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### RESEARCH ARTICLE

#### ROLE OF ASHMARIHARAKWATHA & VARUNA-SHIGRUKWATHA IN MANAGEMENT OF MOOTRASHMARI (UROLITHIASIS).

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#### Abstract

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#### Introduction:-

As per classics *Ashmari* is included in *Ashtomahagada* (Eight dreadful diseases) due to its notorious nature and reluctant to cure<sup>i</sup>. Description of *Ashmari* is found in almost all *Samhitas* of *Ayurveda* either as a type of *Mutraghata* (*Charaka*)<sup>ii</sup> or as a separate disease (*Sushruta*)<sup>iii</sup>.

*Sushruta*, has described *Mootrashmari* first time in details including etiological factors, classifications, symptomatology, pathophysiology, complication and its management by drugs, parasurgical therapy as well as surgical management in a scientific manner. The process of urinary stone formation as described by *Sushruta* is as follows-

तत्रासंशोधनशीलस्यापथ्यकारिणः प्रकुपितः श्लेष्मामूत्रसंपृक्तोऽनुप्रविश्य बस्तिमश्मरीं जनयति<sup>iv</sup>

The *KaphaDosh* of a person, who neglects *Samshodhana* (internal channels of his organs) or is in the habit of taking undesirable and unsuitable (*Apathyakari*) foods, enraged and aggravated by its own exciting causes and reaches to the urinary bladder where it becomes saturated with the stone forming substances and gives rise to formation of concretion or gravels which pass through the urine. So, an exuberance of deranged *KaphaDosh* should be taken in to the consideration as the underlying cause of *Mootrashmari*.

*Ashmari* is a disease having its own identity equally in both sciences, *Ayurveda* as well as Modern and afflicting about 2% of population. It is more common in male than female. Although there is great advancement has been made in the field of modern science yet still there is a need for a specific line of treatment which is least or non-invasive and affordable.

*Sushruta* has been described various medicines and surgical intervention for *Ashmari*. Surgical treatment has to be undertaken only on failure of conservative treatment and when death becomes inevitable. As per *Ayurveda* medicinal treatment includes use of various *Ghruta*, *Kwatha*, *Churna*, *KsharaDravyas* etc<sup>v</sup>. Among those, *Kwatha* are used predominantly because they are mostly having *Mutrala* and *Bhedana* properties

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In modern science the best possible treatment for urinary calculus is use of various drugs to correct involved pathologies and use of diuretics as well as surgical intervention including open surgery, per cutaneous techniques, ESWL<sup>vi</sup> etc. But even after surgery there are high chances of recurrence because urinary stones have peculiar tendency of recurrence.

Now a day's everybody is in state of hurry. This in turns ends with abnormal food habit, less intake of water, lots of perspiration which increases chance of getting stone. The consumption of food materials like milk (High in calcium), Leafy vegetables, tomatoes (High in oxalate), meat and non-veg food (High in protein content) increases the incidence of renal calculus<sup>4</sup>. In Gujarat, particularly in Saurashtra region the incidence of *Mootrashmari* is very high due to high mineral content of water and hot climate. Approximately 30% patients of urinary disorders are found suffering from urolithiasis.

### Material and methods:-

#### Selection of Patients, Grouping and Posology:

Patients having signs and symptoms of *Mootrashmari* (Urolithiasis) were selected irrespective of sex, religion, occupation from OPD and IPD of Shalya Tantra, I.P.G.T. & R.A. Hospital, Jamnagar and from special camps organized time to time and randomly categorized into 3 groups.

**Table 1:-**

Groups	No. of patients	Formulation	Route	Dose	Time (After meal)	Duration
Group A (Trial group)	15	<i>Varuna-shigru Kwatha</i> +	Orally	40 ml	Twice a day	30 days
		<i>Yava Kshara (Prakshep)</i>		2 gm		
Group B (Control group)	15	<i>Ashmarihara Kwatha</i>	Orally	40 ml	Twice a day	30 days
Group C (Trial group)	15	<i>Ashmarihara Kwatha Ghanvati</i>	Orally	500 mg	Twice a day	30 days

(20 gm raw material was taken for preparation of 40 ml *Kwatha* and 20 gm raw material was taken for preparation of 500 mg *Ghanvati*)

#### Procurement of Drug:-

All drugs were procured from the pharmacy of IPGT & RA, GAU, Jamnagar.

#### Research Proforma:-

Special research proforma was prepared on the basis of signs and symptoms of *Ashmari* as well as the features of urolithiasis described in the texts.

#### Criteria for selection of patients:-

##### Inclusion criteria:-

- Age – 16 to 70 years.
- Pain in the renal angle & loin region, radiating towards groin.
- Renal & Bladder Stones size up to 20 mm
- Ureteric Stones size up to 10 mm
- Radiographic and / or USG evidence of the stone.
- Crystals of stone.
- Urolithiatic patients with controlled Hypertension & Diabetic Mellitus.

##### Exclusion Criteria:-

- Renal failure.
- Gross Hydronephrosis.
- Acute pain abdomen.
- Cases which requires surgical intervention.
- Severe Haematuria.

- Renal & Bladder Stone size > 20 mm
- Ureteric Stone size > 10 mm
- Known cases of Malignancy.
- Known cases of Tuberculosis.
- Known cases of HIV, VDRL & Hepatitis-B positive.

**Diagnostic Criteria:-**

Patients were diagnosed on the basis of clinical features, physical examination, laboratory investigation and radiological evidences.

**Laboratory investigation:-**

Serum Creatinine, Serum Calcium, Uric acid, Urine examination, X-ray for KUB region and USG for abdomen & Pelvis were carried out before and after treatment whereas Hb%, CBC, ESR and FBS were carried out before treatment only.

**Research Design:-**Open Randomized Clinical Trial**Assessment Criteria:-**

Assessment was done on the basis of relief in signs, symptoms by scoring pattern & laboratory and radiological findings.

Details of the scores adopted for the chief signs and symptoms<sup>vii</sup> (before and after treatment) in the present study were as follows –

**Subjective Criteria:-****Pain**

- |   |   |   |
|---|---|---|
| ▪ No pain   | - | 0 |
| ▪ Bearable pain, no medication                      | - | 1 |
| ▪ Bearable pain and require oral medication         | - | 2 |
| ▪ Unbearable pain and require injectable medication | - | 3 |

**Burning micturition:-**

- |   |   |   |
|---|---|---|
| ▪ No burning micturition                            | - | 0 |
| ▪ Occasional burning micturition                    | - | 1 |
| ▪ Regular burning micturition, medicine not require | - | 2 |
| ▪ Regular burning micturition, required medication- | 3 |   |

**Dysuria:-**

- |   |   |   |
|---|---|---|
| ▪ No dysuria                            | - | 0 |
| ▪ Occasional dysuria                    | - | 1 |
| ▪ Regular dysuria, medicine not require | - | 2 |
| ▪ Regular dysuria, require medication   | - | 3 |

**Haematuria:-**

- |                    |   |   |
|--------------------|---|---|
| ▪ No haematuria    | - | 0 |
| ▪ Smoky urine      | - | 1 |
| ▪ Blackish urine   | - | 2 |
| ▪ Bright red urine | - | 3 |

**Frequency of micturition (in 24 hours):-**

- |                 |   |   |
|-----------------|---|---|
| ▪ Up to 6 times | - | 0 |
| ▪ 7-9 times     | - | 1 |
| ▪ 10-12 times   | - | 2 |
| ▪ >12 times     | - | 3 |

**Objective Parameters:-****Size of stone:-**

▪ No change	-	0
▪ Increase	-	+1
▪ Decrease	-	- 1

**Number of stones:-**

▪ No change	-	0
▪ Increase	-	+1
▪ Decrease	-	- 1

**Criteria for overall assessment of therapy:-**

<b>Cured</b>	:	80 – 100 % relief in sign and symptoms
<b>Marked improvement</b>	:	60 - < 79 % relief in sign and symptoms
<b>Moderate improvement</b>	:	40 - < 59 % relief in sign and symptoms
<b>Mild improvement</b>	:	20 - < 39 % relief in sign and symptoms
<b>No improvement</b>	:	< 20% relief in sign and symptoms

**Follow up:-**

After completion of treatment for 1 month, all the patients were instructed to visit for regular follow-up at fifteen days interval for the period of 1 month (30 days). During this follow up period patients were examined for the recurrence of either signs and symptoms of stones.

**Ethical Clearance:-**

The study was approved by the Institutional Ethics Committee (Ref. No.PGT/7-A/Ethics/2014-15/ 1538 Dt. 02/09/2014)

**CTRI Registration:-**

The study was registered with CTRI (Reg. No. CTRI/2016/01/006563)

**Informed written Consent:-**

It was taken from each patient in starting of the study.

**Observation:-**

Total 48 patients were registered, 16 in each group and 41 patients were completed the treatment. 13 patients in group A, 14 patients each in group B and C were completed the treatment. 3 patients in group A, 2 Patients each in group B and group C were discontinued the treatment due to their personal reasons.

**Table 2:-** All Observations and their percentage.

Observation	Percentage of patient	Observation	Percentage of patient
Age group (26-40 yrs)	43.75%	Asamshodhanasheela	77.08%
Males	68.75%	Guru Ahara	77.08%
Females	31.25%	Snigdha Ahara	75.00%
Occupation Service	31.25%	Madhura Ahara	47.92%
wives	25.00%	Mamsa Ahara	45.83%
Higher middle class	52.08%	Shita Ahara	41.67%
Vishamashana	31.25%	Apathya sevana	41.67%
Adhyashana	37.50%	Mutra Vegavarodha	27.08%
>2 litres water intake	50.00%	C/o Vedana	93.75%
Up to 1.5 litres water intake	10.41%	Increased Frequency of micturition	35.41%
Addiction of tobacco	29.17%	Mutrardhara sang	37.50%
Addiction of smoking	22.92%	Burning Micturition	81.25%
Divaswapna	75.00%	Bilateral renal stones	47.91%
Scanty micturition	18.75%	Left renal stones	29.16%

<b>Sadaha Micturition</b>	81.25%	<b>Right renal stones</b>	20.83%
<b>Mutra-krichchhata</b>	39.58%	<b>Ureteric stones</b>	16.66%
<b>Sasula Micturition</b>	37.50%	<b>Bladder stones</b>	06.25%
<b>Vata Kapha prakriti</b>	43.75%	<b>Positive X-ray Findings</b>	45.83%
<b>Ushna Ahara Sevana</b>	79.17%		

### Results:-

Group A was showing statistically highly significant results in pain (*Vedana*), *Mutradhara Sanga* (Interrupted urine flow) and burning micturition. Statistically insignificant results were observed in increased frequency of micturition. Group B showed statistically highly significant results in pain (*Vedana*), *Mutradhara Sanga* (Interrupted urine flow), increased frequency of micturition and burning micturition whereas Group C showed statistically highly significant results in pain (*Vedana*), and burning micturition; and statistically significant results were observed in *Mutradhara Sanga* (Interrupted urine flow), increased frequency of micturition. On comparison between Group A and B there was significant difference observed in Interrupted urine flow (*Mutradharasang*) whereas on comparison between Group B and C there was significant difference was observed in pain.

**Table 3:-** Effect of therapy on size of stone:

Group	PARAMETER	Mean		Diff.	% Change	DF	't'	P	S
		BT	AT						
Group A	STONE SIZE	15.60	14.077	1.523	9.762	12	0.947	0.362	IN
Group B	STONE SIZE	9.471	5.107	4.364	46.078	13	4.143	0.001	HS
Group C	STONE SIZE	10.764	7.614	3.150	29.28	13	2.434	0.030	S

**Table 4:-** Overall Effect of Therapy on Types of Stone as per site: (n=41)

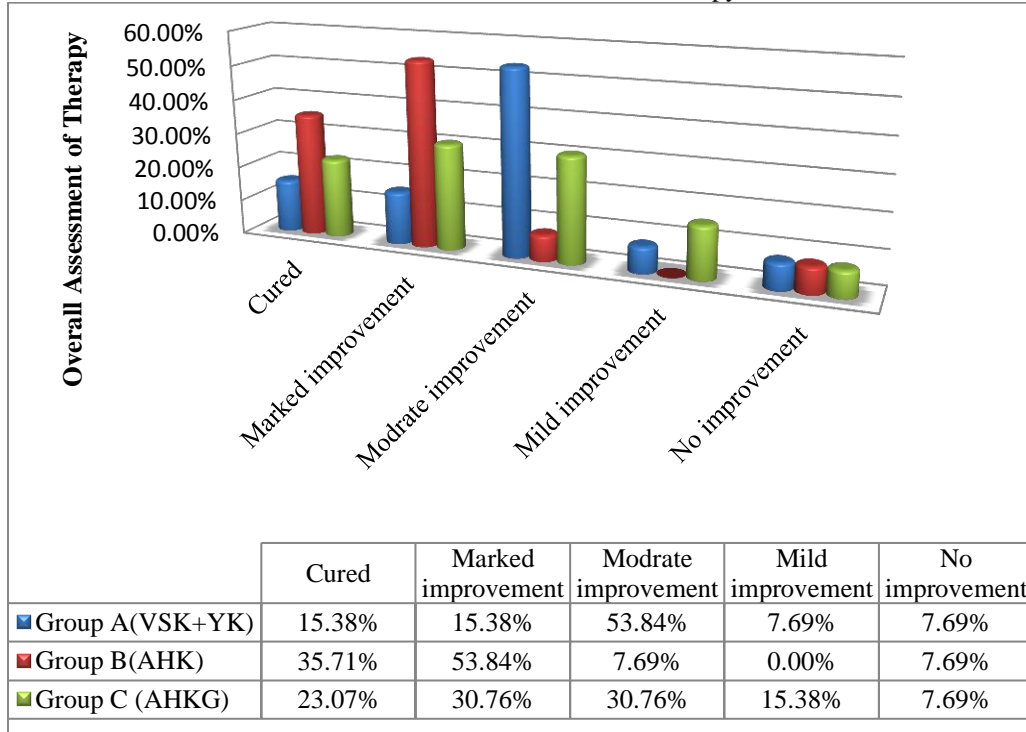
Variety	Group A (VSK)		Group B (AHK)		Group C (AHKG)	
	No of Stone	Effect in %	No of Stone	Effect in %	No of Stone	Effect in %
<b>Kidney Stone total (BT)</b>	<b>24</b>		<b>22</b>		<b>26</b>	
Expelled	04	16.66%	08	36.36%	08	30.76%
Decrease in size	07	29.16%	09	40.90%	08	30.76%
No change	08	33.33%	04	18.18%	07	26.92%
Increase in size	05	20.83%	01	04.54%	03	11.53%
<b>Ureteric Stone total</b>	<b>Nil</b>		<b>02</b>		<b>03</b>	
Expelled	Nil	Nil	02	100.00%	02	66.66%
Decrease in size	Nil	Nil	Nil	Nil	01	33.33%
No change	Nil	Nil	Nil	Nil	Nil	Nil
Increase in size	Nil	Nil	Nil	Nil	Nil	Nil
<b>Bladder stone</b>	<b>02</b>		<b>Nil</b>		<b>Nil</b>	
Expelled	Nil	Nil	Nil	Nil	Nil	Nil
Decrease in size	02	100.00%	Nil	Nil	Nil	Nil
No change	Nil	Nil	Nil	Nil	Nil	Nil
Increase in size	Nil	Nil	Nil	Nil	Nil	Nil

**Table 5:-** Overall assessment of therapy in all groups: Overall assessment is calculated by giving 70% weightage to the subjective parameters and 30% weightage to the objective parameters.

Overall Assessment	Effect of Therapy						Total	%
	Group A (VSK+YK)		Group B (AHK)		Group C (AHKG)			
	No. of Patients	Effect in %	No. of Patients	Effect in %	No. of Patients	Effect in %		

<b>Cured</b>	02	15.38	05	35.71	03	23.07	10	24.39
<b>Marked Improvement</b>	02	15.38	07	53.84	04	30.76	13	31.70
<b>Moderate Improvement</b>	07	53.84	01	07.69	04	30.76	12	29.26
<b>Mild Improvement</b>	01	07.69	00	00.00	02	15.38	03	07.31
<b>No Improvement</b>	01	07.69	01	07.69	01	07.69	03	07.31
<b>Total</b>	13	100.00	14	100.00	14	100.00	41	100.00

Chart 1:- Overall Assessment of Therapy.



**Discussion:-**

Though *Ashmari* can occur at any age yet middle age group are more prone for occurrence of *Ashmari*<sup>viii</sup>. In females, stone formation is less because of low serum testosterone level<sup>ix</sup>. *Ashmari* has no relation with religion, but this might be due to geographical dominance of Hindu population in Jamnagar and surrounding area of research place. Peoples who are in service spent maximum time in works place and ignore to take sufficient water and mostly they are the victim of irregular dietetic habit. Middle class peoples are mostly having stressful life and irregular dietary habits leads to vitiation of *Agni* and *Doshas* resulting in diseased condition. Up to 1.5 liters water intake is not sufficient for a normal person according to the climatic conditions of Saurashtra and causes over saturation of urine which leads to formation of *Ashmari*.

Tobacco can play role in the formation of urinary stone as data suggested. *Divaswapna* was found in 75.00% patients, it may increase the chances of *Kapha Dosh* *Prakopa*, which is considered as an important *Nidana* of *Ashmari*<sup>x</sup>. Quantity of micturition plays important role in *Ashmari* formation and due to scanty micturition crystalloids are not properly excreted through urine and lead to *Ashmari* formation. Amongst the *Nidanas*, *Ushna Ahara Sevana*, *Asamshodhanasheela*, *Guru Ahara*, *Divaswapna*, *Snigdha Ahara*, *Madhura Ahara Sevana*, *Mamsa Sevana*, *Shita Ahara*, *Apathya sevana* and *Mutra Vegavarodha* were played important role to develop *Ashmari* as data have suggested. These all are mentioned under *Nidanas* of *Ashmari* in *Ayurveda* and have definite role in formation of stone by causing vitiation of *Doshas* and *Srotovagunya*. *Asamshodhana* and *Apathya sevana* are the

chief causes of *Ashmari* as mentioned by *Sushruta* and these were found in almost all patients registered under this study<sup>xi</sup>.

Amongst all chief complaints of *Ashmari*, *Vedana* was found in 93.75% patients, burning micturition in 77.08% patients, *Mutradhara Sanga* in 37.50% patients, increased frequency of micturition in 35.41% patients. These all are the classical symptoms of *Ashmari* and indicates different stages of disease pathology. Maximum 47.91% patients showed bilateral renal stone, 29.16% patients showed only left renal stone and 20.83% patients have depicted right renal stone. Total 16.66% patients were suffering from ureteric stones and 6.25% patients were suffering from bladder stones in this study. It is because that stones are usually formed in kidneys which are the prime organs related to urine formation and excretion then stone (s) come into ureter with urine and finally go in to the bladder and urethra. Only those stones which do not pass through the tract due to bigger size may be held at some level of urinary passage and as per the level / site those are known as ureteric, vesical or urethral stone. In some cases independent stone formation can occur in individual organs.

X-ray finding for presence of stone 45.83% cases was positive. It indicates that only radio-opaque stones can be detected by X-ray<sup>xii</sup> and it is not suitable for diagnosing stones which are radiolucent.

#### **Assessment of therapy on chief complaints between all groups:-**

*Ashmarihara Kwatha* showed better results in cured category, marked improvement category and no improvement category. *Ashmarihara Kwatha Ghanvati* showed better result in moderate and mild improvement category. *Varuna-shigru Kwatha* showed better result in marked improvement. *Ashmarihara Kwatha Ghanvati* showed better results than *Varuna-shigru Kwatha*. The *Kwatha* preparation is tedious job reported by patients while *Ghanvati* is ready to take, palatable and preferred by patients in comparison to *Kwatha* preparation and it also has probably same properties as found in *Ashmarihara Kwatha*.

#### **Comparative Effect of Therapy on average size of stones:-**

*Ashmarihara Kwatha* - Group B has shown better result on average size of stones than group B and C. It can be attributed to the *Lekhana* and *Bhedana* properties of *Ashmarihara Kwatha* which gave better result.

#### **Overall effect of therapy on Subjective and Objective parameters:-**

*Ashmarihara Kwatha*- Group B has shown better results in cured and marked improvement category whereas Group A showed better results in moderate improvement category and Group C has shown good result in mild improvement category.

#### **Probable Mode of action of *Varuna-shigru Kwatha*:-**

- *Varuna* has *Tikta* and *Kashaya Pradhana Rasa*, and *Shigru* has *Tikta* and *Katu Pradhana Rasa*, both drugs have *Ushna Virya*, *Katu Vipaka* and *Vatakapha Shamaka* properties.
- By virtue of *Mutrala*, *Bhedana* and *Shulaprashamana Karma* it helps to disintegrate the stones and expelled out from *Mutravaha Srotasa*.

#### **Probable Mode of action of *Yava Kshara*:-**

- *Yava Kshara* is having *Shodhana*, *Lekhana*, *Bhedana*, *Pachana* and *Tridosha Shamaka* properties, so it reduces the pain and it helped in removal of stone probably by reduction in size.
- *Yava Kshara* also acts as *Lekhana* for the stone, acting mainly on *Kapha Dosha*.
- It is alkaline in nature and soluble in water, so it counteracts the pathogenesis of stone formation by alkalizing acidic media of urine.

#### **Probable Mode of action of *Ashmarihara Kwatha* / *Ashmarihara Kwatha Ghanvati*:-**

- Most of the ingredient have *Tikta- Kashaya Pradhana Rasa*, *Laghu – Ruksha Guna*, *Shita Virya*, *Katu Vipaka* and *Vatakapha Shamaka* properties and have *Mutrala*, *Vedanasthapana*, *Anulomana* and *Bastishodhana Karma*<sup>xiii</sup>.
- It causes relief in symptoms of *Ashmari* by virtue of *Vatakapha Shamaka*, *Vedanasthapana*, *Shothahara*, *Mutrala*, *Rasayana* and *Anulomana* properties.
- It helps in disintegration of *Ashmari* by *Laghu*, *Ruksha Guna* and *Vatakapha Shamaka* properties.

- It also corrects *Agni* by *Pachana* and *Anulomana* properties, therefore it prevents formation of *Ama* as well as *Pachana* of *Ama Doshas* and breaks the pathogenesis of *Ashmari* and helps to prevent further *Ashmari* formation.

### Conclusion:-

After completion of one month treatment trial for *Mootrashmari*, *AshmariharaKwatha* has shown overall better result to cure the disease *Ashmari* in comparison to *Varuna-shigruKwatha* with *YavaKshara* whereas other doses form of *AshmariharaKwatha* i.e. *AshmariharaKwathaGhanvati* also showed better result over the *Varuna-shigruKwatha* and *YavaKshara*, but it was found less effective than *AshmariharaKwatha* dose form.

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