

Effect of *Kushmandadi* Compound in the Management of *Ashmari* (Urolithiasis) - A Clinical Approach

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ABSTRACT

Mutrashmari has been dealt in great detail in almost all ancient treatises. This signifies its importance and antiquity of this condition. A clear and striking picture regarding its classification, symptomatology, complications and management is mentioned in ancient surgical text *Sushruta Samhita* as well as the other *Ayurvedic* texts. *Mutrashmari* is the entity where both medicinal and surgical treatments are advised and agreed upon by all *Acharyas*. As surgical modalities have certain limitations, risk, complications and high occurrence rate. Various drugs are in a trial to prove their efficacy.

In the present study an effort was made to evaluate the efficacy of *Kushmandadi* compound described by Chakrapanidatta³. For present clinical study total 60 patients were selected randomly on the basis of selection criteria mentioned above and divided in two groups, each containing 30 patients. Trial Group patients were treated with *Kushmandadi* compound and Control Group patients were treated with *Pashanbheda Churna*⁷. The effect of the drug in both groups was observed on various parameters and compared by using various statistical methods. The statistical analysis as well as clinical study shows that, *Kushmandadi* compound is as effective as compared to *Pashanbheda Churna*, also *Kushmandadi* compound significantly helped to reduce the signs, symptoms and help to disintegrate the stone.

Key Words *Mutrashmari*, *Kushmandadi* Compound, *Pashanbheda Churna*

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INTRODUCTION

Renal calculus is an age old disease having amply evident from the reports in the literature. The etiology of urinary calculi is multi factorial and rarely can a single factor be accounted for the stone formation. The whole of north – west India has been recognized as stone no effective treatment is available till date except surgical removal of stone, shock wave lithotripsy and other modalities. Still these modalities are not the

permanent care for urolithiasis because of frequent recurrences.

Sushruta ‘the father of surgery’ has elaborated the etio-pathogenesis, symptomatology and management of *Ashmari*¹⁻². As surgical modalities have certain limitations, risk, complications and high occurrence rate. Various drugs are in a trial to prove their efficacy demanding for new scientific evidence for the efficacy, safety and quality of its medications is

ORIGINAL RESEARCH ARTICLE

gaining momentum. Hence from the various available references *Kushmandadi* compound described by Chakrapanidatta containing *Kushmanda Swarasa* (*Benincasa hispida*), *Yavakshara* (*Hordeum vulgare*), *Guda* (*Khanda*, Jaggery) was selected for study³. The effect of the drug in both control and trial groups was observed on various parameters and compared by using various statistical methods. The statistical analysis as well as clinical study shows that, *Kushmandadi* compound is as effective as compared to *Pashanbhed Churna*, also *Kushmandadi* compound significantly helped to reduce the signs, symptoms and help to disintegrate the stone⁷.

The prospective aspect of this study reveals that *Kushmandadi* compound can be used as lithotriptic, diuretic, alkalizer and analgesic to treat the *Ashmari* effectively, as it is cheap easily available and palatable.

Aims and objectives

1. To evaluate the effect of *Kushmandadi* compound with reference to *Ashmari* (urolithiasis) clinically.
2. To promote and fortify the rational use of *Kushmandadi* compound in *Ashmari*.

MATERIALS AND METHODS

The study was a randomized open clinical trial. The patients attending the O.P.D. & I.P.D. of *Shalyatantra* department Govt. Ayurved Hospital Nagpur, provided the material for the clinical study.

Criteria for selection of patients

- Patients of age between 18 – 75 yrs.
- The patient who had either positive radiological diagnosis of calculus or significant evidence of crystal in urine.
- Patients suffering from urinary calculus measuring size less than 10 mm (6mm in case of ureteric calculus) were selected randomly on the basis of clinical sign, symptom & pathological as well as radiological investigations.

Criteria for rejection of patients

- Patients suffering from calculus size more than 1 cm.
- The patients having major complication like, renal failure, hypertension, severe hydronephrosis, uremia, diabetic mellitus, acute retention of urine
- Patients having severe obstructive uropathy
- Patients in critical condition having severe signs & symptoms, requiring immediate surgery or intensive care.

Investigation

All necessary investigations were carried out to diagnose urinary calculus.

- Blood Investigation such as Hb%, TLC, DLC, ESR, Serum creatinine, blood sugar were done to rule out any abnormality
- Urine was subjected for routine and microscopic examination before and after treatment.
- X-Ray KUB, Sonography of abdomen and pelvis were done before and after treatment. Changes occur were taken into consideration for

ORIGINAL RESEARCH ARTICLE

the assessment.

Sample Size

For present clinical study total 60 patients were selected randomly on the basis of selection criteria mentioned above and divided in two groups i.e. Trial Group and Control Group, each containing 30 patients.

Record of Patients – Special pro forma was prepared for the record of patient and clinical assessment.

Treatment Plan

Trial group – group A

Patients in this group were treated with the *Kushmandadi* compound which contains –

Kushmanda Swarasa (Benincasa hispida) -20 ml

Yavakshara (Hordeum vulgare) -500mg

Guda (Khanda, Jaggery) - 3gm

The compound was given twice a day orally with Luke warm water after meal.

Duration of therapy :- 30 days

Control Group – Group B

In this group patients were treated with *Pashanbhed Churna* in a quantity of 5 gm twice a day with Luke warm water.

Duration of therapy :- 30 days

Criteria of Assessment: The main criteria of assessment in present clinical study were based on the symptomatic relief of associated symptoms. Apart from this passing out of *Ashmari* was also taken into consideration.

Gradations of symptoms for the assessment was as follows

Pain

Grade 0 - Absent

Grade 1 – During Micturition or Intermittently

Grade 2 - Continuous dull ache not disturbing daily routine

Grade 3 - Severe colicky pain disturbing daily routine.

Haematuria –

Grade 0 - Below 4 RBC’s/hpf

Grade 1 - 5-10 RBC’s/hpf

Grade 2 - Above 10 RBC’s/hpf

Grade 3 - Visible by naked eye (pink or red color urine)

Burning Micturition-

Grade 0 - Absent

Grade 1 - During Micturition

Grade 2 – Up to 1hr after Micturition

Grade 3 - More than 1hr. after Micturition

X ray KUB

Grade 0 – Negative Finding

Grade 1 - Positive Finding

Sonography -

Grade 0 – Negative Finding

Grade 1 - Positive Finding

Follow up Three follow up were taken (first follow up at 10th day ,second follow up at 20th day, third follow up at 30th day),and changes occurs during the treatment were recorded in the pro forma for the assessment.

Table 1 Observations on the basis of comparative relief in average symptom score in group A and group B.

Symptoms/ Assessment Parameter	Group	Average symptoms score			Percentage of relief
		B.T Mean	A.T Mean	Difference	

ORIGINAL RESEARCH ARTICLE

Pain	Group A	1.500	0.100	1.400	93.33%
	Group B	1.433	0.300	1.133	79.06%
Heamaturia	Group A	0.4333	0	0.4333	100%
	Group B	0.4333	0.066	0.3667	84.62%
Burning micturition	Group A	1.100	0.266	0.833	75.72%
	Group B	0.9667	0.266	0.7000	72.41%
Size of calculus	Group A	5.920	0.866	5.053	85.35%
	Group B	5.960	1.85	4.103	68.84%
X-Ray finding	Group A	1	0.233	0.7667	76.67%
	Group B	1	0.5	0.5	50%

Wilcoxon-Signed-Rank Test is done for comparison of result within the group between BT and AT

Table 2 Group A Wilcoxon-Signed-Rank Test

Sr.no	Assessment parameter		Mean	S.D	Median	P Value
1	Pain	B.T	1.500	0.6297	1.000	< 0.0001
		A.T	0.1000	0.3051	0.000	
2	Burning micturition	B.T	1.100	0.6618	1.000	< 0.0001
		A.T	0.2667	0.4498	0.000	
3	Size of calculus	B.T	5.920	1.843	5.500	< 0.0001
		A.T	0.8667	1.637	0.000	

Table no 2 shows extremely significant results for all the assessment parameter in Group A as p value (p<0.0001).

Table 3 Group B Wilcoxon-Signed-Rank Test

Sr.no	Assessment parameter		Mean	S.D	Median	P Value
1	Pain	B.T	1.433	0.5040	1.000	< 0.0001
		A.T	0.3000	0.4661	0.000	
2	Burning micturition	B.T	0.9667	0.6687	1.000	< 0.0001
		A.T	0.2667	0.4498	0.000	
3	Size of calculus	B.T	5.960	1.815	5.850	< 0.0001
		A.T	1.857	1.980	1.250	

The evaluation of effect of therapy by Wilcoxon-Signed-Rank Test of Group B in the table no 3 suggests Extremely Significant results for all assessment parameter as p value (p<0.0001).

For examining the significance of intergroup differences, further the data was treated by Mann-Whitney test

Table 4 Comparison between Group A Group B By Mann-Whitney Test

S. No	Symptoms	Group	Mean difference ± SD	Median	P value	Result
1	Pain	Group A	1.400±0.4983	1.000	0.0705	Not quite significant
		Group B	1.133±0.3457	1.000		
2	Burning micturition	Group A	0.8333±0.4611	1.000	0.4022	Not significant
		Group B	0.7000±0.4661	1.000		
3	Size of calculus	Group A	5.053± 1.073	4.000	0.0004	Extremely significant
		Group B	4.103±0.8508	5.000		

Table no 4 shows that the Mean difference ± SD of the assessment parameters Pain and Burning micturition in group A and B do not differ much and also p value is not significant which reveals, effect of therapy for assessment parameter Pain

and Burning micturition is similar in Group A and Group B. While the mean difference ± SD for the assessment parameter - size of calculus for group A and B differ significantly and also p value is extremely significant. That means effect

ORIGINAL RESEARCH ARTICLE

of therapy in Group A is extremely significant than Group B for the parameter size of calculus

Table 5 Fisher’s Exact Test for the Symptom Heamaturia in Group A and B

Group	Total		Cured		Not cured		P value
	No. of patients	Percentage	No. of patients	Percentage	No. of patients	Percentage	
Group A	09	30	09	100	00	00	0.4857
Group B	12	40	10	83.33	02	16.67	

Table no 5 shows in Group A out of 30 patients, 9 (30%) patients of Heamaturia were seen and after treatment all of them were cured. Hence percentage of relief is 100%. In Group B of 30 patients, 12 (40%) patients of Heamaturia were seen and after treatment 10 (83.33%) patient

cured and 2 (16.7%). Hence percentage of relief is 83.33% Two sided p value of above test is 0.4857 which is not significant. Thus the therapy shows similar changes for Heamaturia in group A and B.

Table 6 Observation of Fisher’s Exact Test for the assessment parameter x-ray finding in Group A and Group B

Group	Cured (Negative X-ray finding)		Not Cured (Positive X-ray finding)		P value
	No. of patients	Percentage	No. of patients	Percentage	
Group-A	23	76.67	07	13.33	0.0596
Group-B	15	25	15	25	
Total	38	63	22	37	

Table no 6 shows in Group A of 30 patients, 23 (76.67%) patients were having negative x-ray findings after treatment i.e. cured by therapy while 07(13.33%) patients were having positive x-ray finding. Hence percentage of relief was 76.67 % while in Group B of 30 patients 15 (50 %) patients were having negative x-ray finding i.e. cured by therapy and 15(50 %) patients are having positive x-ray finding thus percentage relief was 50 %. Two sided p value of above test is 0.0596 which is not quite significant .Hence the effect of therapy is not quite significant in both the groups. Thus the therapy shows quite similar changes for assessment parameter X-ray finding in both the groups.

in term of cured, relived, improved and unchanged. The same criteria of assessment is applied for both groups

- 1) **Cured:** Patients who getting total or more than 80 percent relief in associated symptoms of calculus along with the passage of stone through urethra are considered cured.
- 2) **Relieved :** Patients getting symptomatic relief more than 60 percent in sign and symptoms but not passage of stone or just descent of stone to lower level are considered relieved .
- 3) **Improved:** Relief from sign and symptoms more than 40 percents without passage of stone or descent of stone are regarded as improved.
- 4) **Unchanged:** Patients not getting any relief or less than 40 percent relief are considered unchanged.

Total Effect of Therapy

Criteria of assessment of total effect

After the completion of treatment given to patient, the total effect is assessed and evaluated

ORIGINAL RESEARCH ARTICLE

Table 7 Total Effect of Therapy

Sr no.	Result	Group A		Group B	
		Number of patients	Percentage	Number of patients	Percentage
1	Cured	23	76.67	15	50
2	Relived	05	16.67	08	26.67
3	Improved	02	6.67	06	20
4	No change	00	00	01	3.33

Table no 7 show that in Group-A of 30 patients.23 (76.67%) are cured,5 (16.67%) patient are relived , 02 (6.67%) patients improved and no patient is recorded as unchanged. In Group-B of 30 patient 15 (50%) patients are cured, 08(26.67%) patients are relieved, 06 (20%) patients are improved and 01(3.33%) patient is unchanged.

DISCUSSION

Each and every aspect of Ayurveda literature needs a great deal of research and in this present era of “Scientific temper”. Therefore an effort has been made in this study to critically analyze the available references in relation to *Ashmari*. In present clinical study 60 patients of *Ashmari* were screened based on the criteria of inclusion, mentioned earlier and divided into two groups i.e. trial group and control group, each containing 30 patients. Trial group was treated with *Kushmandadi* compound and control Group with *Pashanbhed Churna*⁷. A special proforma was prepared for record and assessment. After the completion of therapy the data was collected and summarized for statistical analysis to evaluate the effect of therapy in the both groups. Facts encountered after summarization of data are as below -

Site of calculus – In maximum patient (75%) site of calculus was renal pelvis. It may be due to fact that kidneys are the first and main organ of the urinary system. Chances of sedimentation of particles are more in it, as the filtration process takes place over here, which may lead to stone formation. Ureteric and urethral stones are less as they are the secondary stones.

Size of calculus: observation shows that maximum number of patients (45%) had size of calculus between 5mm-7mm.

Number Of calculus: Maximum (85%) patients with solitary urinary calculus were found in the present study.

X-ray findings: In present study on urolithiasis x-ray finding were positive in 93.33% patients.

Pain: Almost all 100% patients had complained pain.

Heamaturia: Only 33.33% patients had complained Heamaturia.

Burning micturition: Maximum number of patients i. e 80% had complain of burning micturition.

Probable mode of action of *Kushmandadi* Compound

For the manifestation of *Ashmari*, *Kaphadosha* is the chief factor contributing the nucleus for the pathogenesis. Also when the urine becomes stagnated in the urinary system for long time, it gets concentrated and infected. Thus there is

ORIGINAL RESEARCH ARTICLE

more chance for stone formation. Hence the treatment adopted should be *Kaphahara*, *Ashmaribhedana*, *Lekhana* and *Mutrala*. *Kushmandadi* Compound the formulation selected for the present clinical study possess all these required actions.

Kushmand Swaras: It acts as analgesic and antispasmodic as *Madhur Rasa*, *Madhur Vipaka*, *Singdha Guna* results in *Vatashaman*, hence reduces pain. Also it acts as *Mutrala* by virtue of its *Sheet Virya* and *Bastishodhana Prabhava*⁵.

Yava Kshara: It is having the properties such as *Shodhana*, *Lekhana*, *Bhedana*, *Deepana*, *Pachana* and *Tridoshagna*. It reduces pain, disintegrates the stone by its *Bhedan Guna* and also helps to dislodge the *Ashmari* from its own site by diuretic property. *Vata Shamaka*, *Deepan* and *Pachana* property of *Yavakshara* normalizes the function of *Apana Vayu* and helps in expulsion of the stones. It is 100% soluble in water, so it actively precipitates to counteract the pathogenesis of stone formation, reduces the burning sensation by neutralizing acidic media of urine⁶.

Guda: *Madhur Rasa* and *Singdha Guna* of *Guda* increases *Kleda* hence quantity of urine. It acts as demulcent and purifies the blood and urine. Due to *Sakshara* property it also behaves as alkaline substance which neutralizes acidic media of urine⁴.

Thus *Mutral*, *Lekhan* and *Bhedan* properties of *Kushmandadi* Compound effectively help to disintegrate and flush out *Ashmari* by process of diuresis.

Total effect of therapy

To evaluate the effect of therapy on the parameters of both the groups, the data was treated with Wilcoxon Signed Rank Test which the effect of therapy of in both the groups was extremely Significant. Further Wilcoxon Mann Whitney Test was carried out for intergroup comparison which suggests insignificant results for assessment parameter Pain and Burning micturition in both the groups. That means therapy shows similar changes in group A and B for symptoms Pain and Burning micturition.

In trial group - 23(76.67%) patients get cured, 05 (16.67%) patient get relived from symptoms, while 02 (6.67%) patients improved with treatment.

In control group - 15 (50%) patients get cured, 08(26.67%) patients get relived from symptoms, 06 (20%) patients improved with treatment while 01(3.33%) patient remain unchanged.

CONCLUSION

Overall study and statistical analysis reveals that *Kushmandadi* Compound is as effective as compared to *Pashanbhed Churna*, moreover size of calculus that were not much alleviated by *Pashanbhed Churna* were reduced to great extent by *Kushmandadi* Compound³. This defines the superiority of the combination over a single drug therapy.

The study also concludes analgesic, diuretic, stone dissolving (lithotriptic), alkalizing, anti-infective and antiseptic properties of

ORIGINAL RESEARCH ARTICLE

Kushmandadi compound which concerted multipronged action in clearing gravel and stones from the urinary system.

ORIGINAL RESEARCH ARTICLE

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