



Clinical Research

Clinical evaluation of the efficacy of *Khadiradi yoga avachornana* in *Kachchu* with special reference to genitoinguinal intertrigo

Mamatha K. V.¹, Shubha U.¹, C. M. Jain²

¹Department of Prasuti Tantra and Stree Roga, SDM College of Ayurveda, Udupi, Karnataka, ²Department of Prasuti Tantra and Stree Roga, NIA, Jaipur, India

Abstract

Kachchu is a simple localized dermatological infection of the genitoinguinal region, which occurs because of unhygienic observance, and manifests in the form of inflammation followed by secondary bacterial or fungal infections that can be best correlated to genitoinguinal intertrigo. Even though it rarely causes systemic manifestations, its mere presence itself is disturbing because of intractable itching and pain. It may delay the proper healing of the episiotomy wound and may cause difficulty in walking because of severe pain. Candida powder is the highest selling medicine for the intertrigo, as the incidence of intertrigo is as high as 40% in some particular seasons. In the Ayurveda fraternity, there is no established preparation that can be preserved safely in all the epochs of life in females and which is easy to apply. After understanding the disease in the perspective of the ayurvedic and modern medicinal systems, *Khadiradi yoga choorna* — a new ayurvedic formulation — was prepared on the basis of stringent ayurvedic principles. Hence, an attempt has been made to study the efficacy of the *khadiradi yoga avachurnana*¹ in *Kachchu*, with special reference to genitoinguinal intertrigo in females.

Key words: *Kachchu*, itching, intertrigo

Introduction

Human psyche has an innate tendency of confronting to get rid of any illness, simple or complicated, but definitely creating discomfort in that person. In this modern era, where etiquette is highlighted, people tend to be or pretend to be very neat with cultured social behaviors and a simple problem like intertrigo can cause a set back. In inguinal intertrigo, people feel a lot of discomfort as there is intense itching, and scratching in public places may be regarded as being uncultured. The altered gait due to severe discomfort may look awkward.

Kachhu / *Vrushana Kachchu* is a *sthanika twak gata vikara* explained in *kshudra roga*. *Snana uthsadana hinatha* are the predisposing factors, which cause itching in the genital region and because of scratching there will be manifestation of *sphota* and *srava* due to *Kapha* and *Rakta prakopa*. As the *nidana* and *samprapti* are not gender-specific, going by the word *vrushana* we have to consider the anatomical region and not the anatomical organ.^[1]

Address for correspondence: Dr. Shubha Ural,
Department of Prasoothi Tantra and Stree Roga, SDM
College of Ayurveda, Udupi, Kuthpady, Karnataka, India.
E-mail: shubha.ural@gmail.com

Genitoinguinal intertrigo,^[3] a mild form of superficial skin inflammation, may or may not be associated with secondary bacterial or fungal infection. It causes discomfort in the day-to-day activities, especially in pregnancy associated with obesity. In the costal regions, in particular, which have high humidity and hot climate and where there is severe sweating in both rainy and summer seasons, people are predisposed to get intertrigo. Diabetes and use of tight synthetic undergarments are the other factors that lead to intertrigo. The lesion may interfere in the healing of the episiotomy wound in the puerperal period. As the symptoms and etiological factors of *kachchu* and those of genitoinguinal intertrigo are similar, *kachchu* can be best correlated to genitoinguinal intertrigo. The present study was carried out with the aim to evaluate the efficacy of *Khadiradi Yoga Avachurnana* in *Kachchu* / genitoinguinal intertrigo.

Materials and Methods

Drug

Khadiradi yoga choorna has 11 drugs selected from different *ganas*. They are — *Kustaghna gana*,^[3] (*Khadira*, *Amalaki*, *Haritaki*, *Saptaparna*, *Haridra*); *Kandughna gana*^[3] (*Mustaka*, *Nimba*); *Vedanastapana gana*^[3] (*Shireesha*); *Bibhitaki*^[4] (on *pralepa* imparts *dahahara* property); and *shudda gandhaka*^[8] and *Dugdhapashana*^[6] (both have the *twakdoshahara* property).

Sources of data

A minimum of 30 female patients suffering from genitoinguinal intertrigo were selected from the OPD and IPD of the SDM Hospital of Ayurveda Udipi, and taken for the study.

Method of collection of the data

It was a single blind clinical study, with a pre-test and post-test design, wherein, 60 diagnosed female patients of age group 20 – 50 years were selected. The patients were categorized into two groups of 30 patients each. The control group was given candid powder and the test group was given *Khadiradi yoga choorna*. A special proforma was prepared with all points of history taking, symptoms, physical signs and laboratory investigations as mentioned in our classics and allied sciences. The parameters of the signs and symptoms were scored on the basis of the standard method of statistical analysis.

Intervention

The drug powder was dusted on the affected area twice daily after cleaning the part with pre-boiled water and drying the area with clean gauze.

Dose Approximately 5 g of the powder was dusted on the surface of the affected skin twice in 24 hours.

Duration of administration: Three weeks.

Follow-up: For a total of one month with an interval of one week.

Investigations

Hemoglobin gm%, Total leucocyte count, Differential count, Erythrocyte sedimentation rate, Random blood sugar were carried out.

Inclusion criteria

- Diagnosed cases of genitoinguinal intertrigo / *Kachchu* in otherwise healthy female patients aged 20 – 50 years.
- Diagnosed cases of genitoinguinal intertrigo / *Kachchu* in pregnancy in all three trimesters and in the puerperal state.
- Genitoinguinal intertrigo / *Kachchu* with gynecological conditions, wherein, administered drugs did not have any action on the lesion.

Exclusion criteria

- Patients with intertrigo with other skin diseases, atrophic changes, with complications like septicemia.
- Patients with systemic diseases like diabetes, HIV, and in an immunocompromised state or on steroid treatment.
- Patients exhibiting allergic reaction to any of the constituents of the product used.
- Intertrigo in locations other than the genitoinguinal region.

Assessment criteria

Assessment was made on the basis of changes in the following subjective and objective parameters: Subjective parameters — pain, itching

Objective parameters — size of the lesion, color, discharge, blisters

Observations and Results

Presence of pain

All the patients had pain, but of a varied nature. Out of them, 65% of the women had intermittent pain and 35% women had continuous pain. In intertrigo, continuous pain is present in the presence of acute inflammation, and intermittent pain is present in the waning stage of acute inflammation, and in the presence of intermittent friction,

Itching

Itching is an intractable symptom that is seen in this pathology. All the patients had itching. Eighty-five percent of the women presented with severe *Kandu*. Ten percent of the women presented with moderate *Kandu*, and 5% of the women presented with mild *Kandu*. *Kandu* is attributed to *Kapha* and is present due to maceration.

Size of the lesion

In 58.33% of the women, the intertrigous lesion had extended up to the vulva, in 36.67% the lesion had extended to the thighs, in 3.33% it had extended to the lower abdomen, and in 1.67% of the women it had extended to the buttocks. The ecosystem of the inguinal region and the vulva were similar and both were in the compact region. Therefore, the lesion tended to spread to the vulva. In obese females, it might even spread to the folds of the lower abdomen, thighs, or even to the buttocks.

Color

In the present study, out of 60 patients 43.33% of the women had a macerated lesion, 25% of the women had a blackish red lesion, 18.33% of the women had a blackish lesion, and 13.33% of the women had a red-colored lesion.

Presence of blisters

Only 16.67% of the women had development of blisters and 83.33% of the women never had blisters. As the sample size was small, it was inconclusive.

Effect of therapy

The effect of *Khadiradi Yoga avachurnana* and control group as well as the comparison between the two are presented in Tables 1 to 12.

Discussion

Mode of action of *Khadiradi choorna*

The genitoinguinal region is an ecosystem of many bacteria and fungus. In normalcy, there would be some homeostasis in between. When there is a breach in the body immune system because of specific etiological factors, the balance in between the microorganisms is lost, as also the homeostasis between the genitoinguinal skin and the commensals gets impaired. Thus one or the other microorganism will get the pathogenicity and multiply in number to form colonies.

In the present study, the drug is used in a powder form. The very pathogenesis of *Kachchu* starts from the *kledana* of the *mala* present in the genitoinguinal region. The powder form of the drug and the presence of *dugdha pashana* and other *kashaya rasa yukta* drugs impart dryness to the skin of the genitoinguinal

Table 1: Effect of therapy on pain

Group	BT mean	Test	AT mean	D	%	SD	SE	't'	P value
Test group	2.145	AT ₁	0.345	1.80	83.92	0.848	0.114	15.748	< 0.001
		AT ₂	0.0545	2.091	97.48	0.800	0.108	19.387	< 0.001
		AT ₃	0.0364	2.109	98.32	0.809	0.109	19.333	< 0.001
Control group	2.313	AT ₁	0.688	1.625	70.26	0.806	0.202	8.062	< 0.001
		AT ₂	0.438	1.875	81.06	0.719	0.180	10.434	< 0.001
		AT ₃	0.250	2.063	89.19	0.772	0.193	10.688	< 0.001

BT-Mean score before treatment, AT-Mean score after treatment, D-mean difference, SD-Standard deviation, SE-Standard error

Table 2: Comparison of effect of therapy on pain

Test group mean	Control group mean	D	SD	SE	't'	P value
0.145	0.459	0.313	0.220	0.127	- 1.940	0.124

Table 3: Effect of therapy on itching

Group	BT mean	Test	AT mean	D	%	SD	SE	't'	P value
Test group	2.800	AT ₁	0.418	2.382	85.07	0.686	0.102	23.320	< 0.001
		AT ₂	0.0727	2.727	97.39	0.592	0.0798	34.180	< 0.001
		AT ₃	0.0545	2.745	98.04	0.645	0.0869	31.588	< 0.001
Control group	2.938	AT ₁	1.063	1.875	63.82	0.806	0.202	9.603	< 0.001
		AT ₂	0.625	2.313	78.73	0.946	0.237	9.773	< 0.001
		AT ₃	0.563	2.375	80.84	1.025	0.256	9.271	< 0.001

Table 4: Comparison of effect of therapy on itching

Test group mean	Control group mean	D	SD	SE	't'	P value
0.182	0.750	0.569	0.273	0.157	-2.889	0.045

Table 5: Effect of therapy on size of lesion

Group	BT mean	Test	AT mean	D	%	SD	SE	't'	P value
Test group	2.964	AT ₁	1.891	1.073	36.20	0.658	0.0893	12.006	< 0.001
		AT ₂	1.236	1.727	58.27	0.781	0.105	16.409	< 0.001
		AT ₃	0.745	2.218	74.83	0.686	0.0924	23.995	< 0.001
Control group	3.000	AT ₁	2.125	0.875	59.17	0.619	0.155	5.653	< 0.001
		AT ₂	1.688	1.313	43.77	0.704	0.176	7.456	< 0.001
		AT ₃	1.375	1.625	54.17	0.885	0.221	7.344	< 0.001

Table 6: Comparison of effect of therapy on size of lesion

Test group mean	Control group mean	D	SD	SE	't'	P value
1.291	1.729	0.439	0.377	0.217	-1.105	0.331

Table 7: Effect of therapy on color of lesion

Group	BT mean	Test	AT mean	D	%	SD	SE	't'	P value
Test group	2.236	AT ₁	0.909	1.327	59.35	0.818	0.110	12.037	< 0.001
		AT ₂	0.545	1.691	75.63	0.900	0.121	13.933	< 0.001
		AT ₃	0.218	2.018	90.25	1.027	0.139	14.570	< 0.001
Control group	1.875	AT ₁	1.063	0.813	43.36	0.655	0.164	4.961	< 0.001
		AT ₂	0.563	1.313	70.03	0.704	0.176	7.456	< 0.001
		AT ₃	1.000	0.875	46.67	1.147	0.287	3.050	0.008

Table 8: Comparison of effect of therapy on color of lesion

Test group mean	Control group mean	D	SD	SE	't'	P value
0.557	0.875	0.318	0.272	0.157	- 1.252	0.279

Table 9: Effect of therapy on Discharge

Group	BT mean	Test	AT mean	D	%	SD	SE	't'	P value
Test group	0.745	AT ₁	0.127	0.618	82.95	0.490	0.0661	9.350	< 0.001
		AT ₂	0.000	0.745	100.00	0.440	0.0593	12.575	< 0.001
		AT ₃	0.000	0.745	100.00	0.440	0.0593	12.575	< 0.001
Control group	0.813	AT ₁	0.438	0.375	46.13	0.719	0.180	2.087	0.054
		AT ₂	0.188	0.625	76.88	0.619	0.155	4.038	0.001
		AT ₃	0.250	0.563	69.25	0.512	0.128	4.392	< 0.001

Table 10: Comparison of effect of therapy on discharge

Test group mean	Control group mean	d	SD	SE	't'	P value
0.0423	0.292	0.250	0.130	0.0752	-2.894	0.044

Table 11: Effect of therapy on blisters

Group	BT mean	Test	AT mean	d	%	SD	SE	't'	P value
Test group	0.127	AT ₁	0.000	0.127	100.00	0.336	0.0454	2.806	0.007
		AT ₂	0.000	0.127	100.00	0.336	0.0454	2.806	0.007
		AT ₃	0.000	0.127	100.00	0.336	0.0454	2.806	0.007
Control group	0.313	AT ₁	0.0625	0.250	79.87	0.447	0.112	2.236	0.041
		AT ₂	0.0625	0.250	79.87	0.447	0.112	2.236	0.041
		AT ₃	0.125	0.188	60.06	0.544	0.136	1.379	0.188

Table 12: Comparison of effect of therapy on blisters

Test group mean	Control group mean	d	SD	SE	't'	P value
0.000	0.0833	0.0833	0.0361	0.0208	- 4.000	0.016

region. This will also break the chain of the pathogenesis causing *kachchu*. Most of the drugs have *Kapha*, *Pitta-hara* properties. Therefore, the *Khadiradi yoga choorna* pacifies the vitiated *doshas* responsible for the manifestation of *Kachchu*. *Nimba and dugdha pashana* have the *lekhana* property, which helps to remove the unwanted layer in that region. Moreover, *haridra* imparts luster.

Proteins and tannins present in the *yoga* impart dryness to the skin. Tannins constrict the opening of the gland ducts and cause peripheral vasoconstriction and reduce the oozing. Saponins and phenols act as cleansers and help in the debridement. Steroids are anti-inflammatories and thus analgesic. The glycosides present in the drugs directly act as anti-bacterial and anti-fungal agents.

The active principles of the drug may also act at the host tissue level and may undergo first-phase metabolism in the skin itself, before entering into the systemic circulation. This first phase metabolism of the drug in the skin fold of the genitoinguinal region may aid in many changes like alteration of pH and local temperature of that area, drying the skin of that area, and it may change the total local atmosphere of the local skin that has triggered the pathogenicity of microorganisms. Once the dampness

of the area reduces, there is no nutritive media for the bacteria and fungus to grow, and hence, their growth may be reduced.

Even though the drug is applied in the powder form, some of its components, for example, the active principles, are dissolvable in the aqueous media. The interaction of the active principles of the drug with each other in that particular temperature and pH, with the microorganism or with the interactions of the microorganisms may act to combat the disease and help to heal the intertrigo.

Conclusion

Genitoinguinal intertrigo is seen more often in pregnant and puerperal patients, as in both conditions there is increased sweating. It is more frequent in females with increased per vaginal discharges and per vaginal bleeding. Obesity and diabetes mellitus are the precipitating factors. All these conditions result in occlusion, leading to the improper disposal of sweat. Sweat retention increases friction between the skin folds and the pathology of the genitoinguinal region starts.

Avachoomana is the mode of procedure adopted to administer the drug as the disease *Kachchu* is a *sthanika twakgata vikara*.

Avachurnana acts for both purposes of *shodhana* and *ropana*, as mentioned in the classics. This clinical study done with the objective to see the clinical efficacy of *Khadiradi yoga avachurnana* in *Kachchu* shows that itching, dampness, and blisters respond to *khadiradi choorna* better than candida., *Khadiradi choorna* has a similar effect on pain, color, and size of the lesion as that of the candida powder, which has proved its efficacy.

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