



A CLINICAL AND COMPARATIVE STUDY OF SHVADANSHTRADI KWATH AND VARUN KWATH IN MANAGEMENT OF MUTRASHMARI

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ABSTRACT

In various *Ayurvedic* texts urolithiasis is correlated with *Mutrashmari* as per their sign and symptoms. It is considered in eight most troublesome diseases (*Ashtmahagada*). *Mutrashmari* is considered in *Ashtmahagada* because the disease is *Tridoshaja* in origin, *Marmaashrayee*, *Basti* (urinary bladder) is the *vyaktsthana* of *Ashmari*. Increased incidence of urolithiasis in this world is associated with improved standard of living and strongly associated with race, ethnicity and region of residence. The identification of common risk factors for urolithiasis may result in new approach for prevention and treatment for this objectives, the drug *Shvadanshtradi Kwath* (combination of *Shvadanshtra*, *Eranda*, *Shunthi* & *Varun*) a unique

combination mentioned in *Chakradatta* and the drug *Varun Kwath* (*Varun*) mentioned in *Bhaisjya Ratnavali* was selected. *Ashmari* is *Tridoshaja* in origin but basically related to *Kapha Dushti* with *Apan Vayu Vaigunya* These drugs has *Kaphavata Shamaka*, *Vatanulomana*, *Vedanasthapana*, *Mutrala*, *Ashmari Bhedana* (lithotryptic) properties. In this clinical trial, 15 patients of group A was given *Shvadanshtradi Kwath* and 15 patients of group B was given *Varun Kwath* for 2 months. After 2 months extremely significant improvement in pain, size of calculus, no of calculus by *Shvadanshtradi Kwath*. Dysuria, Burning micturition, increased frequency of micturition also improved significantly by this.

KEYWORDS: *Ashmari, Shvadanshtradi Kwath, Varun Kwath.*

INTRODUCTION

Ayurveda is a science dealing not only with treatment of some diseases but is a complete way of life. Formation of stones in the urinary tract is a global phenomenon and is described in ancient *Ayurvedic* scriptures as *Mutrashmari*. *Ashmari* is a disease in which there is a formation of stone, resulting into severe pain as given by enemy. Hence it has been considered as one among the ‘*Ashtamahagada*’.^[1] *Mutrashmari* is one of the most troublesome disorders and is considered as *Darun Vyadhi*.^[2] It is the disease of *Mutravaha Srotas*.

It is estimated that each individual will have a chance of 1% to suffer from urolithiasis in their lifetime. It affects up to 5% of population. Males are more affected more commonly than females in the ratio of 3:1. 50% have recurrence within 5-10 years. Recurrence of stone even after removal is becoming a great problem and constant efforts are being made to evolve an effective treatment as well as prevention of the recurrence of the disease. *Sushruta* has advised that surgery to be undertaken only on failure of conservative treatment³. Even after surgery patients have to take medicines to check its further recurrence. In this way the need of medicinal treatment is always required. So to avoid the incidence of recurrence after surgical removal of stone and in search of effective conservative treatment, the present work is designed.

AIMS AND OBJECTIVES

- To study *Ashmari*, in *Ayurvedic* perspectives, its etiopathogenesis, line of treatment.
- To assess the efficacy of “*Shvadanshtradi kwath*” and “*Varun kwath*” in the management of *Mutrashmari*.
- To compare the efficacy of “*Shvadanshtradi kwath*” and “*Varun kwath*” in the management of *Mutrashmari*.

MATERIAL AND METHOD

1. Selection of patients

30 patients were selected from O.P.D. & I.P.D. of hospital N.I.A., Jaipur, irrespective of sex, caste and religion using randomized method of trial.

Inclusion Criteria

- Age between 16 to 60 years
- Clinically and pathologically diagnosed patient all type of *Mutrashmari*.
- Patients not suffering from any systemic disorder.
- Patients not taking any other medicine for *Mutrashmari*.
- Size of the stone up to 10mm.
- Stone present in Upper Calyx, ureter, urinary bladder.
- Multiple urinary stone

Exclusion criteria

- Age less than 16 years and more than 60 years.
- Patients with obstructive uropathy.
- Patients suffering from any major systemic disease like diabetes mellitus, Renal failure, Renal tuberculosis etc.
- Benign prostatic hyperplasia.
- Size of stone more than >10mm.

Criteria for withdrawal

- If any serious condition or any serious adverse effects appear during the course of study which requires urgent treatment.
- If the patient discontinues.
- If patient wants to withdraw him/herself from the clinical study.

2. Laboratory Investigations

Following investigations were carried out in the patients to rule out any organic or systemic disease.

Radioscopic investigation- USG (KUB region)

Blood investigation- Serum Uric acid, Serum Creatinine

Urine investigation- Urine analysis (R/M)

3. Grouping of the selected patients

In the present design of study patient were randomly divided into 2 groups:-

- Group A: *Shvadanshtradi Kwath*
- Group B: *Varun Kwath*

Shvadanshtradi Kwath^[3]

Shvadanshtradi Kwath is mentioned in *Chakradutta* under *Ashmari Rog Chikitsa*.

- **Ingredients^[4]**

There are four ingredients in *Shvadanshtradi Kwath* which are in equal quantity.

Sr. No.	Plants	Letin Name	Part used	Quantity
1.	<i>Shvadanshtra</i>	<i>Tribulus Terrestris</i>	Seed	1 part
2.	<i>Eranda</i>	<i>Riccinus communis</i>	Leaves	1 part
3.	<i>Shunthi</i>	<i>Zingiber officinale</i>	Dry rhizome	1 part
4.	<i>Varun</i>	<i>Crataeva nurvala</i>	Bark	1 part

Method of preparation

All the ingredients of *Shvadanstradi Kwath* are taken in equal quantity (total 25gm) in *Yavakutta* form. Then decoction was prepared by adding 16 times water (400ml) to the total weight of drugs. When ¼ th (100ml) of the water remained then this decoction was Filtered.

Dose- 100ml. twice a day, after meal.

Duration- 60 days

Varun Kwath^[5]

Varun kwath is mentioned in *Bhaisjya Ratnavali* under *Ashmari Chikitsa Prakaran*.

- **Ingredients^[6]**

Sr. No.	Plants	Letin Name	Part used	Quantity
1.	<i>Varun</i>	<i>Crataeva nurvala</i>	Bark	1 part

Method of preparation

All the ingredients of *Varun Kwath* are taken in equal quantity (total 25gm) in *Yavakutta* form. Then decoction was prepared by adding 16 times water (400ml) to the total weight of drugs. When ¼ th (100ml) of the water remained then this decoction was Filtered.

Dose- 100ml. twice a day, after meal

Duration- 60 days.

Clinical Assessment**General observation**

Various demographic parameters via. Age, marital status, religion, socio-economic status, education etc. along with specific features of *Dashvidha Pareeksa & Ashtvidha Pareeksha* like *Prakriti, Sara, Samhanana, Satmya, Satva* etc. were analyzed in the present trial.

Subjective Assessment

The patients undergone the treatment were assessed on the basis of symptom rating score for improvement in symptomatology of Mutrashmari.

The subjective symptoms were pain, dysuria, burning micturition, increased frequency of micturition scored as following gradings

- ✓ 0
- ✓ 1
- ✓ 2
- ✓ 3
- ✓ 4

Objective Assessment

The objective symptoms were hematuria, WBC count of urine, size of calculus, no of calculus.

Criteria for Assessment of overall effect of therapy

Data obtained for the parameters of assessment, before & after the therapy was utilized to evaluate the overall effect of therapy.

Statistical Analysis

All the calculation was calculated through 'Graph Pad Instat' software version 3.10.

- ✓ Wilcoxon signed rank test- Non parametric test for the case of two related samples or repeated measurement on a single test. It was used for the assessment of improvement in symptom of group 'A' and 'B'.
- ✓ Mann-Whitney 'U' test- known as Mann-Whitney-Wilcoxon (MMW), Wilcoxon rank-sum test, Wilcoxon-Mann-Whitney. Useful as non parametric test for assessing whether two independent samples of observation come from the same distribution. It was used for comparison between results of symptoms of group 'A' and 'B'.

W = Sum of all signed rank

P = One tailed 'p' value

Interpretation of 'p' value

- ✓ Not significant (NS or NQS)- $p > 0.05$
- ✓ Significant (S)- $p < 0.05$

- ✓ Very Significant - $p < 0.01$
- ✓ Highly Significant - $p < 0.001$
- ✓ Extremely Significant – $p < 0.0001$

OBSERVATIONS AND RESULTS

Total 30 clinically diagnosed patients of Mutrashmari were registered for the present study and randomly divided in 2 groups- A & B.

Observations

- Maximum number of patients (56.66%) in the present study were in the age group of 16-30 years, while 20% patients belonged to age group of 31–40 years. However, age has no direct relation with the *Mutrashmari* formation but it is considered that 3rd and 4th decades of life are more prone to this disease (Robbins Pathology Basis of Disease, 5th Ed.).
- Highest number of patients were male i.e. 70% while rests of the patients i.e. 30% were female. The male female ratio suggests that male were more susceptible to the disease. This may be due to more serum testosterone hormone level in male. Findayson and Richardson postulated that female is having less testosterone level, so they are less prone to disease (Findayson and Richardson In 1974).
- Maximum i.e. 80% patients were found to be addicted to Tea/coffee. Studies shows that excessive intake of tea/coffee cause rise in uric acid excretion and increased oxalic acid output, which may help in *Ashmari* formation.
- Maximum number of patients were possessing *Vata-Kapha Prakriti* i.e. 46.66%. So the above data favours the concept given by *Acharya* in the context of *Ashmari* Formation, that *Vayu Dosha* play an important role for *Sthana Samshraya* of *Kapha* for the formation of *Ashmari*.
- Maximum i.e. 73.33% patients were found vegetarian. Fluid intake and urine output may have an effect on urinary stone disease. High sodium intake is associated with increased urinary sodium, calcium and pH and a decreased excretion of citrate; this increases the likelihood of calcium salt crystallization and leads to *Ashmari* formation (A uric acid disorder in patients with calcium stones, Hodgkinsons; Society of Urological nurses & associates 2005) Who consuming more Calcium & protein rich food, predisposes to Calcium phosphate & Uric acid calculi. In *Ayurveda*, it has been described that the

persons who consume more of *Sita*, *Snigdha* and *Guru Ahara* are more prone to *Ashmari* formation.

Results

• *Shvadanshtradi Kwath*- (Group-A)

Effect of therapy on subjective criteria in 15 patients of *Mutrashmari*

Criteria	Mean		Diff.	% of Relief	SD	SE	P value	Result
	BT	AT						
Pain	1.26	0.20	1.06	84.12	0.70	0.18	0.0005	ES.
Dysuria	0.66	0.06	0.60	90.90	0.73	0.19	0.0156	S.
Burning micturition	0.66	0.13	0.53	80.30	0.74	0.19	0.0313	S.
Increased frequency of micturition	1.20	0.73	0.47	39.16	0.63	0.16	0.0313	S.

In group A, Extremely Significant result was found in pain and Significant result was found in dysuria, burning micturition and increased frequency of micturition.

Effect of therapy on objective criteria in 15 patients of *Mutrashmari*

Criteria	Mean		Diff.	% of Relief	SD	SE	p value	Result
	BT	AT						
Hematuria	0.53	0.20	0.33	62.26	0.61	0.15	0.1250	NS.
WBC count of urine	0.66	0.40	0.26	39.39	0.59	0.15	0.2500	NS.
Size of calculus	1.73	0.66	1.07	61.84	0.70	0.18	0.0005	ES.
No. of calculus	1.80	0.66	1.14	63.33	0.74	0.19	0.0005	ES.

In group A, Extremely Significant result was found in size of calculus & no of calculus and Non Significant result was found in hematuria & WBC count of urine.

• *Varun Kwath*- (Group – B)

Effect of therapy on subjective criteria in 15 patients of *Mutrashmari*

Criteria	Mean		Diff.	% of Relief	SD	SE	P value	Result
	BT	AT						
Pain	1.33	0.53	0.80	60.15	0.67	0.17	0.0020	VS.
Dysuria	0.33	0.13	0.20	60.60	0.41	0.10	0.2500	NS.
Burning micturition	0.53	0.20	0.33	62.26	0.61	0.15	0.1250	NS.
Increased frequency of micturition	0.73	0.33	0.40	54.79	0.63	0.16	0.0625	NS.

In group B, Very Significant result was found in pain and Non Significant result was found in dysuria, burning micturition and increased frequency of micturition.

Effect of therapy on objective criteria in 15 patients of *Mutrashmari*

Criteria	Mean		Diff.	% of Relief	SD	SE	p value	Result
	BT	AT						
Hematuria	0.20	0.06	0.14	70	0.35	0.09	0.5000	NS.
WBC count of urine	0.46	0.33	0.13	28.26	0.35	0.09	0.5000	NS.
Size of calculus	1.73	0.86	0.87	50.28	0.74	0.19	0.0020	VS.
No. of calculus	1.53	0.66	0.87	56.86	0.74	0.19	0.0020	VS.

In group B, Very Significant result was found in size of calculus & no of calculus and Non Significant result was found in hematuria & WBC count of urine.

DISCUSSION

Effect of therapy on subjective criteria

- Effect of therapy in group A (*Shvadanshtradi Kwath*)

Shvadanshtradi Kwath provided extremely significant relief in pain (84.12%), and significant relief in increased frequency of micturition (39.60%), burning micturition (80.30%) and dysuria (90.90%).

- Effect of therapy in group B (*Varun Kwath*)

Varun Kwath provided very significant relief in pain (60.15%) and non significant relief in increased frequency of micturition (54.79%), burning micturition (62.26%) and dysuria (60.60%).

So the relief in **pain** was observed might be due to *Vedana Sthapaka* and *Sothahara* properties of *Erand*, *Shunthi* & *Gokshur*, *Vatanulomana* properties of *Varun* & *Shunthi*, *Ushna Virya* of *Varun*, *Shunthi*, *Eranda*.

Relief in **burning micturition** was observed might be due to *Madhura Rasa* of *Varun*, *Gokshura* & *Eranda*, *SheetaVirya* of *Gokshur* and *Madhura Vipaka* of *Shunthi*, *Eranda* & *Gokshur*.

Relief in **dysuria** might be due to *Vatanulomana* properties of *Varun* & *Shunthi*, *Mutrala* properties of *Varun* & *Gokshura*, *Mutrakrichchhrahara* properties of *Varun*.

Effect of therapy on objective criteria**• Effect of therapy in group A (*Shvadanshtradi Kwath*)**

Shvadanshtradi Kwath provided non significant relief in hematuria (62.26%), WBC count of urine (39.39%) and extremely significant relief in size of calculus (61.84%) & no. of calculus (63.33%).

• Effect of therapy in group B (*Varun Kwath*)

Varun Kwath provided non significant relief in hematuria (70.00%), WBC count of urine (28.26%) and very significant relief in size of calculus (50.28%) & no. of calculus (56.86%).

The above observed effect on **size of calculus and no. of calculus** might be due to the *Bhedana Karma* of *Varun*, *Ashmarinaashana karma* of *Gokshur*, *Ashmaribhedana Prabhava* of *Varun* and *Mutrala* properties of *Varun & Gokshura*.

Probable mode of action of drug

The action of every drug is determined by the dominant Pharmacodynamic properties. These pharmacodynamic properties are- *Ras*, *Guna*, *Veerya*, *Vipaka* and *Prabhava*.

According to *Ayurvedic* pharmacodynamic, some drug do work through *Rasa*, some drug through *Veerya*, some through *Guna*, some through *Vipaka* and some drug through *Prabhava*.

The line of treatment in *Ayurveda* is mainly based on *Dosha Chikitsa*. *Ashmari* is caused by *Vata* and *Kapha-Prakopaka Nidana*. It is *Tridoshaja Vyadhi*, but in this disease main vitiated *Dosha* is *Kapha*, followed by *Vata* and *Pitta*, which require being pacified. *The Basti* is seat of *Vata* and act of micturition is under the control of *Apan Vayu*. Thus disease has involvement of vitiation of *Kapha Dosha* along with vitiation of *Vata (Apana Vayu)* and *Pitta*.

❖ Probable mode of action of *Shvadanshtradi Kwath*^[7]

All the ingredients of the drug *Shvadanshtradi Kwath* are having a particular mode of action on *Dohsa*, *Dushya*, *Agni* and *Srotas*. The properties of ingredients like *Kaphahara*, *Lekhana*, *Vedanasthapana*, *Vatanulomana*, *Shoolaprashamana*, *Sheeta Prashamana*, *Bhedana*, *Shothahara*, *Mutrala*, *Deepana*, *Pachana*, *Shodhana* act on the *Dosha (Vata, Pitta and Kapha)*, *Dushya (Mutra)*, *Srotas (Mutravaha Srotas)* and *Agni*.

The ingredients of *Shvadanshtradi Kwath* pacify *Kapha Dosha* by virtue of their *Laghu& Ruksha Guna, Kshaya, Katu& Tikta Rasa, Ushna Veerya* and also show "*Lekhana*" property due to *Ushna Veerya*.

The *Vatanulomana, Shothahara* and *Mutrala* properties of ingredients help to relieve pain and *Sthanika Shotha*. *Deepana* property of drug helps to increase the *Agni*, which further check the formation of *Ama* at *Jatharagni* level itself. *Pachana* property of ingredients helps in assimilations of drug in the body in case of *Jatharagnimandya*. Due to the *AshmariBhedana* or *Ashmari Hara* property of ingredients present in the drugs, stone might be dissolved.

Shvadanshtra (Gokshura) act as *Mutrala* (diuretic) by virtue of their *Sheeta Veerya* and *Madhura Rasa*.

Ingredients of the drug by their *Bhedana, Ashmarihara* and *Kaphahara Karma* along with *Mutrala Karma*, are helpful to reduce the size of the *Ashmari* and expelled it out from the body.

Thus in total this formulation has the capacity to disintegrate the pathogenesis of the disease *Mutrashmari* and due to its diuretic action it flushes out the disintegrated *Mutrashmari* by the process of diuresis.

❖ Probable mode of action of *VarunKwath*

Varun Kwath only consists of *Varun* i.e. predominance of *Vayu* and *Akasha Mahabhuta*. They are expected to act against vitiated *Kapha Dosha*, responsible for formation of stones which have dominance of *Prithvi* and *Jala Mahabhuta*.

Varun has *Vatakaphahara* property. *Vata Dosha* is considered to be main factor responsible for pain and vitiated *Kapha Dosha* responsible for formation of stones. So due to *Vatakaphahara* property of *Varun* it is most likely to provide relief in pain and stops formation of stones.

Varun mainly consists *Tikta&Kshaya Rasa, Laghu&Ruksha Guna, Ushna Veerya* and *Katu Vipaka*. These pharmacological properties of *Varun* induce *Vatakapha Shamaka, Agni Deepaka, AmaPachaka, Lekhana, Vilayana* effects.^[8]

Varun Kwath shows improvement due to action of all properties which are *Lekhan (Tikta Rasa & Laghu Guna)*, *Shoshan (Kashaya Rasa & Ruksha Guna)*, *Vilayana (Ushna Veerya)* and *Ashmari Bhedan (Prabhav)* property of *Varun*, which reduce the size of stone along with *Gura (Prakshep Dravya)* which has *Ashmaribhedana* and *Bastishodhana* property. *Mutrala* effect of *Varun* decreases post voidal urine and improves bladder tonicity. Due to *Mutrala* effect of *Varun* there may be raise in intra-luminal pressure. Because of this raised intra-luminal pressure, calculus is expelled out as a whole or in fragments from urinary system. *Ashmari Bhedana Karma* along with *Mutrala Karma* reduce the size of stone and flushes it out from the body.

CONCLUSION

Mutrashmari is one of the most common and painful disease of urinary system. *Sushruta* has described the problem of *Mutrashmari* widely and comprehensively during early civilization. The concept of *Mutrashmari*, its etiological factors, clinical features, pathology, classification, complications and management have been described with both medical and surgical procedures-

Following conclusions can be drawn from the current research project

- ✍ *Mutrashmari* occurs in both sexes but most commonly observed in the male in between 16-30 years age group (commonly in 3rd and 4th decades).^[9]
- ✍ Dietary intake and regimen has a direct link with the formation of *Mutrashmari*. The predominant *Dosha* in *Ashmari* is *Kapha*. So diet and regimen which increase *Kapha* may cause *Ashmari* formation.
- ✍ Excessive intake of *Guru, Sheeta, Snigdha, Madhura Ahara*, irregular food habits, day sleep etc. may increase *Kapha* leading to formation of *Mutrashmari*.
- ✍ High socioeconomic group and sedentary life style of persons are more prone to the disease. It has been found in a survey that inadequate physical activity and over saturation may be important factor contributing to the formation of many stones. Persons doing regular cooking, engine room persons, heavy chemical workers, driver etc. are exposed to high environmental temperature, which may be the factor of stone formation.
- ✍ *Langhana, Vamana, Virecana, Basti, Avagaha Sweda* are useful in *Ashmari*. The dietetic items advised are *Yava, Kulattha, Puraṇa Shali, Mudga*, flesh of *Krauncha* bird, ginger, *Yavakshara* and all the *Vata Nashaka Ahara*.

- ✍ *Ativyayama* (excessive practice), *Adhyashana*, *Samashana*, *Sheeta*, *Snigdha*, *Guru*, *MadhuraAhara*, suppression of micturition, defaecation, constipating and heavy diets are treated as *Apathya* for *Ashmari*. *ShushkaAhara*, *Kapittha*, *Jamun*, *Bismrunal*, dry dates, *Kashaya Rasa Sevana* etc. are also considered as *Apathya* for *Ashmari*.
 - ✍ Maximum number of patients observed with Rt. Sided multiple Renal calculi of size between 5.1 to 10mm in the present study.
 - ✍ Higher incidence of *Mutrashmari* was observed in Hindu religion.
 - ✍ Higher incidence of *Mutrashmari* was noted in *Vata-Kaphaj Prakruti* patients. The person having *Vata-Kapha Prakriti* are more prone to formation of *Mutrashmari*.
 - ✍ Maximum patients of *Mutrashmari* were vegetarian (73.33%) (This may be due to unbalanced diet (lack of Vitamin-A), excess of tea/coffee, excessive consumption of protein and high salt.).
 - ✍ Group A (*Shvadanshtradi Kwath*) was found to have extremely significant effect on pain, size of calculus, no of calculus and significant effect on burning micturition, dysuria, hematuria, increased frequency of micturition.
 - ✍ Group B (*Varun Kwath*) was found to have very significant effect on pain, size of calculus and no. of calculus.
 - ✍ On inter-group comparison Group A (*Shvadanshtradi Kwath*), Group B (*Varun Kwath*) showed not significant effect on pain, burning micturition, dysuria, increased frequency of micturition, hematuria, W.B.C. count of urine, size of calculus and no. of calculus.
 - ✍ None of patients were observed unchanged in the trial groups.
 - ✍ On comparison of both groups it was found that expulsion rate of all stones is almost similar in both groups but reduction in size of stones is better in *Shvadanshtradi Kwath* group due to *Ashmaribhedana* and *Ashmarihara* property.
 - ✍ Overall assessment of results shows that there was not much difference observed in effects of both groups but *Shvadanshtradi Kwath* was showed slightly better improvement rate, due to improvement of physiology of *Mutravaha Srotas* by correction of *Agni*, *Ama Pachana* and *Anulomana*.
- From the study we can concluded that-
- ✍ *Shvadanshtradi Kwath* and *Varun Kwath* both are effective in patients suffering with *Mutrashmari*.
 - ✍ Assessment of therapy shows that *Varun Kwath* is showing better results on reducing size of stones and *Shvadanshtradi Kwath* is showing slightly better results on combating symptoms of *Ashmari* & reducing size of stones.

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