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## ORIGINAL RESEARCH ARTICLE

# ROLE OF VARUNA GUDA IN THE MANAGEMENT OF MUTRASHMARI (UROLITHIASIS) AND ASSESSMENT WITH IMAGING TECHNIQUES

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### Abstract:

**Background:** Mutrashmari (Urolithiasis) is associated with pain in bladder, testicles and penis, anorexia, Dysuria and fever. Among all the urological problems, most problematic condition is mutrashmari or the urinary calculus. The genesis of the disease can be understood from the fact that it is grouped under the eight most difficult to cure diseases - ashtamahagada. **Aims:** To study the disease Urolithiasis in terms of its etiopathogenesis, clinical manifestations with possible correlation to the description available in texts of Ayurveda as well as modern texts. To find out the efficacy of the drug in the management of Mutrashmari symptomatically or by confirming with the use of repeated imaging techniques i.e. Plain X-ray (K.U.B), U.S.G (K.U.B) etc. To study the side effects of drug, if any. **Settings and Design:** In the present study, total 36 patients of Mutrashmari were selected and treated into two groups, Group- I patients were treated with varuna guda orally, in a dose of 10gm. twice daily for two months and in Group- II, 15 patients were under control therapy. **Materials and Method:** Patients attended the O.P.D. and I.P.D. of Shalya tantra dept. of Rajiv Gandhi Govt. Post Graduate Ayurvedic College & Hospital Paprola, Distt. Kangra (H.P.) provided material for the clinical study. **Results:** Out of 17 patients of vataja ashmari in Group - I, 4 patients were cured, 1 patient markedly improved and 12 patients were improved and in control group out of 13 patients of vataja ashmari, 1 was cured, 7 patients were improved and 5 remained unchanged. 1 patient of pittaja ashmari was improved and 1 patient of kaphaja ashmari remained unchanged. **Conclusion:** Varuna guda has shown encouraging symptomatic relief in most of the clinical features with expulsion of ureteric stones in few cases.

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**Keywords:** Mutrashmari, Urolithiasis, Renal Calculi, VarunaGuda, Dysuria, Mutrakrichha

## Introduction:

To understand Urolithiasis it is more important to know the mechanism of stone formation i.e. lithogenesis<sup>1</sup>. There have been enough reason to support the hypothesis that lithogenesis is a result of a form of electrolyte imbalance in the circulating blood volume which encourages the precipitation of certain salts particularly calcium, phosphate, oxalates and urate etc., ultimately resulting into stone formation. Stasis is another important point which is supposed to attributes strongly to the formation of stone. Infection provides a nidus for the precipitation of the salts. This sets in a vicious cycle of stasis and infection resulting in calculus formation and calculus in turn causing stasis and infection.

In texts of Ayurveda, the mechanism is clearly mentioned i.e. srotovaigunya (blockage of channels) from vitiated kapha localised in basti in conjunction with vitiated vata and pitta is responsible for the formation of calculus<sup>2</sup>. Initially, vitiation of dosha occurs in the urinary tract and may be catalysed by presence of an incipient lesion and ultimately be held responsible in the pathogenesis of Urolithiasis<sup>3</sup>.

Keeping in view the etio-pathogenesis in both the systems, it is clearly understood that a free flushing kidney is less likely to give rise to stones. Therefore attention of the scientists has gone to these basic principles while treating the cases of urolithiasis. Attempts have been made to re-establish the balance between various electrolytes and produce a mild diuresis in case of any obstructive lesion.

Ayurveda treatment for urolithiasis mainly consists of lithotryptic and diuretic drugs. It is a

common perception in the society that it is very risky to undergo for surgery of urolithiasis as it may endanger the life as definite recurrence. But now the scenario has been changed in terms of risk and even today it is too expensive to go for lithotripsy.

Classical treatment and advantage of this drug: Most of the preparations mentioned in texts of Ayurveda are in the form of decoction which is not palatable and it should be freshly prepared which is inconvenient and time consuming in today's fast life. Moreover urolithiasis also found in children too so making the drug more palatable and patient friendly certain Acharya recommended this preparation as in avleha or semisolid with sugary as base. This drug have got 19 content mainly acts on urinary tract.

## Materials and Method

Diagnosis is made on the basis of special Performa prepared in relation to mutrashmari. Patients were monitored regularly and observations were recorded before, during and after the drug schedule.

## Study setting

The study was carried out in Patients attended the O.P.D. and I.P.D. of Shalya tantra dept.of Rajiv Gandhi Govt. Post Graduate Ayurvedic College & Hospital Paprola, Distt. Kangra (H.P.) provided material for the clinical study from **September 2003- July2004**.

**Study design:** Randomized, placebo controlled, single blind, parallel, clinical trial

## Trial Drug Details:

**Name of Trial drug:** VarunaGuda<sup>4</sup>

## Ingredients of varuna guda

S.No	Ingredients	Latin name	Parts used	Quantity
1.	Varuna	<i>Crataeva nurvala</i>	Stem bark	1 part
2.	Guda	<i>Saccharum officinarum</i>	--	1 part
3.	Pashanabhda	<i>Bergenia ligulata</i>	leaves	1/100 <sup>th</sup> part

4.	Gokshuru	<i>Tribulis terrestris</i>	Seed	1/100 <sup>th</sup> part
5.	Haritaki	<i>Terminalia chebula</i>	Fruit	1/100 <sup>th</sup> part
6.	Vibhitaka	<i>Terminalia bellerica</i>	Fruit	1/100 <sup>th</sup> part
7.	Shunthi	<i>Zingiber Officinalis</i>	Root	1/100 <sup>th</sup> part
8.	Pippali	<i>Piper longum</i>	Fruit	1/100 <sup>th</sup> part
9.	Draksha	<i>Vitis vinifera</i>	Fruit	1/100 <sup>th</sup> part
10.	Vastuka	<i>Chenopodium album</i>	leaves	1/100 <sup>th</sup> part
11.	Ervaruka	<i>Cucumis melo var utilissimus</i>	Seed	1/100 <sup>th</sup> part
12.	Kushmanda	<i>Benincasa hispida</i>	Fruit	1/100 <sup>th</sup> part
13.	Trapusha	<i>Cucumis sativus</i>	Seed	1/100 <sup>th</sup> part
14.	Dhanyaka	<i>Coriandrum sativum</i>	Seed	1/100 <sup>th</sup> part
15.	Shobhanjana	<i>Moringa oleifera</i>	Leaves	1/100 <sup>th</sup> part
16.	Vidanga	<i>Embelia ribes</i>	Seed	1/100 <sup>th</sup> part
17.	Ela	<i>Elettaria cardamomum</i>	Twak	1/100 <sup>th</sup> part
18.	Sheetla	<i>Cynodon dactylon</i>	Leaves	1/100 <sup>th</sup> part
19.	Shilajatu	<i>Asphaltum punjabinum</i>	Niriyas	1/100 <sup>th</sup> part

**Procurement of the drug:** Ayush Herbs pvt ltd, Nagrotabagwan, Kangra, H.P.

#### Method of preparation:

A young varuna tree not eaten by worms, grown in an auspicious place is cut on an auspicious day and time and its bark 1 tula in quantity is collected, made into small pieces and boiled in 4 times its quantity of water till decoction reduced to a quarter. To this, equal quantity of Guda is added and cooked again till it attains solid nature, then nice powder of above said ingredients each 1 pala (48gms) is added and preserved. This medicine-consumed daily in appropriate doses cured all varieties of urinary calculi quickly.

#### Study Population

Patients attending the O.P.D. and I.P.D. of Shalya tantra dept. of Rajiv Gandhi Govt. Post Graduate Ayurvedic College & Hospital Paprola, Distt. Kangra (H.P.) provided material for the clinical study.

**Sampling Method:** Random sampling method

**Sample Size:** 36 patients

#### Selection of patients

Patients attending the O.P.D. & I.P.D. of Shalya tantra dept. of Rajiv Gandhi Govt. Ayurvedic Post Graduate College & Hospital Paprola, Distt. Kangra (H.P.) suffering from salient features of Mutrashmari described in text of Ayurveda and in modern texts had been confirmed with the help of plain x-ray abd. and ultrasonography were selected randomly irrespective of their age, sex, caste, religion etc.

**Diagnostic Criteria:** Based on various investigations like urine, biochemical examination, X-ray (K.U.B.), U.S.G. (K.U.B.), which was done before and after the treatment. The statistical analysis of these scores was done before starting the treatment and after the treatment.

#### Inclusion Criteria:

1. Patients suffering from salient features of Mutrashmari described in text of Ayurveda and in modern texts had been

confirmed with the help of plain x-ray abd. and ultrasonography were selected randomly irrespective of their age, sex, caste, religion etc.

2. Patients who did not want to undergo surgery had been taken for the study.
3. Patients with stones size less than 15mm. in diameter in any part of urinary system.

#### Exclusion Criteria:

1. Patients with impaired renal function, acute renal, chronic renal failure, renal tuberculosis and malignancies of the urinary tract.
2. Patients suffering from systemic diseases like hypertension, diabetes mellitus, tuberculosis, cardiac problems, gall stones, stag horn calculus, gout, urethral stricture, prostatic enlargement etc.
3. Stones having size of more than 15mm.
4. If any adverse effect or reaction occurs during the trial.

#### Grouping:

**Group-I:-**The patients in this group were treated with Varuna Guda

**Group-II:-**In this group placebo therapy was given with starch capsules as a control group.

#### Lab investigations:

Routine- Blood, Urine.

Special -S.Calcium, S.Creatinine, S. Uric acid, B. Urea.

Radiological- Plain X- ray (K.U.B.), Intravenous Urography (If required)

Sonography - Ultrasonography (K.U.B.)

#### Intervention:

##### Group I:

Drug-VarunaGuda

Dose – 10 gm.

Anupana- Luke warm water

Duration- 2 months

Time of administration- BD after meals

Follow-up-2 months

##### Group II:

Drug-Starch Cap

Dose : 1 cap thrice daily

Anupana: - Luke warm water

Duration- 2 months

Time of administration- BD after meals

Follow-up- 2 months

#### Criteria for Assessment:

Based on various investigations like urine, biochemical examination, X-ray (K.U.B.), U.S.G. (K.U.B.), which was done before and after the treatment. The statistical analysis of these scores was done before starting the treatment and after the treatment. The detail of the scores adopted for the main signs and symptoms in present study were as below:-

##### 1. Pain

No pain	0
Occasional pain requires no treatment	1
Occasional pain requires treatment	2
Constant dull pain requires treatment	3
Constant severe pain required treatment but did not show any relief	4

##### 2. Burning micturition

No Burning micturition	0
Occasional, requires no treatment	1
Occasional, requires treatment	2
Constant, requires treatment	3
Constant, severe requires treatment but did not show any improvement	4

##### 3. Dysuria

No Dysuria	0
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Occasional, requires no treatment	1
Occasional Dysuria requires treatment	2
Constant Dysuria requires treatment	3
Constant, severe, requires treatment but did not show any relief	4

#### 4. Haematuria

No R.B.C. / HPF	0
0-5 R.B.C. / HPF	1
6-10 R.B.C. / HPF	2
11-15 R.B.C. / HPF	3
>16 R.B.C. / HPF	4

#### 5. Pus Cells

No Pus cells	0
0-5 pus cells	1
6-10 pus cells	2
11-15 pus cells	3
> 16 pus cells	4

#### 6. Tenderness at renal angle

No tenderness	0
Mild tenderness	1
Moderate tenderness	2
Severe tenderness	3
Very severe tenderness	

#### 7. Crystals

No Crystals	0
Presence of crystals	1

This was done before treatment and after the completion of treatment and improvement was assessed on percentage basis.

#### Overall Assessment of the Therapy:

To assess the overall effect of the therapy following criteria was laid down.

##### Cured(Complete remission)

More than 75% relief in all signs and symptoms.

Absence of any calculus in urinary tract with radio-sonological evidence.

##### Markedly Improved:

50-75% relief in all signs and symptoms.

50-75% reduction in dimension of calculi, but not excreted confirmed with plain x-ray (K.U.B.) & U.S.G.

##### Improved:

25-50% relief in all signs and symptoms.

No change in size of stone confirmed objectively.

Total effect of therapies was assessed in two groups on the basis of above 1st 3 criteria's. Patients fulfilling two or more of these criteria's are considered in that particular group.

##### Unchanged:

No relief either subjectively or objectively.

##### Observations:

Majority of patients (38.88%) were of age group 21 to 40 years.

Males (61.1%) are more prone to Urolithiasis as compared to females(38.88%).

Persons with kapha-pitta prakriti are having more chances of formation of Urolithiasis as kapha dosha is responsible for nidus formation along with vata and pita dosha.

The probable aetiological factors recorded in present study were sleeping at daytime, unhealthy dietary habits, oily diet, heavy food, sweets, excessive exposure to sunlight etc.

Obstructed urination, pain at umbilical region, pain in bladder and haematuria were found to be the main complaints in maximum patients in this study.

Pain, Dysuria, Burning micturition, Nausea/Vomiting, Urgency and general debility were the chief complaints in most of the patients.

The difference of improvement in pain in the treatment group was highly significantly greater than in the placebo group after 2 months of treatment ( $P < 0.001$ ).

The difference of improvement in burning sensation in the treatment group was highly significantly greater than in the placebo group after 2 months of treatment ( $P < 0.001$ ).

The effect on Dysuria in the treatment group was highly significantly greater than in the placebo group after 2 months of treatment ( $P < 0.001$ ).

There was significant improvement in fever, Nausea/Vomiting and tender renal angle in Group 1 than in Group II.

The increase in retention time (Diminution in urgency) in the treatment group was significantly greater than in the control group ( $P < 0.001$ ).

Significant improvement were observed in General debility ( $P < 0.001$ ), hematuria ( $P < 0.05$ ), Pyuria ( $P < 0.001$ ), crystalluria ( $P < 0.05$ ) and S.

Calcium ( $P < 0.001$ ) in the treated group than the control group.

Observation revealed that highly significant result seen in blood urea level ( $P < 0.001$ ) and s. uric acid level ( $P < 0.05$ ) in the treatment group as compared to control group.

From the observations it was observed that in Group 1, among the stones measuring less than 5 mm in diameter, all the 3 renal stones remained unchanged. Among the stones measuring more than 5mm in diameter, 1 renal stone was decreased in size and 7 remains unchanged out of 8 renal stones. Out of 6 patients having ureteric stones, 4 was expelled out and 2 remains unchanged while in Gr. II with placebo therapy no change was observed in most of the stones at all levels except 1 renal stone measuring less than 5 mm in diameter was expelled out.

Out of 17 patients of Vataashmari<sup>5</sup> in Group - 1, 4 patients were cured, 1 patient markedly improved and 12 patient were improved and in control group out of 13 patients of vataja ashmari, 1 was cured, 7 patients were improved and 5 remained unchanged. 1 patient of Pittajashmari<sup>6</sup> was improved and 1 patient of Kaphajashmari<sup>7</sup> remained unchanged.

## Effect of Therapy on symptoms

**Table No. 1 - Effect of Therapy on symptoms Group I**

S. No.	Signs & Symptoms	Mean Value		%age Relief	SD	SE $\pm$	T	P
		BT	AT					
1.	Pain	2.76	0.88	68.11	0.69	0.16	11.14	<.001
2.	Burning Micturition	1.00	0.11	88.20	0.16	0.28	3.11	<.001
3.	Dysuria	0.82	0.17	78.04	0.78	0.19	3.39	<0.001
4.	Nausea/Vomiting	1.05	0.17	83.23	1.11	0.26	3.27	<0.001
5.	Fever	0.70	0.11	84.0	0.79	0.19	3.05	<0.001
6.	Tender renal angle	1.05	0.17	83.23	1.16	0.28	3.11	<0.001
7.	Urgency	0.64	0.11	81.76	0.87	0.21	2.4	<0.05
8.	General debility	1.52	0.29	80.4	1.3	0.31	3.91	<0.001

9.	Haematuria	0.58	0.41	60.34	0.60	0.14	2.4	<.05
10.	Pyuria	2.82	0.88	68.79	2.65	0.64	3.01	<0.001
11.	Crystalluria	0.76	0.17	76.96	1.04	0.24	2.4	<0.05

**Table No. 2 - Effect of Therapy on symptoms Group II**

S. No.	Signs & Symptoms	Mean Value		%age relief	SD	SE $\pm$	T	P
		BT	AT					
1.	Pain	3.06	2.73	10.78	1.59	0.39	0.83	>.10
2.	Burning Micturition	1.26	1.20	4.73	1.33	0.34	0.19	>.20
3.	Dysuria	1.26	1.20	4.76	0.96	0.24	0.26	>0.20
4.	Nausea/Vomiting	1.06	0.83	12.46	0.91	0.23	0.56	>0.20
5.	Fever	0.73	0.66	9.58	0.59	0.15	0.43	>0.20
6.	Tender renal angle	0.86	0.73	15.35	0.91	0.23	0.56	
7.	Urgency	0.66	0.6	9.90	0.70	0.18	0.36	Gr-II
8.	General debility	1.66	1.40	15.95	0.79	0.20	1.29	Gr-II
9.	Haematuria	0.60	0.57	11.67	0.47	0.12	0.56	>.10
10.	Pyuria	2.10	1.93	7.90	0.74	0.19	0.86	>0.20
11.	Crystalluria	0.26	0.20	23.07	0.25	0.06	1.00	>0.20

**Table No. 3 - Effect of therapy on different investigations**

Effect	Group	Mean Value		% relief	SD	SE $\pm$	T	P
		BT	AT					
Blood Urea	Gr-I	24.23	23.35	3.63	0.99	0.24	3.66	<0.001
	Gr-II	24.20	24.26	-2.75	0.79	0.20	0.32	>0.20
Serum Creatinine	Gr-I	1.10	0.92	15.91	0.24	0.05	3.01	<0.001
	Gr-II	1.02	1.02	0	0.22	0.05	0.11	>0.20
Serum Calcium	Gr-I	10.04	9.32	7.19	0.57	0.13	5.19	<0.001
	Gr-II	10.12	10.10	0.19	1.20	0.30	0.06	>0.20
Serum Uric Acid	Gr-I	2.46	2.54	- 3.32	0.15	0.03	2.24	>0.05
	Gr-II	2.38	2.41	- 1.11	0.14	0.03	0.69	>0.20

**Table No. 4 - Overall Effect of therapies on 32 patients of Mutrashmari**

Result	No. of Pts. % Relief Gr. – I		No. of Pts. % Relief Gr. – II	
Cured	4	12.5	1	3.12
Markedly Improved	1	3.12	0	0
Improved	12	37.5	8	25.0
Unchanged	0	0	6	18.75

### Discussion:

The scoring was given to the signs and symptoms, based upon the severity. The assessment was carried out before treatment and after treatment to evaluate the effects of therapy. Results obtained were also statistically analysed and mean percentage of relief, S.D., S.E. and “t” value by using the paired “t” test was calculated. The results obtained in this study are as follows:-

#### 1. Size of stones :

Size of stones was estimated by Radio-sonological investigations, in this study. Majority of patients i.e. 56.25% were having stones in between 5-15mm. in diameter. The patients having stones more than 15mm. in diameter were not taken, because it seems little more difficult to treat them with medical therapy.

#### 2. Number of stones :

In the present study, majority of patients 72.72% were having single stone, while remaining 27.77% were having multiple stones. Vataja ashmari have been found more in the present study and it is clearly mentioned in modern texts that the oxalate stones are mostly single in number, which can be correlated with vatajashmari. Maximum patients were found with single stone.

#### 3. Site of stones :

Maximum 69.44% patients were found to be of renal stones in the present study, followed by 30.55% ureteric stones. No patients were having

bladder and urethral stones. This is due to the fact that nidus formation takes place at tip of renal papillae. This nidus anyhow dislodged from kidney then it becomes ureteric and vesical calculus. Also kidneys are the main organ of urinary system, so chances of sedimentation of particles are more in it as the filtration process takes place over here which may lead to stone formation. These may be the reasons for presence of kidney stones in majority of the patients.

#### 4. Clinical features :

All the patients i.e. 100% complained of pain. In texts of Ayurveda, there is no description regarding colic. Umbilicus and pain in bladder was found in 58.33% and 52.77% patients respectively. Nowhere in the modern texts pain at umbilicus has been mentioned. It was observed that 77.77% of patients were having urinary retention. It may be due to the sudden spasm of the sphincter. Nausea /vomiting and Dysuria 41.66% each, burning micturition 38.88%, Pyuria 33.33%, fever and tender renal angle 36.11% each, urgency and general debility 25% each, haematuria 22.22% and crystalluria 19.44% found in this clinical study. Manifestations of symptoms indicate the stage at which the patients approached for treatment. Pain, burning micturition and Dysuria being a common general symptoms manifesting early in the course of illness and haematuria and urgency etc. indicate the more advanced stage.

#### 5. Effect of therapy :

Effect of therapies were assessed in total 32 patients of both the groups (Gr-I-17 patients and in Gr-II, 15 patients) on the basis of changes observed in cardinal symptoms and signs as mentioned in the criteria for assessment in clinical study and statistical analysis.

### 1. Effect on clinical features:

**In Group I :** The therapy provided statistically highly significant ( $P < 0.001$ ) relief in pain (68.11%), burning micturition (88.2%), Dysuria (78.04%), nausea/vomiting (83.23%), fever (84%), tenderness in renal angle (83.23%) and general debility (80.4%). The patients of this group showed statistically significant ( $P < 0.05$ ) relief in urgency (81.76%) (table no.1).

**In Group II:** The results observed in placebo group on cardinal signs and symptoms of the patients of Urolithiasis showed statistically insignificant results at the level of  $P > 0.10$  and  $P > 0.20$  (table no.2).

### 2. Effect on urine analysis:

**In Group-I :** Microscopic urine analysis revealed that 60.34%, 68.79% and 76.96% relief was observed in R.B.C., pus cells and crystals of calcium oxalate respectively. The treated group showed highly significant effect ( $P < 0.001$ ) in pus cells, followed by significant effect ( $P < 0.05$ ) in R.B.C. and crystals.

**In Group-II:** The results were statistically insignificant ( $P > 0.10$ ) for R.B.C., ( $P > 0.20$ ) for pus cells & crystals in urine analysis.

### 3. Effect on biochemical investigations:

**In Group I:** The treated group indicates that there is statistically highly significant ( $P < 0.001$ ) effect on serum calcium, serum Creatinine, Blood Urea with insignificant effect ( $P > 0.05$ ) on serum uric acid. In fact, there is no apparent effect on bio-chemical values as the relief percentage was very low (table no.3).

**In Group II:** The placebo therapy has shown statistically insignificant effect ( $P > 0.20$ ) on all the biochemical findings (table no.3).

### 4. Effect on stones of different size and site:

**Size: In Group I:** The study displays that the stones less than 5 mm in diameter remains unchanged while out of 14 stones between 5 to 15 mm, 4 were expelled out, 1 decreased in size and 9 remains unchanged.

**In Group II:** In the present study, 1 stone less than 5 mm in diameter was expelled out and remaining 14 found unchanged.

**Site: In Group I:** Present study indicates that out of 11 renal stones, 1 decreased in size, 10 remains unchanged and out of 6 patients of ureteric stones, 4 stones had expelled out, 2 remains unchanged. Therefore it may be postulated that the effect of drug was found at the level of ureters only with no effect at the level of kidneys.

**In Group II:** In this group, out of 6 renal stones, 1 was expelled out and 5 remains unchanged and 9 ureteric stones remains unchanged. Thus, the study displays very slight effect of placebo therapy on renal stones. It may be due to excessive use of fluid intake.

### 5. Effect on types of calculus:

**In Group I:** In this group, all the 17 patients were having vataja calculus, out of which 4 were cured, 1 was markedly improved and 12 were improved. It may be due to the fact that vataja calculi are comparatively smaller in size. And as the drug compound has the diuretic property, so it may have flushed out the calculus.

**In Group II:** In this group, 13 vataja calculus, 1 pittaja calculus and 1 kaphaja calculus were found. Out of 13 vataja calculus; 1 was cured, 7 were improved and 5 remains unchanged. Kaphaja calculus was improved and pittaja calculus remains unchanged.

### 6. Total effect of therapies:

**In Group I:** Screening of total effect of therapies revealed that in the treated group, out of 17 patients, 12.5% cured, 3.125% markedly improved, 37.5% improved and none remains unchanged (table no.4).

**In Group II:** Compared to treated group, in placebo group, out of 15 patients, 3.125% cured, 25% improved and 18.75% remains unchanged and none of the patients showed markedly improvement(table no.4)..

In Placebo group, pathyapathaya was advised along with the oral intake of plenty of fluids to the patients. This may be the reason of 3.125% cure and 25%improvement. But in comparison with placebo group, the group treated with varuna guda were found to be effective in all the aspects.

#### **Mode of action:**

In the pathogenesis of urolithiasis the kapha dosha plays important role, which contribute the nidus for its formation along with vata and pitta<sup>8</sup>. Vitiating apanavayu is responsible for the pain, dysuria<sup>9</sup> etc. whereas morbid pitta doshacauses burning micturition, haematuria<sup>10</sup> which are the main symptoms found in patients of urolithiasis. The formulation taken for the study possess all the needful actions as the main ingredient of the compound, Varuna is well known for its action on urinary system acts as urinary antiseptic, anti - inflammatory and diuretic. The ingredients of the compound like guda, vibhitaka, shilajeet, vidanga etc. pacify kapha dosha as well as shows lekhana property due to ushna virya<sup>11</sup>. The ingredients like shunthi, haritaki etc. are Madhura vipaki and ushna virya in nature<sup>12</sup>. These properties help in correcting vitiated vata dosha. Also, some of the ingredients like Draksha, Vastuka<sup>13</sup>, Ervaruka have mild laxative effect, so by maintaining the normal bowel movements it may help in correction of vitiated apanavayu as well as in expulsion of morbid pitta dosha. Due to the expulsion of morbid pitta dosha, the features like burning micturition were relieved. Remaining ingredients like pashanbheda<sup>14</sup>, ela, gokshuru, trapusha, dhanyaka exerts diuretic effect by virtue of their sheeta virya. Thus in total, this formulation has the capacity to disintegrate the pathogenesis of the disease calculus due to its

diuretic action it flushes out the disintegrated calculus by the process of diuresis.

The water extract of varuna (*Crataeva nurvala*) bark reportedly, displays nicotinic actions on guinea pig ileum and dog tracheal muscle in vitro. Deshpande et.al. have studied the effects of this water extract on the bladder contractility of dogs. They found that the expulsive force of detrusor contraction increases under the influence of varuna. The alcohol ether extract of the bark has anti-inflammatory activity comparable to that of Corticosteroids. Acute inflammations induced by histamine and carrageenin, and delayed (chronic) inflammations (in formaldehyde induced arthritis) are both inhibited. The water extract of varuna leaves displays antibacterial activity against Shigella and Salmonella in vitro. Deshpande has studied the clinical use of varuna decoction on bladder emptying, chronic urinary infection and urinary electrolyte excretion. varuna decoction reduces the urinary excretion of sodium and magnesium, shifting values from the lithogenic to the non- lithogenic zones. It was also found to increase the 'spontaneous' passage of renal and bladder calculi. In patients with prostrate hypertrophy, varuna decoction increases the force of detrusor contraction, reducing the volume of residual urine. This action, through which stagnation of urine is reduced, combined with its anti-inflammatory property, may explain the antiseptic action of varuna on the urinary tract<sup>15</sup>.

#### **Conclusion:**

The genesis of the disease can be understood from the fact that it is grouped under the eight most difficult to cure diseases – ashtamahagada<sup>16</sup>. Varuna guda is found to be very effective in relieving all the clinical features like pain, Dysuria, Burning sensation, Haematuria, Tenderness at renal angle. The drug was devoid of any toxic effect also and thus can be safely given in Urolithiasis. In nut shell, it can be concluded that the trial compound has shown encouraging symptomatic relief in most

of the clinical features with expulsion of ureteric stones in few case. It is hoped that the observations made will be helpful to further

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