

**CONCEPTUAL STUDY OF MUTRASHMARI WITH SPECIAL
REFERENCE TO UROLITHIASIS****Chandan Kumar Pathak^{1*}, Anant Saznam², Haider Ali³ and Deepali Sundari Verma⁴**

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ABSTRACT

Ashmari is one of the dreadful diseases described by Acharya Sushruta. *Mutrashmari* (Urinary Stone) is most common disease of urinary system. Mutrashmari is a mutravaha shroto disease. Mutrashmari is more serious and is included in the ashtamahagada rogas (Eight grave diseases mentioned in Brihatrayi- the three major classical texts of Ayurveda). Nidanam, purvarupam, rupam, samprapti and upashayam are called as Nidanapanchaka or five pathological factors mentioned in Ayurveda for eliciting a disease. Main nidana of mutrashmari is asamsodhana seela i.e., absence of evacuative measures or cleansing procedures in the body. Many Acharyas have explained purvarupas of ashmari. On the basis of rupa and lakshana (Symptoms) Acharyas classified it as vataja, pittaja, kaphaja and sukraja. Samprapti of mutrashmari is the series of changes that takes place from the commencement of nidana till manifestation of the disease. Upashayam is explained as the treatment and pathya (Healthy Food and Regimen)

for mutrashmari. Rupa and lakshana of mutrashmari is similar to Urolithiasis.

KEYWORDS: Mutrashmari, Urolithiasis, Nidanapanchaka.

INTRODUCTION

Mutrashmari (Urinary Stone) is most common disease of urinary system. As per classics Ashmari is included in *Ashtomahagada* (Eight Dreadful Diseases) due to its notorious nature and reluctant to cure.^[1] It is the third most common affliction of the urinary tract, exceeded only by UTI and BPH.^[2] Description of Ashmari is found in almost all *Samhitas* of *Ayurveda* for eg. either as a type of *Mootraghata* (*Acharya Charaka*)^[3] or as a separate disease (*Acharya Sushruta*).^[4] *Acharya Sushruta*, father of plastic surgery, has described *Mutrashmari* first time in details including etiological factors, classifications, symptomatology, pathophysiology, complication & its management by drugs, para-surgical therapy as well as surgical management in a most scientific manner. The process of urinary stone formation as described by *Acharya Sushruta* is as follows-

तत्रासंशोधनशीलस्यापथ्यकारिणः प्रकुपितः श्लेष्मा मूत्रसंपृक्तोऽनुप्रविश्य बस्तिमश्मरीं जनयति ।^[5]

The *Kapha* of person who neglects to cleanse (*Samsodhana*) the 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 travel into the urinary bladder where it becomes saturated with the stone forming substances and gives rise to the formation of concretion or gravels to pass through the urine. So, an exuberance of deranged *Kapha Dosha* should be taken in to consideration as the underlying cause of *Mutrashmari*.

Acharya Sushruta described various medicines as well as surgical intervention for *Ashmari*. Medicinal treatment is advised to be undertaken in the early stages of the disease. Indication of surgical management has been recommended along with a note of caution regarding its complications.^[6] Surgical treatment has to be undertaken only on failure of conservative treatment and when death becomes inevitable as per the *Sushruta*.

As per *Ayurveda* medicinal treatment includes use of various *Ghrita*, *Kwatha*, *Churna*, *Kshar Dravyas* etc.^[7]

Modern science emphasizes on various factors like heredity, age, sex, metabolic disorders, sedentary life style, dehydration, mineral content of water, nutritional deficiency etc. for urinary stone formation. Urolithiasis causes pain, loss of working time, medical expenses, need for hospitalization and an infrequent cause of renal failure. 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^[8] etc. But even after surgery there are high chances of recurrence because urinary stones have peculiar tendency of recurrence.

The prevalence and incidence of urolithiasis still is a major urinary problem facing by the society across the world. The epidemiology of this disease differs according to geographic distribution of population in terms of prevalence, incidence, age, sex distribution, stone composition and stone location etc. Race, diet and climatic factors also influence the prevalence of this disease. In developing countries like India prevalence of urolithiasis is increasing day by day.

Nidana

Nidana includes all the etiological factors of a disease. The knowledge of Nidana is helpful for the proper diagnosis, prevention and treatment of disease. Sushruta has described the causative factors of Ashmari separately, while Charaka and Kashyapa included it under Mutrakrichchhra.

According to sushruta

There are two main Nidanas of Ashmari, Asamshodhana and Apathya sevana.

‘तत्रासंशोधनशीलस्यापव्यकारिणः प्रकुपितः श्लेष्मा मूत्रसंपृक्तोऽनुप्रविश्य वस्तिमश्मरीं जनयति’^[9]

Asamshodhanasheela

Who do not undergo Shodhana therapy called as Asamshodhanasheela. Acharya has mentioned specific Shodhana measures according to seasons as natural accumulation of Doshas are take place like Chaya of Vata, Pitta and Kapha occur in Grishma, Varsha and Shishira Ritu respectively.^[10] Due to the lack of proper Shodhana measures, the Kitta Bhaga of digested food as well as accumulated Doshas precipitate in the urinary system contributing to the formation of Ashmari.

Apathya sevana

It means taking undesirable and unsuitable foods. Due to Apathya Sevana vitiation of Doshas and Khavaigunya in Mutravaha Srotasa take place leads to precipitation of vitiated Doshas in Mutravaha Srotasa and Ashmari formation.

According to charaka

व्यायामतीक्ष्णौषधरुक्षमद्यप्रसङ्गनित्यद्रुतपृष्ठयानात्।

आनूपमत्स्याध्यशनादजीर्णात्

स्युर्मूत्रकृच्छ्रणि नृणामिहाष्टौ ॥^[11]

- Ati Vyayama
- Tikshna Aushadha
- Ruksha Madya Sevana
- Drutaprishthayana
- Anupamamsa Sevana
- Matsya Sevana
- Adhyashana
- Ajirna Bhojana

Ethnicity, race, genetics, age and sex are the main intrinsic factors for Urolithiasis. Urolithiasis is more present in white Caucasians. South Americans and South Indians are less prone to this disease. Third to fifth decades of age are more prone to Urolithiasis. Due to low testosterone level and effect of oestrogen, it is three times less common in females.^[12]

Presence of the Urolithiasis is common in mountainous, desert or tropical areas. South east area of USA, Sudan to Philippines in Afro Asia, Amritsar to Uttar Pradesh and Jamnagar to Jabalpur in India are main stone belts in the world. Ammonium urate stones in the urinary bladder are associated with malnutrition. Obesity predisposes to calcium containing stones in the upper urinary tract.^[13]

Vitamin A Deficiency, excessive administration of Vitamin D, use of combined calcium and vitamin D and highly rich protein foods are the major causes of Urolithiasis. Diet rich in purines (Red meat, fish), Calcium (Milk) and oxalate (Cocoa, beer, tea) leads to uric acid stones, calcium stones and oxalate stones respectively. Dehydration increases stone formation. Absence of Zinc and presence of calcium sulphate in water may lead to stone formation.

Physical changes in urine, urinary stasis and hyper-excretion of relatively insoluble urinary constituents, metabolic factors and foreign bodies like pieces of catheter are the predisposing factors.^[14]

Samprapti of mutrashmari

Samprapti is the process by which a particular disease is manifested. According to Vagbhatta, the sequential vitiation of Dhatus initiated by the vitiated Doshas due to Nidana Sevana, is termed as Samprapti.^[15] In another words it can be says that the process which starts from Sanchayavastha of Doshas to the Vyadhi-vyaktavastha is termed as Samprapti. It is possible to assess the Doshas, Dushyas, Srotodushti – Khavaigunya, state of Agni etc. through Samprapti. Another importance of Samprapti in Ayurvedic treatment process is “Samprapti Vighatanam Eva Chikitsa”.

According to acharya sushruta

‘तत्रासंशोधनशीलस्यापव्यकारिणः प्रकुपितः श्लेष्मा मूत्रसंपृक्तोऽनुप्रविश्य वस्तिमश्मरीं जनयति।’^[16]

The Kapha of person who neglects to cleanse (Samsodhana) the 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 travel into the urinary bladder. Here, it becomes saturated with the stone forming substances and gives rise to the formation of concretion or gravels to pass through the urine. So, an exuberance of deranged Kapha Dosha should be taken in to consideration as the underlying cause of Mutrashmari.

Acharya Sushruta, Charaka and Vagbhatta have the similar opinion and explained the process of Ashmari formation by giving different examples as mentioned below-

Sushruta's view

अप्सु स्वच्छा (स्था) स्वपि यथा निषिकतासु नवे घटे। कालान्तरेण पङ्कः स्यादश्मरीसंभवस्तथा।^[17]

As clear water kept in a new pitcher gets muddy in due course of time, similarly calculus is formed in Basti when urine gets reserved.

संहन्त्यापो यथा दिव्या मारुतोऽग्निश्च वैद्युतः।

तद्वद्वलासं बस्तिस्थमूष्मा संहन्ति सानिलः॥^[18]

Acharya Sushruta has given another example to explain the Ashmari formation. The way, in which rain water became freezes to ice by air and electricity produced by thunder, similarly Pitta located in the bladder, in conjugation of Vayu consolidates Kapha to form Ashmari.

Pathogenesis of urolithiasis

When the delicate balance between solubility and precipitation of salts loses it cause urinary stone formation. Conservation of water and excretion of low soluble materials by kidneys must be balanced during adaptation to diet, climate and activity; otherwise, it may lead to Urolithiasis. Super saturation and crystallisation play an important role in stone formation. Dehydration and over excretion of calcium, oxalate, phosphate, cystine or uric acid may cause super saturation of urine. If the urine pH is below 5.5, uric acid crystals will be predominant whereas phosphate crystals are rare.

Purvarupa of ashmari

The signs and symptoms which are certainly suggestive of a future disease are known as Purvarupa. These are helpful in making diagnosis at the time of differential diagnosis and in treatment of the disease in the early stage. According to Sushruta, the Purvarupa of Ashmari are—

तासां पूर्वरूपाणि ज्वरो वस्तिपीडारोचकौ मूत्रकृच्छ्रम् बस्तिशिरोमुष्कशेफसां वेदना कृच्छ्रावसादो
वस्तगन्धित्वं मूत्रस्येति॥

यथास्ववेदनावर्णं दुष्टं सान्द्रमथाविलम्। पूर्वरूपेऽश्मनः कृच्छ्रान्मूत्रं सृजति मानवः ॥^[19]

Rupa of ashmari

Signs and symptoms of a disease when fully manifested are called RUPA which are helpful to diagnose a disease. According to Acharya Sushruta RUPA of Ashmari are –

अथ जातासु नाभिवस्तिसेवनीमेहनेष्वन्यतमस्मिन् मेहतो वेदना मूत्रधारासङ्गः सरुधिरमूत्रता
मूत्रविकिरणं गोमेदकप्रकाशमत्याविलं ससिकतं विसृजति

धावनलङ्घनप्लवनपृष्ठयानोष्णाध्वगमनैश्चास्य वेदना भवन्ति।^[20]

Clinical features of urolithiasis

Some stones are quiescent calculus. They are symptomless and gradually increase in size with the destruction of the renal parenchyma. Usually, phosphate stones are quiescent calculus. Fixed renal pain, ureteric colic and referred pain are the three types of pain normally noticed in Urolithiasis. Fixed renal pain is a dull flank pain and gets worse on movement, particularly walking up the stairs and during jolting. Ureteric colic is an agonising pain which radiates from the loin to groin, accompanied by profuse sweating, nausea and vomiting.

Referred pain is a rare symptom. It is sometimes referred to all over the abdomen and to opposite kidney, known as renorectal reflex. Hydronephrosis and occasional haematuria are the common symptoms. Tenderness, muscle rigidity and swelling are the main physical signs.^[21]

Classification of ashmari

Ashmari is mainly classified into kaphaja, pittaja, vataja and sukraja.

Lakshanas of different ashmaris

Shleshmaja ashmari

This type of stone is white, slimy and big in size like a hen's egg (Kukkutanda) and having a colour of Madhuka flower.^[22]

Pittaja ashmari

These types of Ashmari are reddish, yellowish, black or honey like colour and appear like Bhallataka seed.^[23]

Vataja ashmari

These types of stones are dusky in colour, hard, irregular, rough and nodular like Kadamba flower.^[24]

Shukraja ashmari

The special characteristic feature of this type of Ashmari is that it can easily be dissolved by applying mild pressure by hands over it.^[25]

Classification of urolithiasis

Urinary stones can be classified as small and large on the basis of its size. Based on X-ray characteristics, stones are radio opaque, poor radio opaque and radiolucent. Non-infection stones, infection stones, genetic stones and drug induced stones are aetiological classification of stones. On the basis of stone composition, it may be chemical or of mineral composition. Based on the origin, stones are classified as primary stones and secondary stones.^[26]

A- Primary stones

1. Oxalate calculus

This type of stone is usually single and is extremely hard. It is dark in colour due to staining with altered blood precipitated on its surface. It is spiky that means it is covered with sharp

projections, which cause bleeding due to injury to the adjacent tissues. This stone is popularly known as Mulberry stone.

Due to high calcium content, it casts an exceptionally good shadow radiologically (radio-opaque). The rough surface may also be evident in X-ray.

2. Uric Acid and Urate calculi

In children, stones of ammonium and sodium urate are sometimes found. These stones are yellow, soft and friable. But unfortunately, if these do not contain some impurities like calcium oxalate, they do not become radio-opaque, so may not be visible on straight X-ray.

3. Cystine calculi

Cystine calculi usually occur in multiple numbers. These calculi are soft and yellow or pink in colour. When these are exposed outside the hue gradually changes to green. Pure cystine calculi are not radio-opaque, but as they contain sulphur, they are usually radio-opaque. Such stones also occur in acidic urine.

4. Xanthine calculi

These are extremely rare. These are smooth, round and brick red in colour. On cut surface it shows lamellar appearance.

5. Indigo calculi

These are so uncommon that these are merely academic curiosities. These are blue in colour and are derived from indican, formed by decomposition of tryptophan in the intestine and found in the urine.

B- Secondary stones

1. Phosphate calculus

Majority of these stones are composed of calcium phosphate, though a few are composed of ammonium magnesium phosphate, known as “triple phosphate”. Such calculus is usually dirty white in colour. This type of calculus usually occurs in infected urine and hence it is called secondary calculus. Urine is often alkaline and such stone enlarges rapidly and gradually and fills up the pelvis and renal calyces to take up the shape of “stag horn calculi”. As this stone gives little symptom due to its smooth surface but it enlarges rapidly.

On cut section it shows laminated appearance as the crystalloid are deposited in layers. These stones are usually radio-opaque as these contain calcium. But it is also due to its large size rather than density that it is radio-opaque.

2. Mixed stones

When the urine becomes infected deposits of phosphate occur on the surface of calcium oxalate stones. Such stones also occur in alkaline urine.

Sadhyaasadyata (Prognosis) of mutrashmari

It can be cured with drugs when newly arisen; but in advanced stages it requires surgical operation.^[27] Prolonged treatment may be advised in certain conditions. Ashmari associated with complications, like swelling in the umbilical and genital regions, severe pain, retention of urine and sandy urine do not have treatment according to classical Ayurvedic texts. Children may have good prognosis. Ashmari is one among the Ashtamahagada rogas, according to Brihatrayi, which are difficult to treat and do not have a good prognosis.

Upadrava of mutrashmari

If the ashmari is broken into small pieces by vata, Sarkara or gravels will be coming out along with the urine. This condition is known as Mutra sarkara.^[28]

Chikitsa of mutrashmari

Chikitsa are of mainly two types, Samanya chikitsa and Vishesha chikitsa.

Samanya chikitsa

Samanya chikitsa is 'Nidana Parivarjana'. As ashmari is a kapha predominant disease, the measures aggravating kapha are to be avoided and the treatment to control kapha is to be followed.

Vishesha chikitsa

In the early stages it can be managed with medicines, but in later stages, surgery is the treatment of choice.^[29]

Aushadha chikitsa

Ashmari has been mentioned as a fatal and grave disorder. It is mandatory to diagnose and treat the disease at its early stage. Sushruta has advised to treat the disease in the Purvarupa

stage itself. A newly formed Ashmari is curable with medicines while big or chronic calculi should be treated with surgical interventions.

He has prescribed snehapana in the first stage of ashmari. Alkalies, gruels, soups, decoctions, milk and foods prepared from vata alleviating groups, kapha alleviating groups and pitta alleviating groups should be administered for vataja, kaphaja and pittaja ashmari respectively.

Avagahasweda

Avagahaswedana is sweda karma adopted in mutrasaya rogas.

Shastra chikitsa

If mutrashmari cannot be managed by conventional treatments, surgical operation is suggested in Brihat trayees. Even after the surgical wound is healed, the patient should abstain from sex, riding animals, climbing of hills and trees and swimming up to one year according to Ayurvedic classics.

Sodhana chikitsa

Sodhana chikitsas like vamana, virechana and basti are advised by all Acharyas. Sushruta acharya advised Uttara basti in the management of bladder stones.

Kshara chikitsa

Acharya Sushruta has advocated preparing ksharas from the drugs preparing for ghrita.

Pathyapathya

Pathya^[30]

Langhana, Vamana, Virechana, Basti, Avagaha Sweda are useful in Ashmari. The dietetic items are Yava, Kulattha, Purana Shali, Mudga, flesh of Krauncha bird, ginger, Tanduliyaka, Kushmanda, Yava Kshara and all the Vatanashaka Ahara. These items are mostly Vatanulomana and Mutrala. Further, it is mentioned to take Gokshura, Yava Kshara, Varuna, Punarnava and Pashanabheda as medicine.

Apathya^[31]

Ativyayama (Excessive practice), Adhyashana, Samashana, Shita, Snigdha, Guru, Madhura Ahara, Vegavarodha are treated as Apathya for Ashmari. Sushka Ahara, Kapitha, Jamuna, Bisamrinala, dry dates, Kashaya Rasa Sevana etc. are also considered as Apathya for Ashmari.

Useful recommendation in ashmari

- **Cereals:** Yava, old rice (Shali)
- **Pulses:** Kulattha
- **Vegetables:** Kushmanda, cucumber, Chirabhat, tender shoot of bamboo.
- **Fruits:** Cucumber, Chirabhat, Amlavetasa.
- **Fish and Meat:** Meat of animals from any dry region, sea tortoise.
- **Food Preparation and Drinks:** Jivanti, Nimbu, Saindhava, Kulattha soup, alcohol.
- **Other measures:** Emesis, fasting, induction of sweating, enema, hot water bath and purgation etc. are advised.

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