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To evaluate the efficacy of *Shigru* in *Mutrakrichhra* w.s.r. to *E.Coli*

Anand Kumar,¹ Vijay Shankar Dubey²

¹M.D. in Dravya Guna, G.A.C.H., Patna & Senior Consultant, CCRAS, ²Professor & HOD, Department of Dravya Guna, Government Ayurveda College and Hospital, Patna, Bihar, India.

ABSTRACT

All the *Acharyas* have described the pathogenesis of *Mutrakrichhra* and *Vasti* (bladder) *Rogas*. *Acharya Charaka* has given specific pathogenesis of *Mutrakrichhra*, that *Doshas* being provoked by their respective aetiological factors, individually or altogether reaches *Vasti* and *Mutramarga* and begins to compress on all sides and thus results in *Mutrakrichhra*. The vitiated *Doshas* enter into *Vasti*, which is the place of *Khavaigunya*. *Dosa Dushya Sammurchhana* takes place and *Mutradusti* occurs. *Dushita Mutra* causes irritation and spasm of urinary tract and leads to difficulty in micturition. *Sushruta* in general has explained the pathogenesis of *Vasti Roga* and *Vayu* as the main causative factor. *Samyak Apana Vayu* helps in proper excretion of urine from *Vasti* and when this *Vayu* becomes *Pratiloma* (opposite) produces disorders in *Vasti*.

Key words: *Mutrakrichhra*, *Vasti*, *E.coli*, *Mutraghata*, *Shigru*, *UTI*.

INTRODUCTION

The disease in which *Mutra* is voided with much *Dukha* (difficulty) is called *Mutrakrichhra*.^[1] The disease in which urine is passed with difficulty is called *Mutrakrichhra*. The description of *Mutrakrichhra* is available in *Atharvaveda*. There are references regarding urogenital system in *Atharvaveda*. Urinary structures like *Vrikka* (kidneys), *Vasti* (urinary bladder), *Mehana* (urethra), *Gavini* (ureter) etc. are mentioned.

Acharya Charaka has described *Mutraghata* in 19th chapter of *Sutrasthana* but the detailed description of eight types of *Mutrakrichhra* have been defined along

with its aetiopathogenesis and treatment in the 26th chapter of *Chikitsasthana*.

The *Uttaratantra* of *Sushruta Samhita* contains description of 8 types *Mutrakrichhra*.^[2] *Astanga Sangraha* and *Astanga Hrudaya*, both the *Acharyas* have classified the disease of *Mutravaha Srotas* according to its *Pravrutti* (frequency). *Acharya Sharangdhara* has described eight types of *Mutrakrichhra* and thirteen types of *Mutraghata*.^[3] In the chapter 30 and 31 *Acharya Madhavkara* has given detailed description of *Mutrakrichhra* and *Mutraghata*. The description of *Mutrakrichhra* is available in almost every authentic texts of Ayurveda. *Mutrakrichhra* is considered as disease of *Mutravaha Srotas* (urinary system). So the present study has been planned to evaluate the action of *Shigru*^[4] on *E.Coli*.^[5]

OBJECTIVES

To evaluate the action of *Shigru* on *E.coli* and also study the complication if any occurs during the course of treatment.

MATERIALS AND METHODS

Criteria of selection of patient

Inclusion Criteria

The patients attending the O.P.D. and I.P.D. of Research Department of Govt. Ayurvedic Hospital,

Address for correspondence:

Dr. Anand Kumar

M.D. in Dravya Guna, G.A.C.H., Patna, Senior Consultant, CCRAS, Patna, Bihar, India.

E-mail: akdranand121@gmail.com

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Patna, having classical symptomatology of *Mutrakricchra*. Careful elucidation and evaluation of medical history of patients. The patients having classical symptomatology of *Mutrakrichhra* were enrolled.

Detailed physical and clinical examination on the basis of proforma specially prepared for this purpose. The patient under 70 years irrespective of caste, religion, sex, habits, Socioeconomic status and those who fulfill the diagnosis were selected for the study.

Exclusion Criteria

Patients of diabetes, hypertension. Thyroid dysfunction, Carcinoma, Sexually transmitted diseases, Pregnant woman and other severe diseases laid down as per rules are excluded.

Haematological Investigations

The following laboratory investigation were undertaken in each case just before beginning of drug trial and after completion of the study. Blood - Hb%, TLC, DLC, ESR & PCV. Above mentioned all pathological investigation were done in hospital attached laboratory.

Urine routine and culture

Urine analysis for its colour, appearance, specific gravity, reaction etc. and urine culture is done to rule out microorganism.

Radiological Investigations

If required USG of urinary system (KUB) was done to rule out any pathological obstruction in urinary tract.

Study design: Single arm clinical study

Patients were subjected to medicine with the drug under trial.

- Drug - *Shigru Ghana Vati*
- Dose - 500 mg BD
- Route of administration - oral
- Duration of therapy - 90 days

Diet advised

They were advised to follow the dietary restriction like;

1. High intake of water
2. Intake of plenty of fluid in the form of soups, coconut water, juices and glucose water.
3. Maintenance of perineal hygiene.
4. Not to suppress the urge of micturation.
5. Complete and frequent emptying of the bladder at short intervals.

Routine laboratory investigation and sign and symptoms scoring have been carried out before and after treatment.

The drug efficacy was assessed on the basis of clinical observation in course of the treatment, especially the sign and symptoms beside the laboratory investigation before and after the course of treatment.

Criteria for assessment

1. **Cured** : This was decided on the basis of following two points. Complete relief in the initial chief complaints of the patient along with the positive improvement (100% relief in signs and symptoms). Complete no growth of organism in urine culture examination.
2. **Moderately improvement** : 30-59% relief in sign and symptoms.
3. **Mild improvement** : below - 30% relief in sign and symptoms
4. **Unchanged - No relief** : This was the group of patients in our series which did not report either symptomatic relief in their basic complain and not have negative urine examination report after treatment.

STATISTICAL ANALYSIS

Insignificant	p>0.05
Improvement	P<0.05
Significant	P<0.01
Highly Significant	P<0.001

OBSERVATIONS AND RESULTS

Table 1: Effect of Shigru Ghana on clinical symptoms in patients of Mutrakrichhra.

Clinical Symptoms	Mean Score		D	% Relief	S.D ±	S.E ±	t	P
	BT	AT						
Burning Micturition	2.53	0.67	1.9	70.51	0.85	0.19	9.97	<0.001
Frequent Micturition	2	0.65	1.35	62.84	0.94	0.21	6.44	<0.001
Loin Pain	0.55	0.2	0.35	63.64	0.67	0.15	2.33	>0.05
Bodyache	2	1.75	0.25	12.5	0.5	0.25	1	<0.01
n=20								

For the burning micturition there was 70.51% relief with $p < 0.001$ that was highly significant. In the frequent micturition there was 62.84% relief with $p < 0.001$ that was highly significant. For loin pain there is 63.64% relief with $p > 0.05$ that was insignificant. For the bodyache there was 12.5% relief with $p < 0.01$ that was significant.

Table 2: Effect of Shigru Ghana of on haematological values in patients of Mutrakrichhra.

Haematological Value .	Mean score		D	%Change	S.D ±	S.E ±	t	P
	BT	AT						
Hb%	11.07	10.94	0.13	1.17	0.18	0.04	3.16	<0.01
TLC	8100	7105	995	12.28	706.72	158.03	6.3	<0.001
Neutrophils	63.15	60.46	2.6	4.27	5.12	1.14	2.36	<0.05
Lymphoc	31.	28	2.4	7.79	5.3	1.1	2.	>0.

ytes	46		4		2	9	06	05
ESR	48.05	31.5	16.55	34.44	12.89	2.88	5.74	<0.001
S.creatinine	1.00	0.94	0.06	6.93	0.13	0.03	2.57	<0.05
n=20								

The mean haemoglobin percentage decrease from 11.07gm% to 10.94gm% which was statistically significant ($P < 0.01$). Initial score in the total leukocyte count was 8100 which was decreased to 7105 was significant ($P < 0.001$). There was an decreased observed in the mean neutrophil form 63.15 to 60.46 which was significant ($P > 0.05$). The initial mean score of lymphocytes was 31.46 which was decreased to 28 which was statistically significant ($P > 0.05$).

The ESR decreased from mean score of 48.05 to 31.5 which was statistically significant ($P < 0.001$). The mean score of S.cretanine was 1.00 which was decreased to 0.94 after treatment which was significant.

Table 3: Sensitivity of Shigru Ghana.

Range of Sensitivity	No of Samples	Total	%
+++	05	05	25
++	11	11	55
+	04	04	20

The sensitivity showed that 25% patients are high sensitive for *Shigru Ghana* while 55% were moderate sensitive and 20% were low sensitive for *Shigru Ghana*.

Table 4: Effect of Shigru Ghana on Urine Culture and Sensitivity.

Urine Examination	Mean Score		D	% Relief	S.D ±	S.E ±	t	P
	B T	AT						
Culture & Sensitivity	2.4	0.63	1.77	70.46	0.77	0.18	9.14	<0.001

Urine Culture and Sensitivity - The observed change was 70.46 % with $p < 0.001$ which is statistically highly significant.

DISCUSSION

The present research work has been carried out with a view to provide a scientific basis for the claims made in various Ayurvedic texts regarding the effect of *Shigru Ghana*. *Shigru* is having *Katu* (alkaline), *Tikta* in taste (*Rasa*). In *Vipaka* (post digestive effect) it is *Katu* and *Ushna* in *Virya* (potency) having *Vata Kapha Nashaka* property.^[6] It has *Laghu*, *Ruksha*, *Tikshna Guna*. It is also *Mutravirechaka* in action.^[7]

It increases circulation of blood in kidney there by increases glomerular filtration rate and prevent Na⁺ (Sodium) reabsorption in the urinary tubules which lead to increase amount of urine formation.^[8] The *Katu*, *Tikta Rasa* are *Krimighna* (antimicrobial) as such it helps in treatment of E.coli. *Ushna Virya* has property opposite to *Vata*, i.e. *Vasti*, as such to help to cure diseases. It helps in the elimination of the bacteria out of the body due to its diuretic effect. Due to *Laghu*, *Tikshna*, *Ruksha Guna* it increases blood circulation in the kidney so that to eliminate bacteria. Sensitivity of *Shigru* shows that it has antibacterial activity.^[9]

CONCLUSION

Having analysed the result on statistical parameters, it can be concluded that *Shigru* is highly effective for the treatment of *Mutrakrichhra* (*Escherichia coli*). The drugs are easily available so helpful in the treatment of urinary tract infection caused by *Escherichia coli*. The dose and duration of *Shigru* can be increased to see the results in chronicity. There was no side effect observed in patients and so it is free from various drug hazards that occurs with other medicine. *Shigru* drug mentioned in almost all the ancient literature and has a bright future for the treatment of urinary tract infection caused by *Escherichia coli*.

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