

Efficacy of Nagaradi Vati In the Management of Mutrashmari w.s.r. to Urolithiasis

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Abstract

Introduction: Mutrashmari is one of the most common and distressing malady among urinary disorders. The urological diseases like Ashmari, Mutrakrichra, Mutraghata, Prameha are the ailment causing suffering to human health since ancient age. Urolithiasis is still a mysterious even after extensive research in urology because the cause and mechanism of stone formation is still uncertain. Urolithiasis formation is a complex process which involves crystalloid and colloids. Ayurveda has a unique concept of breaking the stone by using the Ashmari-bhedana and Mutral drugs. **Objective:** An effort was made to evaluate the efficacy of Nagaradi Vati in Mutrashmari patients. The main aim of this study was inclined towards the disintegration, dissolution, dislodgement and expulsion of urinary stones. Therefore, trial formulation which has Ashmari-bhedana and Mutral properties has been selected for the study. **Methods:** The trial drug is having anti-inflammatory, diuretic and litholytic, antilithiatic properties. Total 30 patients were randomly selected and treated with Nagaradi Vati in a dose of 500 mg, thrice daily after food for duration of 90 days. **Result:** The result of trial drug in pain, tenderness, burning micturition, size and number of calculi was statistically highly significant. In pyuria and haematuria result was statistically significant. **Conclusion:** Management of Mutrashmari by Nagaradi Vati has given significant improvement in the sign, symptoms and size of stone. It has paved new way of treatment, which is effective and with no adverse effect.

Key words: Ashmari-bhedana, dysuria, Mutrakrichra, Mutrashmari

INTRODUCTION

Ashmari description is the specific contribution of Acharya Sushruta, the father of surgery, has included it in the “Ashta-Mahagad”^[1] the eight most troublesome diseases may be owing to its potentiality to disturb the anatomy and physiology of urinary system. The reason is because of the disease is Tridoshaja in origin, Marmashrayee^[2] (disease of the vital part), Basti (urinary bladder) is Vyakthasthana (seat) of Ashmari.^[3] Basti comes under Dashavidha Pranayathana,^[4] Basti is Sadhyapranhara Marma (in which injury causes instant death), on the basis of prognosis this disease is Kricchasadhya Vyadhi^[5] (difficult to manage), also when it is fatal, it needs surgical intervention. The severity of pain which is compared to the “Yama” (sure sign of death) and described as Vyadhirantakpratimam^[6]

(last stage of disease hence of the patient), so this type of pain makes the life of the patient miserable. The patients of this disease will have the symptoms such as pain abdomen, dysuria, burning micturition, and retention of urine. Now-a-day, there are many treatment modalities for the management of urolithiasis like hydrotherapy and various surgical procedures but most of the time they fail in eradicating the root cause and, therefore, recurrence of disease occurs commonly. The existing management for urolithiasis does

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not have any effect on the pathogenesis of stone formation. Unfortunately, urolithiasis occurs during the most productive years of one's life which inhibits him from his normal daily routine task. Thus, we have enough reasons to look out for something which may be a radical treatment of the disease treating it by its root cause.

MATERIALS AND METHODS

Aims and objectives

To assess the efficacy of *Nagaradi Vati*^[7] in the management of *Mutrashmari* w.s.r. to urolithiasis.

Selection of the patients

Patients with *Mutrashmari* were selected randomly from the outpatient department (OPD)/inpatient department Department of Shalya Tantra, Rishikul State *Ayurvedic* (P.G.) College and Hospital, Haridwar. The study was conducted on a single group of 30 patients.

Criteria for selection of patients

Inclusion criteria

Patients with stones present in any part of the urinary system, age between 15 and 65 years, the size of calculus - 1-10 mm.

Exclusion criteria

Patients with impaired renal function or other severe complications, patients with immediate surgical requirement and stone impacted in renal parenchyma.

Criteria for diagnosis of *Mutrashmari*

Patients were diagnosed on the basis of clinical features, physical examination, lab investigation findings, and radiological evidence.

Laboratory investigation

- Routine hematological investigations such as hemoglobin %, complete blood count, and erythrocyte sedimentation rate
- Biochemical investigation – Blood urea, serum creatinine, serum uric acid, and serum calcium
- Urine examination – Routine and microscopic
- Plain X-ray abdomen for kidney, ureter, and bladder region
- Ultrasonography (abdomen and pelvis).

Research design

Open clinical trial, total 30 patients were selected randomly and treated with *Nagaradi Vati* in the dose of two tablets (500 mg each tablet) thrice in a day after meal for a duration of 90 days.

Follow-up

After the completion of the therapy, patients were advised to visit OPD at 30 days interval for a period of 1-year.

Criteria for examination and assessment

The assessment was done on the basis of relief in signs and symptoms of urolithiasis. Other investigation findings (laboratory as well as radiological) on the basis of specially designed research proforma through the scoring pattern.

Subjective criteria^[8]

Assessment of therapy was done according to the relief observed in the signs and symptoms with the help of following a scoring pattern.

General symptoms score

Complete absence of the sign and symptoms - 0

Mild degree of the signs and symptoms - 1

Moderate degree of the signs and symptoms - 2

Severe degree of the signs and symptoms - 3

The details of the scores adopted for the chief signs and symptoms (before and after treatment) in the present study as follows:

1. Pain
 - No pain - 0
 - Occasional pain did not require treatment - 1
 - Constant dull ache pain required treatment - 2
 - Severe constant pain, but did not show relief even after treatment - 3.
2. Tenderness at renal angle
 - No tenderness - 0
 - Mild tenderness - 1
 - Moderate tenderness - 2
 - Severe tenderness - 3.
3. Burning micturition
 - No burning micturition - 0
 - Occasional burning micturition - 1

- Constant burning micturition required treatment - 2
 - Constant severe burning micturition but did not show relief even after treatment - 3.
4. Hematuria: On the basis of microscopic urine analysis
 - No red blood cell (RBC)/Hpf - 0
 - 0-5 RBC/Hpf - 1
 - 6-10 RBC/Hpf - 2
 - >15 RBC/Hpf - 3.
 5. Pus cells: On the basis of microscopic urine analysis
 - No pus cells/Hpf - 0
 - 0-5 pus cells/Hpf - 1
 - 6-10 pus cells/Hpf - 2
 - >15 pus cells/Hpf - 3.

Objective parameters

1. Size of stone
2. Number of stone.

Criteria for overall assessment of therapy

- Complete relief: 100% complete relief in subjective parameters, removal of stone in urinary tract with radiological evidence.
- Marked improvement: >76%
- Moderate improvement: 51-75%
- Mild improvement: 26-50%
- No improvement: Up to 25%.

OBSERVATIONS^[8]

In this study, 30 patients were registered and completed the treatment. Following observations were made during the study. Maximum patients, i.e. 40% were belonged to age group 26-35 years. 60% were male, 60% patients were belong to the rural area. Most of the patients belonging to the Hindu religion (66.66%) and maximum number of patients, i.e. 46.67% were belonged to a lower middle class, and maximum, i.e. 73.33% patients were married. Most of the patients of urolithiasis were literate (83.33%) and most of the patients, i.e. 40% were having *Vata-Kapha Prakriti*, and 53.33% were having a positive family history. 80% patient had a complaint of pain, 86.66% tenderness at a renal angle, 73.33% patients had a complaint of burning micturition, and 60% patients were a complaint of pyuria followed by 26% patients complaints of hematuria. The majority of patients, 63.33% having single stone and 60% patients had a stone of 1-5 mm in size. Out of 30 patients, 13 patients (43.33%) of ureteric calculus, 10 patients (33.33%) of renal calculus, 06 patients (20%) of renal and ureteric calculus, and 01 patient (3.33%) of vesical calculus.

RESULTS

Effect of therapy on clinical signs and symptoms

Highly significant ($P < 0.01$ or < 0.001) results were observed in pain, tenderness, and burning micturition, statistically significant ($P < 0.05$) results were observed in pyuria and hematuria.

Effect of therapy on nWumber and size of urinary stones

Total 30 patients of urinary stones were present in this study having different sizes and sites. Out of these, 40% stones were expelled out, 31.11% stones decreased in size, no change were observed in 17.77% stones, whereas 11.11% stones showed little increase in size (Figures 1-4).

DISCUSSION^[8]

Sushruta gives importance to *Shleshma* in all the three types of *Doshaj Ashmari*, similarly modern medicine also mentioned that the urinary calculi consist of aggregates of crystals which are bounded by the small amount of proteins and glycoproteins (*Shleshma*) to make the stone insoluble. The basic cause of *Ashmari* is an aggregation of *Kapha-Pradhana Doshas* in *Mutravaha Srotasa* due to *Agnimandya* and *Ama* formation, which is caused by different *Nidana Sevana*. The drugs used for the treatment of *Ashmari* should possess the properties to inhibit the process and to correct the pathology involved in the formation of *Ashmari*, i.e. *Samprapti Vighatana* and “*Nagaradi Vati*” is one of them. The ingredients of the trial formulations are easily available and cost effective (Table 1).

Table 1: Probable mode of action

Drug	Action
<i>Nagar (Z. officinale)</i>	<i>Shoolprashaman</i> (analgesic), <i>Kapha-vatashamak</i> ^[9]
<i>Varun Tvak (C. nurvala)</i>	Tridoshghan ^[10]
<i>Gokshur (T. terrestris)</i>	<i>Ashmaribheda</i> , <i>Vastishodhan</i> , and <i>Kapha-vatashamak</i> ^[11]
<i>Pashanabheda (B. ligulata)</i>	<i>Asmaribheda</i> and <i>Vastishodhan properties</i> ^[12]
<i>Kakamachi (Solanumnigrum)</i>	<i>Mutrashodhan</i> ^[13]
<i>Gurr (jaggery)</i>	<i>Ashmaribhedan</i> , <i>Mutrakrichra</i> , and <i>Bastishodhak</i> ^[14]
<i>Yavakshar (K₂CO₃)</i>	<i>Asmaribhedan</i>

Z. officinale: Zingiber officinale, C. nurvala: Creataeava nurvala, T. terrestris: Tribulus terrestris, B. ligulata: Berginia ligulata, S. nigrum: Solanum nigrum

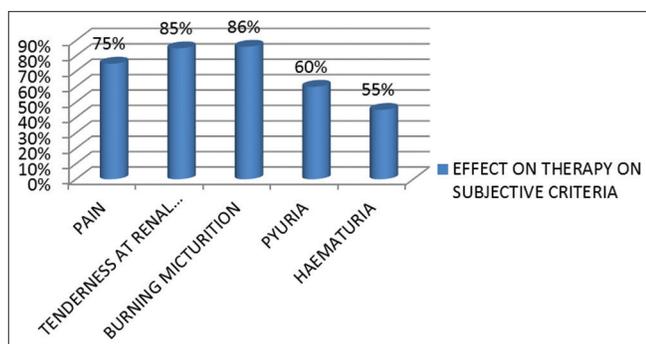


Figure 1: Effect of therapy on subjective criteria

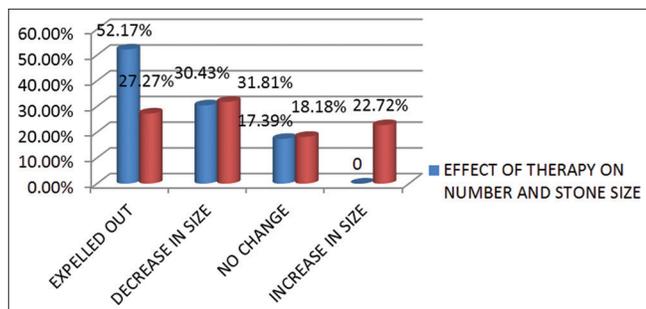


Figure 2: Effect of therapy on number and size of stone

The ingredients of *Nagaradi Vati* having the properties of *Mutrala*, *Bastishodhana*, *Anulomana*, *Deepana*, *Pachana*, *Vedanasthapan*, *Shothhar*, and *Kapha-Vata Shaman* are responsible for its litholytic and antilithiatic action. *Gokshura* due to its *Shothhar* (antiedematous) and *Mutra-Virechaniya* diuretic properties, it plays an important role in increasing urinary output and flushing the urinary system. In *Ayurvedic* classics, it is used in various diseases of urinary system as *Mutrakrichra*, *Ashmari*, and *Prameha*. The major component isolated from *Creataeva Nurvala* is lupeol, which is used to treat hyper crystalluria, hyperoxaluria, and hypercalciuria. The compound is also widely used to treat urinary disorders such as urolithiasis, and it decreases the elevated concentration of oxalate. One content of this drug is *Kshara*, which have the properties of *Lekhana*, *Chedana*, *Bhedana*, *Mutrala*, and *Kapha-shamaka*, so it is also helpful in reducing the size of *Mutrashmari*. The *Vatanulomana*, *Shothahara*, and *Mutrala* properties of ingredients help to relieve pain and retention of urine, *Deepana* property of drugs helps to increase the *Agni*, which further check the formation of *Ama* at *Jatharagni* level itself, *Pachana* property of ingredients helps in the assimilation of drugs in the body. Stone might be dissolved due to the *Ashmari-Bhedana* or *Ashmarihara* property of ingredients present in both the drugs. *Balya* and *Rasayana* properties of ingredients help in overall improvement of health. *Kshara* is having *Lekhana*, *Bhedana*, *Pachana*, *Shodhana*, and *Tridosaghna* properties. *Yavakshara* is alkaline in nature, thus it helps to neutralize the acidic media and prevents stone formation. So, based on clinical trial in present study, it may be said that the formulation of *Nagaradi Vati* acts on symptoms of *Mutrashmari* (urolithiasis) by reducing size of

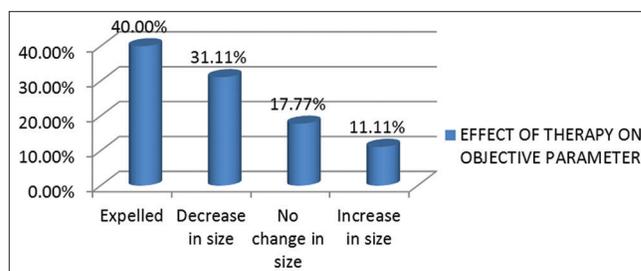


Figure 3: Effect of therapy on objective parameter

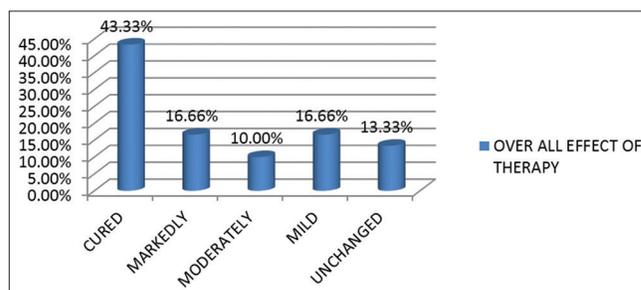


Figure 4: Overall effect of therapy

stone and removal of urinary calculus via antiurolithitic and anti-inflammatory properties, Further, it may be attributed to improving urine flow as well as producing diuretic effect with removal of urinary stone.

CONCLUSION

The study suggests that occurrence of urolithiasis is more common in the third and fourth decade of life, regarding the chief complaints of *Ashmari*, *Nagaradi Vati* showed highly significant results in pain, tenderness, and burning micturition, and significant results in pyuria and hematuria. It indicates the effectiveness of *Nagaradi Vati* in improving symptoms of *Ashmari* due to its *Kapha-Vata Shamak* property and also *Bastishodhana*, *Deepan*, *Paachana*, *Vatanuloman*, *Mutrala*, and *Vedanasthapan Karma*. So, it can be concluded that the trial drug *Nagaradi Vati* had shown encouraging results in most of the clinical features along with expulsion of small urinary stones and can produce relief in sign and symptoms of *Mutrashmari*.

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