



Review Article

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CONCEPTUAL STUDY OF MUTRASHMARI WITH SPECIAL REFERENCE TO UROLITHIASIS ON THE BASIS OF NIDANAPANCHAKA

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ABSTRACT

Mutrashmari is a mutravaha shroto disease. Among the mutravaha shroto diseases, 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, Renal calculi

INTRODUCTION

Urolithiasis is an increasing urological disorder of human health and common in industrialized nations. It affects about 12% of the world population.¹ Urolithiasis means the presence of stones or calculus in the urinary system. Egyptian mummies dated 4800 BC are the earliest recorded examples for detected bladder and kidney stones. "I will not cut even for the stone but leave such procedures to the practitioners of the craft"- this is a sentence in the famous Hippocrates oath.² Urolithiasis is originated from the Greek words, 'ouron' for urine and lithos for stone. Mutrashmari mentioned in Ayurveda can be broadly compared to Urolithiasis.

Definition of mutrashmari is "Ashmari mootra kricha syat" by Amarakosha and "Ashmari mootra kricha bheda" by Ayurveda shabdakosha. "Ashmanam rati dahati ya ashmari", Ashma means stone, rati means to present. It means the formation and presentation of a substance like stone.

Nidana

Absence of evacuative measures (asamsodhana seela) and use of unwholesome items aggravates kapha. The aggravated kapha is mixed with urine and produces calculus. Major Dosha predominance of ashmari is kapha. Kapha vitiating Ahara and vihara are the viprakrushta nidana of ashmari.³ Ashmari is included under mootrakrichra by Acharya Charaka, so mootrakrichra nidanas are also the nidanas of ashmari. According to Vagbhata Acharya, Mutravegavarodha and sukla vegarodha (forceful suppression of urine and semen) causes ashmari.⁴

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.⁵

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 predispose to calcium containing stones in the upper urinary tract.⁶

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.⁷

Samprapti of Mutrashmari

Ahara paka (digestion) leads to the formation of ahara rasa and kitta bhaga. Prasadakhya dhatus are formed from the ahara rasa and malakhya dhatus from the kitta bhaga. The kitta bhagas of digestion are eliminated from the body by means of excretory

system. As natural accumulation of doshas is there in a peculiar season, Acharyas insists specific shodhana measures according to different seasons. Due to lack of proper shodhana, the kitta bhagas of digestion as well as the accumulated doshas precipitate in the system and later form mutrashmari.⁸ When the aggravated vayu dries up the semen, urine, pitta and kapha located in the mutravahasrotas the stones are formed gradually in the bladder, as gorochana formed in bile inside the gallbladder of the cattle.⁹

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

Sushruta has mentioned about Samanya and Vishesh Purvarupa. Different Ayurvedic classics have mentioned about prodromal signs and symptoms. The common purvarupas are enlisted in Table 1. But Charaka has not mentioned about specific Purvarupa like other Acharyas.

Rupa of Ashmari

Signs and symptoms mentioned in the classical Ayurveda textbooks are enlisted in Table 2.

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.¹²

Classification of Ashmari

Ashmari is mainly classified into kaphaja, pittaja, vataja and sukraja. Charaka classified it as Mridu and Katina.

Lakshanas of different ashmaris

The lakshanas of kaphaja, pittaja, vataja and sukraja are different from each other. They are shown in Table 3.

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.¹⁷

A. Primary stones

Primary stones appear in apparently healthy urinary tract and are formed in acidic urine. Oxalate stones, Uric acid stones, Cystine calculi, Xanthine calculi and Indigo calculi are called primary stones.¹⁸ The physical characteristics and radiological features are enlisted in Table 4.

B. Secondary stones

Secondary stones are formed as a result of inflammation. The causative agent is Urea splitting organisms. Secondary stones appearance in alkaline urine.²⁰ The physical characteristics and radiological features are enlisted in Table 4.

The vatika, paittika and kaphaja ashmari resemble calcium oxalate, uric acid and phosphate calculi respectively.²²

Sadhyaasadyata (Prognosis) of Mutrashmari

It can be cured with drugs when newly arisen; but in advanced stages it requires surgical operation.²³ 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.²⁴

Chikitsa of Mutrashmari

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

Vishesh chikitsa

In the early stages it can be managed with medicines, but in later stages, surgery is the treatment of choice.²⁵

Aushadha chikitsa

Acharya Sushruta has advised to treat the disease in the Purvarupa itself. He has prescribed snehapana in the first stage of ashmari. Alkalis, 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 ghrta.

Pathyapathya of Mutrashmari

Yava, Kulatha, Puranasali, Mudga, Godhuma, Dhanwamisham, Tanduleeyam, Jeernakooshmandam, Ardrakam, Yava shookam and all the vata nashaka aharas are pathya for ashmari patients. Most of these items have Mutra virechana guna. Apathya includes exercises, suppression of manifested natural urges, dry and unctuous articles of food, exposure to strong wind, strong rays of the sun, sexual intercourse, Kharjura, Saluka, Kapitha, Jambu and articles having astringent taste.²⁶

Table 1: Purvarupas of ashmari

S. No.	Purvarupa	A.H	A.S	Su. S	M.N	B.P	Y.R.	G.N
1	Basti pida	+	+	+	+	+	+	+
2	Aruchi	+	+	+	+	+	+	+
3	Mutrakruchra	+	+	+	+	+	+	+
4	Jwara	+	+	+	+	+	+	+
5	Bastagandhatwa	+	+	+	+	+	+	+
6	Basti adhma	+	+	-	+	+	-	-
7	Bastisiro vedana	-	+	+	-	-	-	-
8	Mushka vedana	-	+	+	-	-	-	-
9	Sepha vedana	-	-	+	-	-	-	-
10	Avasada	-	-	+	-	-	-	-
11	Sandra mutra	-	-	+	-	-	-	-
12	Avila mutra	-	-	+	-	-	-	- ¹⁰

Table 2: Rupa of ashmari

S. No.	Rupa	A.H	A.S	C.S	Su. S	H.S	K.S	M.N	B.P	Y.R
1	Nabhi vedana	+	+	-	+	+	-	+	+	+
2	Basthi vedana	+	+	+	+	+	-	+	+	+
3	Sevani vedana	+	+	+	+	+	-	+	+	+
4	Gomedaparakasa	+	+	-	+	-	-	+	+	+
5	Sarudhiramutra	+	+	+	+	-	-	+	+	+
6	Mutra rodha	+	-	-	+	+	-	+	+	+
7	Mehana vedana	-	-	+	+	+	-	-	-	-
8	Mutradhara sanga	-	+	-	+	-	-	-	-	-
9	Mutra vikirana	-	-	-	+	-	-	-	-	-
10	Atyavilam	-	+	-	+	-	-	-	-	-
11	Sasiktham	-	+	-	+	-	+	+	+	+
12	Pain during Dhavan, plavan	-	+	-	+	-	-	-	-	-
13	Vishirna dhara	+	-	+	-	-	-	-	-	-
14	Mrudanti medra	-	-	+	-	-	-	-	-	-
15	Kasamana	-	-	-	-	-	+	-	-	-
16	Atimutratriam	-	-	-	-	-	+	+	-	-
17	Pratatam roditi	-	-	-	-	-	+	-	-	- ¹¹

Table 3: Lakshanas of different Ashmaris

Kaphaja ashmari ¹³	Pittaja ashmari ¹⁴	Vataja ashmari ¹⁵	Suklaja ashmari ¹⁶
Dalana, bhedana and todana type of pain. Bladder becomes guru and sheeta	Ushyta, chushyata dahyada and pachyata type pain in the bladder.	Teevra vedana, Patient bites his teeth, presses umbilicus, frequently rubs penis, touches anus, passes flatus, feels burning sensation while passing urine, wind, urine and feces are excreted with difficulty	Obstruction in the urinary passage and causes dysuria
White unctuous, large, simulating hen's eggs colour of madhuka flowers.	Reddish, yellowish, black like kernel of bhallataka colour of honey.	Blackish, hard, uneven, rough and thorny Kadamba flowers.	Pressing on it gets dissolved in that place.
Occurs in all age	Occurs in all age	Occurs in all age	Occurs in adult only.

Table 4: The physical characteristics and radiological features of primary stones

Oxalate calculi	Hard, dark in colour and spiky in look	radio lucent	
Uric acid stones	Smooth, colour varies from yellow to dark brown and has moderate hardness.	radiolucent	
Cystine calculi	Soft and yellow or pink in colour and changes to green when these are exposed outside.	radio opaque	
Xanthine calculi	Smooth, round, brick red in colour	radiolucent	Very rare
Indigo calculi	Blue in colour. This is derived from indican, formed by decomposition of tryptophan in the intestine		Very rare ¹⁹

Table 5: The physical characteristics and radiological features

1. Phosphate stones	Composed of calcium phosphate and calcium ammonium magnesium phosphate (triple phosphate)	Smooth, soft friable, dirty white in colour and have shape of stag horn calculus.	radio opaque
2. Mixed stones	Phosphate stone is occurring as covering of a primary stone known as mixed stones ²¹		

CONCLUSION

Urolithiasis means the presence of stone or calculus in the urinary system. Mutrashmari is the presence of stone in the mutravahasrotas. Mutrashmari is included under eight grave diseases mentioned by Brihatrayi. Urolithiasis has both intrinsic and extrinsic causes. Different Acharyas opined that as amsodhanaseela, mutravegarodha and sukla vegarodha are the major causes for it. Except Charaka all other Acharyas mentioned about Vishsha Purvarupa of mutrashmari. Rupa and Samprapti are detailed in the classics. Urolithiasis is classified on the basis of size, X-ray characteristics, aetiological basis, stone composition and origin. Oxalate calculus, Uric acid stones, Cystine calculi, Xanthine calculi and Indigo calculi are examples for primary stones. Phosphate and mixed stones are examples for secondary stones. Conservatory management and surgery are advised as treatment.

ABBREVIATIONS

A.H. – Ashtanga Hridaya
 A.S. – Ashtanga Sangraha
 B.P. – Bhava Prakasha
 C.S. – Charaka Samhita
 G.N. – Gadanigraha
 H.S. – Haareeta Samhita
 K.S. – Kashyapa Samhita
 M.N. – Madhava Nidana
 Su. S – Sushruta Samhita
 Y. R. – Yogaratnakara

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