corporis is the common fungal infection of skin presents as erythematous centrifugally growing annular lesion with a peripheral scale. The lesions of tinea corporis is usually annular or polycyclic, its borders looks like erythematous and vesicular on scaly, with the central clearing.^[4] The clinical diagnosis of this infections can be established by typical manifestations and distributions of lesions.

Skin diseases can place a heavy emotional and psychological burden on patients that may be far worse than the physical impact. Hence, it's important to constantly review the causative agents and its distribution to avoid resistant, recurrent dermatophytoses. In view of that critical understanding of the *Krimi* in dermatological manifestation is needed. This calls for the study of various etiological factors, clinical presentation of *Krimijanya Kushta* with features resembling Tinea Corporis.

METHODOLOGY

This was an observational descriptive, cross-sectional, hospital based study on minimum of 30 patients clinically diagnosed cases of dermatophytosis of age groups between 16-70 year of both gender registered from O.P.D and I.P.D of S.D.M Hospital, Udupi. The written informed consents were taken from the subjects. This study was approved by the ethical committee of the institution. Data collection was done by a pre-formed case proforma. Subjects fulfilled diagnostic criteria such as dermatological lesions on body or limbs i.e., round or annular skin lesions and scaling with well marginated patches. KOH positive skin scrapings were included. Patients under antifungal treatment for more than 4 weeks, non-dermatophytic fungal infections, uncontrolled diabetes mellitus, Pregnant and lactating women and those who diagnosed with other immune compromised conditions were excluded from the study. Assessment criteria for the present study included identification of fungal Species etiological factors for *Krimi*, etiological factors and clinical types of *Kushta*.

Collection of sample

A total of 31 patients clinically diagnosed with tinea corporis and fulfilling the inclusion criteria were taken for the study. A detailed clinical history was taken and physical examination done in all the cases, and the data will be entered in a pre-formed proforma. The infected skin lesions were scraped to obtain specimens confirming the presence of fungal infection by microscopic examination and culture. The lesions were thoroughly cleaned free of any debris by using 70% alcohol to reduce bacterial contamination. The area was allowed to dry thoroughly. Scrapings of the skin were taken with a no. 15 sterile surgical blade held vertically to the skin from the edge of the lesions. Scrapings collected were directly placed onto the slide for KOH-microscopy. For KOH microscopy, a drop of 10% KOH was added to the sample collected on the slide. A cover slip is applied with gentle pressure to drain away excess KOH. The slides were kept at room temperature for 20 min for clearing of the keratin. Slides are then examined microscopically at 400x magnification. The test is considered positive when long, branching, septate, hyaline hyphae were present. Positive sample scrapings then transferred into a glass container, for transport to the microbiology lab for culture.

Statistical analysis

Microsoft Word and Microsoft Excel 2019 were used to process manuscript and tables. Results were analysed using descriptive statistical methods like mean and percentages.

RESULTS

The frequency of each *Nidana* was assessed through a Likert-type scale.

Table 1: Likert-type scale

Frequency	Likert like scale	No of days/ week
Never	0% chance	Never
Rarely	10% and above chance I would have	1-2 times/ semester

Sometime	50% and above chances I would have used	1-2 times/month
Often	Frequently about 70% of chances I would have	1-3 times/week
Almost	In about 90% and above of chances I could have	3+times/week

In the present study data analysis showed that among 31 patients included 58.1% were female patients, 41.9% of male patients. Infections were more common in age group of 40-50 years (29%). Majority of the subjects belongs to middle class (71%). 19 (61.3%) patients had *Mandagini*. Among 16 patients (51.6%) were having *Krura Koshta*.

Table 2: Aharaja Nidana of Kushta in Tinea corporis patients.

Nidana ^[5]	Never%	Rarely%	Sometime%	Often%	Almost%
Cold water/juice/beverages during warm meals	6.5	54.8	38.7	0	0
<i>Lavana Atisevana</i>	6.5	32.3	29.0	32.3	0
Milk with sour substances	12.9	51.6	22.6	12.9	0
<i>Chilichimamatsya</i> with <i>Payas</i>	74.2	25.8	0	0	0
Aquatic fish/domestic meat in combination with honey/jaggarey / sesame seeds/ radish/ blackgram	74.2	25.8	0	0	0
<i>Amlatisevana</i>	3.2	61.3	12.9	22.6	0
<i>Atisneha</i>	25.8	58.1	12.9	3.2	0

Intake of <i>Santarpana</i> and <i>Apatarpana</i> diet without sequences	0	3.2	54.8	35.5	6.5
Intake of freshly harvested grains	0	6.5	58.1	35.5	0
<i>Madhu, Phanita, Matsya, Lakucha, Mulaka, Kakamachi</i>	3.2	41.9	48.4	6.5	0
Excessive intake of <i>Patrasaaka</i>	0	32.3	41.9	22.6	3.2
Excessive intake of jaggery	6.5	54.8	25.8	9.7	3.2

Table 3: Viharaja Nidana of Kushta in Tinea corporis patients.

Nidana	Never%	Rarely%	Sometime%	Often%	Almost%
Cold bath when afflicted with fear, exhaustion and grief	35.5	45.2	19.4	0	0
Immersing in cold water after exposure to sunlight	3.2	51.6	14.5	14.5	16.1
Hard work causing fatigue	29.0	48.4	22.6	0	0

Excessive exercise	29.0	45.2	25.8	0	0
Indulgence in sex after intake of food	6.45	22.55	12.9	12.9	45.2
Day sleep	16.1	16.1	19.4	25.8	22.6

Table 4: *Krimi Nidana* in *Tinea corporis* patients.

<i>Nidana</i> ^[6]	Never %	Rarely %	Sometim e%	Often %	Almost %
Intake of food during indigestion	3.2	9.7	35.5	16.1	35.5
Excessive sweet items	0	12.9	38.7	16.1	32.3
Excessive sour items	3.5	19.4	25.8	3.2	48.1
<i>Drava Priya</i>	6.5	3.2	25.8	22.6	41.9
<i>Pishtanna</i>	9.7	0	32.3	16.1	41.9
<i>Gudabhokta</i>	3.2	9.7	16.1	35.5	35.5
<i>Vyayama Varji</i>	0	6.5	51.6	12.9	29.0
<i>Divaswapna</i>	0	12.9	22.6	16.1	48.4

Table 5: *Upasargaja Nidana* in *Tinea corporis* patients.

<i>Nidana</i> ^[7]	Never %	Rarely %	Sometime %	Often %	Almost %
Sharing clothes	3.2	6.5	3.2	16.1	38.7

Sharing bed	3.2	6.5	3.2	16.1	38.7
Eating in same vessel	6.5	9.7	45.2	22.5	16.1
Sharing ornaments	16.1	22.5	38.7	16.1	6.6
Sharing unguents	25.8	32.3	23.5	15.3	3.1
Sexual intercourse	74.2	22.7	3.1	0	0
Physical contact	6.5	3.1	6.5	38.7	45.2

Table 6: Dermatophyte species found in different clinical type.

Culture	N=31	Percent%
Trichophyton	15	48.4
Trichosporon	2	6.5
Microsporum Gypseum	1	3.2
Epidermophyton	6	19.4
Aspergillus	5	16.1
Candida	1	3.2
No growth	1	3.2

Table 7: *Doshaja Kushta Lakshana* in *Tinea corporis* patients.

<i>Vatajakushta Lakshana</i> ^[8]	Present/Absent	N = 31	Percent %
<i>Twak Samkocha</i>	Present	15	48.4
	Absent	16	51.6
<i>Supti</i>	Present	0	0

	Absent	31	100
Sweda	Present	8	25.8
	Absent	23	74.2
Bheda	Present	8	25.8
	Absent	23	74.2
Shobha	Present	2	6.5
	Absent	29	93.5
Kaunya	Present	0	0
	Absent	31	100
Swaropaghata	Present	0	0
	Absent	31	100
Kaphaja Kushta Lakshanas ^[9] Gourava	Present	0	0
	Absent	31	100
Kandu	Present	10	31
	Absent	21	69
Bheda	Present	8	25.8
	Absent	23	74.2
Shobha	Present	2	6.5
	Absent	29	93.5
Raga	Present	31	100
	Absent	0	0
Srava	Present	2	6.5
	Absent	29	93.5

Table 8: Dhatu Gata Kushta Lakshana in Tinea corporis patients/

Twak Gata Kushta Lakshanas ^[10]	Present/Absent	%
Sparsha Hani	Present	0
	Absent	100

Twak Vaivarnya	Present	100
	Absent	0
Swedasyatipravarthi	Present	67.7
	Absent	32.3
Ishat Kandu	Present	100
	Absent	0
Twak Swapa	Present	0
	Absent	100
Rooksha Bhava	Present	83.2
	Absent	16.2
Rakta Dhatu Gata Kushta Lakshanas ^[11] Kandu	Present	100
	Absent	0
Vipooyaka	Present	58.1
	Absent	41.9
Twak Swapa	Present	0
	Absent	100
Romaharsha	Present	45.2
	Absent	54.8
Svedasya Atipravarti	Present	67.7
	Absent	32.3

Table 9: Samanya Krimi lakshanas in Tinea corporis patients.

Samanya Krimi Lakshanas ^[12]	Present/Absent	N=31	%
Jwara	Present		0
	Absent		100
Vivarnata	Present		100

	Absent		0
Shoola	Present		25.8
	Absent		74.2
Hridroga	Present		0
	Absent		100
Sadana	Present		22.6
	Absent		77.4
Bhrama	Present		0
	Absent		100
Atisara	Present		0
	Absent		100
Bhaktadvesha	Present		25.8
	Absent		74.2
Bahya Krimi Lakshana ^[13] Kota	Present		74.2
	Absent		25.8
Pidaka	Present		38.7
	Absent		61.3
Kandu	Present		100
	Absent		0
Gandaan	Present		22.6
	Absent		77.4

Table 10: Dadru Kushta Lakshana in Tinea corporis patients.

Dadru Kushta Lakshana ^[14]	Present %	Absent %
Kandu	100	0
Udgata Mandala	74.2	25.8

Pidaka	38.7	61.3
Vivarnata	100	0
Dirghapratana	77.4	22.6

DISCUSSION

The Aharaja, Viharaja Nidana of Kushta as well as Krimi along with Upasargaja Nidana which causes Dosha Dushti and produce Vyadhi.

Samuthana Vishesha

Ahara

Virudha Ahara, Atiamla Atilavana Rasa Pradhana Ahara are described as Nidana for Kushta. Intake of excessive Lavana and Amla Rasa produce excessive Kledada to the body which favours the Krimi Uthpatti. The mode of action of Viruddha Ahara tend to vitiate Rakta and may also lead to many Dhatupradoshaka Vikaras such as Kustha. These Aharadi Nidanas act as a Viprakrushta Hetu for Vyadhi manifestation.

Divaswapna

Divaswapna causes Tridosha Dushti, and is observed in study subjects. Divaswapna causes Kapha Prakopaka and also Kledakaraka.

Sheeta Jalapana after Vyayama

Sheethoshna Vyatyasa Nidana is one of the prime causes for Swedovaha Srotodushti. Vasodilatation is observed in individuals after exercise or heavy work. Immediate intake of Sheetala Jala may result in vasoconstriction. This sudden change for a long time might have ended up in the dysfunction of skin barrier thereby allowing the entry of microbes inside the epidermis ensuing inflammatory processes. This can be considered as a Viprakrushta Nidana of the Vyadhi.

Upasargaja Nidana

Aupasargika Vyadhi spreads from persons by Krimi through Sweda. As tinea corporis is contagious disease it spreads by skin-to-skin contact or by touching contaminated surface or fomites. In the present study there is Upasargaja Nidana plays a major role in

manifesting *Vyadhi*. This acts as *Sannikrushta Nidana* for the *Vyadhi*.

Manasika Nidana

Manasika Nidanas in *Ayurveda* were categorised into that causes *Pitta Prakopaka* and *Vata Prakopaka*. *Krodha* causes *Pitta Prakopa* which directly vitiates *Rakta Dushti* and causes *Kushta*.

Krimi Nidana

Krimi Nidana which produce *Kledata* to the *Twak* and favours *Krimi Utpatti* leads to *Kushta*. In the assessment of *Adhishtanantarani*, *Kushta* vitiates the three *Dosas* and creates *Saithilya* in the *Dushyas* as same as in *Bahya Krimi* which spreads persons to person through *Upasargaja Nidanas*.

Discussion on involvement of Dosh and Dhātu

Even though in *Kushta* there is *Tridosha* become agitated and bring looseness in *Twagadi Dhatus*. In *Krimi Janya Kushta* the *Vata* and *Kapha Pradhana Tridosha* was noted more in the study affecting only the *Utthana Dhatus* like *Twak* and *Rakta*. A large sample size is needed to check the involvement of *Tridoshas*. Also *Virudha* is found to act at the level of *Rasaadi Dhatus*, *Tridoshas* or directly culminate into *Shonita Dushti* because most of the *Viruddhas* act either abruptly as that of *Visha*.

CONCLUSION

To summarise, *Kushta Aharaja*, *Viharaja* as well as *Krimija* and *Upasargaja Nidana* were predominantly found. Involvement of *Pitta Dosh* (comparatively less) and *Mamsa Dhātu* were observed in some cases. In the assessment of *Samutthana Vishesh*, all the *Saptavidha Vyadhi* classification along with *Upasargaja Nidana* are found to be more or less significant in explaining this type of *Kushta*. Both literary analysis and clinical findings reveals the role of *Tridosha Dushti*, *Twak*, *Rakta*, *Mamsa* in genesis of *Kushta* with *Krimi* involvement. 75% which was statistically highly significant follows *Kushta Aharaja* and *Viharaja Nidana*, 73% of them follows *Krimija Nidana*. This *Nidana* might have caused *Swedaavarodha* resulting in *Kledabahulatha*. This is crucial factor for *Kusthotpatti*.

Different categories of *Kushta* having pathological presentation of *tinea corporis* such as *Vataja Kushta Lakshanas*, *Kaphaja Kushta Lakshanas*, *Dadru Kushta*, *Mandala Kushta*, *Twak Gata Kushta*, *Rakta Gata Kushta*, *Mamsa Gata Kushta* (fewer *Lakshanas*). Different species of dermatophytes found in culture study are as follows, 48.4% were Trichophyton, 6.5% were Trichosporon, 3.2% were Microsporum Gypseum, 19.4% were Epidermophyton, 16.1% were Candida, 3.2% were Aspergillus, 3.2% were found no growth. This Observation study concluded that there is a need of culture study to detect the organism present in the lesion as the lesions of superficial infections mimics with the opportunistic fungal infections. Opportunistic mycosis were seen in immunocompromised host, including species of fungi like Trichosporon, Candida and Aspergillus as there is immune system impairment and thus increase the risk of invasive fungal infections. *Ojas* as well as *Vyadhikshamatva* also plays a role in manifestation of dermatophytes. Hence, to reach a diagnosis and for the successful course of treatment fungal culture is crucial.

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