



ISSN: 2456-4419

Impact Factor: (RJIF): 5.18

Yoga 2019; 4(1): 1037-1039

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www.theyogicjournal.com

Received: 04-11-2018

Accepted: 07-12-2018

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Ashmari (Renal Stone) and its management in Ayurveda

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Abstract

Thousands of years ago, scientist of ancient medicine identified the disease urolithiasis and named it as *Ashmari*. It has been derived from the “*Ashman*” Sanskrit word which literally means a structure resembling stone. *Ashmari* (Urolithiasis) is a very common global problem, disturbing mankind since long time. *Ashmari* is one of the major reasons of abdominal pain in present time. Urolithiasis means the presence of stone/calculus in the urinary system. Etiology and pathogenesis of Urolithiasis or renal stone is not very clear. Risk factors for developing kidney stone are familial, obesity (High BMI), not drinking enough water, eating a diet that's high in protein, sodium (salt) and sugar. Main symptoms of Urolithiasis are pain, burning micturition, haematuria, dysurea, tenderness and fever. The four most common types of renal stones are calcium, uric acid, struvite and cystine. Calcium stones are the most common type of kidney stones (Approximately 85%).

Treatment of renal calculi in modern science is mainly surgery and almost none oral modern medicine available for this purpose. Available management of renal calculi like extracorporeal shock wave lithotripsy, cystolithotomy etc. fail to prevent the recurrences and have many side effects such as sepsis, strictures, splenic rupture, renal hematoma etc. *Ayurveda* mentioned a number of herbs for breaking the stone and diuretic herbs for its easy removal by via urine. *Ayurvedic* texts have mentioned *Mutra-virechaniya* (diuretic) and *Ashmarighna Dravya* (lithotriptic) which is very beneficial for urolithiasis. Common drugs mentioned in our texts are *Varuna* (*Crataeva nurvala*), *Gokshura* (*Tribulus terrestris*), *Pashanabheda* (*Bergenia ligulata*), *Shilajit* (*Asphaltum Panjabinum*), *Yava Kshara* (alkali preparation of *Hordeum vulgare* L.) etc. *Acharya Sushruta* had also mentioned perineal approach to remove the stone from the bladder when stones are too large and not responding to medicinal treatment.

Keywords: Ashmari, renal stone, mutravirechaniya, ashmarighna dravya, ayurveda

Introduction

Ayurveda, the ancient science of life is one of the pride and wealth of India. *Ayurveda* deals many diseases of *Mutravaha Srotas* as *Mutrakricchra*, *Mutraghata*, *Mutrashmari* etc. *Mutrashmari* is one of the most common and distressing maladies among urinary disorders. *Ashmari* (calculi) comprises of two words, i.e. ‘*Ashma*’ and ‘*Ari*.’ ‘*Ashma*’ means a stone and ‘*Ari*’ means enemy. *Ashmari* (calculi), specifically called as *Moothrashmari* (urolithiasis), is a disease of *Moothravahasrotas* (urinary tract) and involves formation of stone, resulting into severe pain as given by enemy. *Ashmari* has been mentioned in all ancient texts of *Ayurveda* but *Acharya Sushruta* has described it elaborately in *Sushruta Samhita* along with its medicinal as well as surgical management. *Acharya Sushruta* has clearly mentioned the site, character and severity of pain, its aggravating and relieving factors. *Acharya Sushruta* explains the two process of stone formation. One is by the stagnation and super saturation of the urine and other by crystallization of the crystalloids in the urine

Urolithiasis is the stone formed in urinary tract (kidney, ureter, bladder and urethra). Synonym for Urolithiasis is renal stone/calculi. It is expected that 12% of world population experiences renal stone with a recurrence rate of 70-80% in male and 47- 60% in female^[1]. Renal stones may occur due to metabolic instability, bladder infections, hormonal influences, dietary conditions obstructions in the bladder or kidney and increased excretion of stone forming components such as calcium, oxalate, carbonate, phosphate, urate, cystine etc. In modern medicine there are few drugs such as Allopurinol, Magnesium oxide, Hydrochlorothiazide and Alkaline phosphates used to treat the kidney stone. There are many side effects by these drugs.

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For example, thiazides, low dose of this diuretic causes potassium loss, allopurinol can cause skin rashes, leucopenia and phosphate drug can cause diarrhea. So *Ayurvedic* system is better way for treatment of *Ashmari* (Urolithiasis).

Etiology

In *Ayurveda*, main etiology responsible for the formation of calculi is non-adoption of *Pancha-karma* (five methods of purification of the body), unhealthy diet and lifestyle [2]. In conventional medicine, there are three important factors responsible for urolithiasis such as heredity, geographical condition and dietetic factors [3].

Risk factors: Following risk factors increase the risk of kidney stones:

- ❖ **Obesity-** High body mass index (BMI) and more weight gain have direct relation with increased risk of kidney stones.
- ❖ **Family history-** If any person has family history of kidney stones then more chance to develop stones.
- ❖ **Dehydration-** Not drinking enough water and warm climates increase risk of kidney stones.
- ❖ **Dietary factors-** High protein, high sodium (salt) and high sugar in diet may increase risk of kidney stones.
- ❖ **Digestive diseases and surgery-** Certain surgery such as gastric bypass surgery and chronic diarrhoea affect absorption of calcium and increase more chance of stone formation.
- ❖ **Other medical conditions-** Other medical condition such as renal tubular acidosis (RTA), urinary tract infections and cystinuria can increase the chance of stone formation.

Classification

According to *Ayurveda*, *Ashmari* is of four types i.e. *Vatika*, *Paitika*, *Shlaishmika* and *Shukraja* [4]. The *Vatika*, *Paitika* and *Shlaishmika* *Ashmari* may be similar to calcium oxalate, uric acid and calcium phosphate calculi respectively. In modern medicine classification of urinary calculi is based on its chemical constitution and their morphology, so different types of urinary calculi are described i.e. Calcium stone, Struvite stones, Uric acid stone, Cystine stone and mixed stone [5].

- ❖ **Calcium stones:** Most common type of stone is calcium stones, usually in the form of calcium oxalate. Oxalate is mostly found in food such as some fruits and vegetables, nuts and chocolate and prepared by liver. Dietary factors, high doses of vitamin D and numerous metabolic disorders can raise the concentration of calcium or oxalate in urine. Another form of calcium stones is calcium phosphate that is common in metabolic conditions such as renal tubular acidosis (RTA).
- ❖ **Struvite stones:** Struvite stones are common in patients of urinary tract infection (UTI). These stones can develop quickly and relatively large than other types of stones.
- ❖ **Uric acid stones:** Uric acid stones mainly depend on dietary factors such as less water and high-protein diet intake. Certain genetic factors also increase chance of uric acid stones.
- ❖ **Cystine stones:** These stones are common in some hereditary disorder that excrete too much of certain amino acids (cystinuria) via kidney.

Prevalence

Prevalence of urinary calculi is common in hot climate geographic areas because it promotes dehydration and concentrates calculus forming substances. According to

Victor (1999) the incidences of stones are:-

Calcium oxalate	33%
Mixed calcium oxalate and phosphate	34%
Magnesium ammonium phosphate	15%
Uric acid	8%
Calcium phosphate	5%
Cystine	3%

Signs and symptoms

Main features of *Ashmari* in *Ayurveda* is severe pain in urinary bladder, scrotum and penis; dense and turbid urine, odor of urine similar to that of *Gomed* (hessonite stone), fever, body ache, anorexia and dysuria [6]. *Acharya Sushruta* explain that pain of *Ashmari* aggravated by jumping, swimming, running, riding, walking etc [7].

Texts of modern medicine explain different types of pain stirring at different sites according to the position of the calculi in the urinary tract as the main symptom. The pain may be fixed dull ache, colicky in nature or referred pain which may be associated by profuse sweating, nausea, vomiting, increased pulse and subnormal temperature. Pain increase with movement like running, jumping, jolting and climbing upstairs and pain decrease with rest. Hematuria (blood in urine) may be associated with Urolithiasis [8].

Treatment

Complementary and alternative medicine (CAM) is a broad term for a range of therapies that include plant-based medicine. The general public has a more positive view of plant-based medicines compared with modern medicine mostly because they are apparent as being "natural" and "safe". One of the great myths about herbal medicines is that they are not scientific. By alteration of biochemical quality of urine can help in treatment and prevention of *Ashmari* which can be achieved by more quantity of fluid intake and diet. *Ayurveda* mention a number of herbs that can break the stone and easy removal by diuretic herbs via urine. *Chedana Karma* (excision) is done if its size is large [9].

In *Ayurvedic* texts mainly three types of drugs *Mutravirechaniya* (diuretic) *Ashmarighna* *Dravya*(lithotriptic)and *Kshara Karma* (alkali therapy) have mentioned for treatment of *Ashmari roga* (Urolithiasis).

1. ***Mutravirechaniya Dravyas* [10] (Diuretic herbs):-** In *Mutravirechaniya Dravyas* mainly *Gokshura* (*Tribulus terrestris*), *Punarnava* (*Boerhaavia Diffusa*) *Ikshu* (*Saccharum officinarum* Linn), *Pashanabheda* (*Bergenia ligulata*) and *Shali* (*Oryza sativa* Linn.)
2. ***Ashmarighna Dravyas* [11] (lithotriptic herbs):-** Mainly *Dravyas* of *Veeratarvadi gana*, *Mushkakadi Gana* and *Ushakadi Gana* are used as *Ashmarighna Dravyas*. *Pashanabheda* (*Bergenia ligulata*), *Varuna* (*Crataeva nurvala*) *Kulattha* (*Dolichos biflorus* Linn.), *Shigru mula* (Roots of *Moringa olifera* Lam.) etc. give *Ashmarighna* effect.
3. ***Kshara Karma* (alkali therapy):-** Mainly *Palasa Kshara* (*Butea monosperma*) and *Yava Kshara* (*Hordeum vulgare* L.) uses for treatment of *Ashmari* (Urolithiasis). *Kshara* act as diuretics, lithotriptic, and alkalizer.

Herbal drug uses in *Ashmari roga* (Urolithiasis) [12]

1. ***Punarnava* (*Boerhaavia Diffusa*):-** *Punarnava* significantly decrease the stone forming substance (calcium, oxalate and phosphorous) in the urine [13]

2. **Varuna (*Crataeva nurvala*):**- Main constituent of Varuna stem bark is lupeol which showed remarkable reduction in renal oxalate level and increase in antioxidant status ^[14]. In another study showed Lupeol effective in prevention of vesicle calculi ^[15].
3. **Shigru (*Moringa Oleifera*):**- Many studies showed Shigru have analgesic and antispasmodic action. It also prevents stone forming constituents in the kidneys of calcuogenic rats ^[16].
4. **Pashanabheda (*Bergenia ligulata*):**- It prevents calcium oxalate (CaC₂O₄) crystal formation and decreased antioxidant enzyme activities of the kidneys ^[17].
5. **Kushmanda seeds (*Benincasa hispida* Cong.):**- Kushmanda significantly decrease the levels of oxalate, protein and calcium level in urinary. Elevated levels of sodium, phosphorus, calcium and Creatinine was reduced by Kushmanda seed ^[18]
6. **Kantkari (*Solanum xanthocarpum*):**- The study reported that treatment with Kantkari decreases hyperoxaluria, calcium and uric acid, improves renal function, and also produces antioxidant effects ^[19].
7. **Bakul (*Mimusops Elengi*):**- Alcohol extracts of Bakul showed antiurolithiatic and antioxidant activity. It also reduces deposition of stone forming constituents in the kidneys ^[20].
8. **Jasmine (*Jasminum auriculatum*):**- help in significant reduction of elevated urinary oxalate ^[21].

Discussion and Conclusion

Urolithiasis (*Ashmari roga*) is the stone formed in urinary tract (kidney, ureter, bladder and urethra). Urolithiasis is a common trouble effecting people all around the world and in modern medicine its main treatment is surgery with more rate of recurrence. *Ayurveda*, the ancient science of life is one of the pride and wealth of India. Herbal drugs come out as a miracle for the management and prevention of recurrent urolithiasis. In *Ayurvedic* texts mainly three types of drugs *Mutra-virechaniya* (diuretic) *Ashmarighna Dravya* (lithotriptic) and *Kshara Karma* (alkali therapy) have mentioned for treatment of *Ashmari roga* (Urolithiasis). *Ayurveda* also explains detailed information regarding the dietary habits and lifestyle which is beneficial for *Ashmari* (urolithiasis).

Source of support: Nil

Conflict of interest: None Declared

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