

A REVIEW ON CLASSIFICATION OF UROLITHIASIS AND MUTRASHMARI

Gajanana Hegde¹, Jyoti^{2*}

1. Professor and Head, Dept. of PG studies in Kayachikitsa, Govt. Ayurvedic Medical College, Mysore, Karnataka, India.
2. PG Scholar, Dept. of PG studies in Kayachikitsa, Govt. Ayurvedic Medical College, Mysore, Karnataka, India.

Received: 01-11-2015; Revised: 28-11-2015; Accepted: 11-12-2015

Abstract

Urolithiasis is the third most common affliction of the urinary tract, after Urinary tract infection and Benign prostatic hypertrophy. In Ayurveda Urolithiasis is explained as Mutrashmari; which is considered as one among the Ashta Mahagada. The lakshanas of Mutrashmari explained in Ayurvedic texts resembles the signs and symptoms of Urolithiasis mentioned in the contemporary system of medicine. In Ayurvedic literatures the bheda of Mutrashmari is based on the lakshanas of Dosha and Ashma. In the same way, the classification of urolithiasis in western system of medicine is based on the symptoms and morphology of the calculus. This article is aimed at review on classification of Urolithiasis and Mutrashmari and comparing the same, which may help in accurate clinical diagnosis.

Key words: Mutrashmari; Urolithiasis; Classification.

*Address for correspondence:

Dr. Jyoti,

PG Scholar, Dept. of PG studies in Kayachikita,

Govt. Ayurvedic Medical College,

Mysore, Karnataka, India – 570 001

E-mail: drjyotichavan970@gmail.com

Cite This Article

Gajanana Hegde, Jyoti. A review on classification of Urolithiasis and Mutrashmari.
Ayurpharm Int J Ayur Alli Sci. 2015;4(12):220-225.

INTRODUCTION

Urolithiasis is a condition characterised by the formation or presence of calculi in the urinary tract.^[1] A calculus is polycrystalline aggregates composed of varying amounts of crystalloid and organic matrix. Urinary calculus is a stone like body composed of urinary salts bound together by a colloid matrix of organic materials. The organic matrix is a mixture of muco-proteins and muco-polysaccharides. It consists of a nucleus around which concentric layers of urinary salts are deposited.^[2] Urolithiasis is common worldwide. Globally, its incidence is increasing. An analysis from India shows an increase from 0.9% to 9.0% over 20 years. There is geographical variation in stone composition. The analysis from north India shows calcium oxalate 93.4% (monohydrate 80%, dihydrate 20%), mixed (calcium oxalate, phosphate, urate) 2.76%, struvite (magnesium, ammonium, phosphate) 1.42%, uric acid 0.95%, cystine 0.05%. In India, maximum prevalence occurs in Jammu and Kashmir, Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh and Gujarat (stone belt of India).^[3]

According to the Ayurvedic classics the structure which resembles stone is called as Ashmari^[4] or the one which is converted into a hard mass resembling a stone (ashma) is called as Ashmari.^[5]

Ashmari is the stone formed in the srotas or channel especially in the mutramarga.^[6] All ashmari's are invariably tridosha janya. However, a classification of ashmari is made based on the predominance of dosha. Ashmari is classified into four types viz. vatashmari, pittashmari, shleshmashmari, shukrashmari.

Among the four types, three belong to the category of mutrashmari and one is shukrashmari. The nature of pain and other symptoms vary depending upon the type of ashmari. The shape, size and nature of ashmari

depends on to which doshic subtypes it belongs.

Sushruta samhita^[7] classified the disease Ashmari into 4 types they are - vatashmari, pittashmari, shleshmashmari and shukrashmari. Ashtanga hrudaya,^[8] Ashtanga sangraha,^[9] Madhva nidana,^[10] Bhava prakasha,^[11] Sharangadhara samhita,^[12] Yogaratnakara^[13] have classified the disease Ashmari similar to that of sushruta samhita.

Charak samhita^[14] has described the Mutrashmari under Mutrakrichra and on the basis of consistency, classified shukraja, Pittaja and Kaphaja varieties as Mrudu Ashmari, whereas Vataja variety of Ashmari as Kathina Ashmari.

Classification of urinary calculi

There are different types of urinary calculi mentioned in contemporary science based on pathogenesis, based on composition and based on location.

Based on pathogenesis

- 1) Primary stones
- 2) Secondary stones^[15]

Primary Stones

Are those which appear apparently in healthy urinary tract without any antecedent inflammation? These stones are usually formed in acid urine and usually consist of Calcium oxalate, Uric acid, Urates, Cystine, Xanthine or Calcium carbonate.

Secondary stones

They are usually formed as a result of inflammation. The urine is usually alkaline; urea splitting organisms are most often the causative factors. Secondary stones are mostly composed of calcium ammonium magnesium phosphate (Triple phosphate).

Based on composition

Calcium stone

Calcium stones are Dirty white (Calcium Phosphate) or Dirty brown (Calcium oxalate) in colour. They are Composed of Calcium oxalate, Calcium oxalate monohydrate, Calcium oxalate dehydrate, Calcium Phosphate, Calcium hydroxy appetite and Brushite .have Sharp projections, Rough surface and is usually single in number. Calcium oxalate stone presents with more symptoms, Calcium Phosphate stone presents with few symptom. These stones are usually radio opaque. The incidence of these calculi is 75-85% of total calculi.^{[16][17]}

Uric acid and urate stones

Uric acid and urate stones are Red, Orange or from yellow to reddish brown. Are Composed of Uric acid, Ammonium, Sodium urate .The Incidence of these calculi is 5-8% of total renal calculi. These stones are usually Multiple hard and have smooth surface .these May be asymptomatic. Radiologically these stones are radiolucent.

Cystine

Cystine stones are Lemon yellow in colour, composed of cystine. The incidence of it is 1% of total renal calculi. It will be flat and hard, translucent, hexagonal plate. These stones may be May be asymptomatic many a times Radiologically are radio opaque.

Struvite

Struvite stones have white colour and are composed of Calcium phosphate & Triple phosphate. The Incidence is 10/15% of total renal calculi. These stones have Rectangular prisms resembles with coffin lids and are dangerous. Radiologically is radio opaque.

Based on location

Renal calculus

The patient will have Extreme, sharp pain in the loin that will not subside, Blood in the urine, Nausea and vomiting, Cloudy or odorous urine, Frequent urination , A feeling of burning while patient urinates, Fever and chills.^[18]

Ureteric calculus

Radiating, colicky, agonising pain, Rather constant ache in the costovertebral area and flank, Nausea and vomiting may be associated, Blood mixed urine, Urgency and frequency of urination, Chills.

Vesical calculus

Increased frequency, Pain and discomfort at the end of micturition, terminal haematuria, Dysuria, Acute retention of urine.

Urethral calculus

In males

Patient may experience a sudden stoppage of urine while urinating and thereby unable to empty the bladder. Dribbling also occurs. Pain due to the stone in urethra may be rather severe and may radiate to the glans penis.

In females

The symptoms of urethral diverticulum with or without calculus are those of infection of lower urinary tract including frequency, dysuria, nocturia, pyuria and in rare haematuria. Dyspaerunia is a prominent symptom. Occasional discharge of pus through urethra may occur.

Types of ashmari

Vataja ashmari

Vataja ashmari presents with the lakshanas like severe pain due to obstruction to the flow of urine, due to excessive pain the patient clenches his teeth, squeezes the umbilical region, rubs the penis, touches the perineal region often and cries with agony, patient feels burning sensation and passes flatus, urine and stool with difficulty while straining for micturition.

The vataja ashmari possess Shyava varna and it will be Parusha, Khara, Vishama and hard studded with thorns like kadamba pushpa.

Pittaja ashmari

The lakshanas of pittaja ashmari explained in sushruta samhita are; obstruction to the flow of urine causes warmth, sucking, burning or throbbing sensation in basti and this result in ushnavata lakshana. The ushnavata lakshanas are burning sensation in basti, medra & guda.

The Pittaja ashmari possess Rakta varna, peeta varna, krishna varna or madhu varna and resembles Bhallataka asthi.

Kaphaja ashmari

According to Sushruta samhita the lakshanas of kaphaja ashmari are; obstruction to the flow of urine causes cutting, incising or pricking pain, heaviness and cold sensation in basti.

The kaphaja ashmari possess shweta or Madhuka pushpa varna and it will be Mahath, Snigdha & resembles Kukkutanda.

Shukrashmari

The lakshanas of shukrashmari explained in sushruta samhita are burning micturition, painful micturition, pain in the basti and swelling in the vrushana.

This type of ashmari disappears by just pressure in that region. The other Ayurvedic classics have mentioned similar lakshanas of shukrashmari, as mentioned in sushruta samhita.

DISCUSSION

By above review it is clear about various considerations of Ashmari. The symptoms mentioned under calcium oxalate stone mimic with that of Vataja Ashmari mentioned in authoritative books of Ayurveda. Uric acid stones, Urate Calculus appear yellowish brown in colour which resembles that of authoritative version of Pittaja Ashmari. Colour changes of cystine stone initially yellow and green on exposure to external atmosphere again compares with basic colour representation of Pittaja ashmari. Phosphate stone impart white colour, smooth surface, larger size, lesser pain compared to other types of calculi, correlates with classical features of Kaphaja ashmari. (Table 1)

A single stone made of oxalate, uric acid or phosphate may have different locations while passing out, therefore only based on location and without considering the morphology one cannot classify stone according to dosha involvement. Hence based on symptoms vataja ashmari may be ureteric calculi, pittaja ashmari may be vesicle calculi and kaphaja ashmari may be renal calculi but not vice versa. (Table 2)

Discussion on Shukrashmari

This is a rare condition; it can be compared with seminal concretions or the spermolith, which are not seen in ultrasonography or X-ray. Seminal calculi are very fragile in nature and can be crushed by fingers. Even the site of pain also differs from Urolithiasis, in spermolith the pain is mainly at the path of vas deference.

Table 1: Showing the similarity in symptoms

Vataja Ashmari	Ureteric calculus
Tivra vedanam bhavati , Bhrusha peeda	Ureteric colic- The agonizing pain occurs typically at loin and radiates to groin.
Atyartha peedyamano dantaan khadati Nabhi peedayati anisham Nabhi,mehana,guda shula Mrudgati medhran	It starts suddenly and patient moves around to find comfort. The severe colicky intolerable pain originates at loin and radiates to groin. When the stone descends to lower ureter, pain radiates to the testical, labia majora and upper portion of the thigh.
Mehati bindushah	Urgency and frequency of urination
Pittaja Ashmari	Vesical calculus
Pittena dahyate basti, dahyate, pacchate, dushyate iva vedana.	Burning and sucking type of pain(scalding type) occurs when the stone approaches the bladder. A stone impacting very nearer to bladder exactly mimic an acute cystitis.
Kaphaja Ashmari	Fixed renal calculus
Dalyate, bhidyate, suchibiriva vedana, Basti guruta Basti Nisthoda	Dull and constant ache at renal angles Heaviness felt in the region of kidney. Fixed pain which does not radiate.

Table 2: Showing the similarity in morphological appearance

Characteristics	Vataja ashmari	Calcium oxalate stones
Colour	Shyavavarna	Calcium oxalate stones – Produces haematuria resulting in deposition of blood over the stone, giving dark color to the stone.
Surface	Parusha & Kara	Hard, with rough surface
Edges	Vishama	Irregular
Shape	Hard studded with thorns like kadamba pushpa	Calcium oxalate stones have sharp projections
Characteristics	Pittaja ashmari	Uric acid, urate or cystine calculus
Colour	Rakta varna / peetavarna / krishnavarna or madhuvana	Yellowish, Reddish brown
Shape	Ballataka asthi	Hexagonal shape.
Characteristics	Kaphaja ashmari	Phosphate stone
Colour	Sweta, madhuvana, sitavarna, madhuka puspa varnavat, pingala and shuklavarna.	Dirty white, or yellow white.
Size	Mahati	They grow bigger in size in major and minor calyces.
Surface	Snigdha	They are soft
Shape	Kukkutanda pratikasha	round like hens egg, and slowly stag horn stones are formed

CONCLUSION

Based on explanations available from both treatises of Ayurveda and western medical science, it can be concluded that Vataja Ashmari is calcium Oxalate stone, Pittaja Ashmari is uric acid, urate or cystine stone and Kaphaja Ashmari is phosphate stone.

REFERENCES

1. Retrieved from: <http://www.merriam-webster.com/dictionary/Urolithiasis> [Accessed on: [26/11/2015]
2. Das SA. Concise textbook of surgery. 3rd ed. Calcutta: Das publications; 2001. p.1324.
3. Munjal YP. API textbook of medicine, Vol. 2. 9th ed. New Delhi: Jaypee Brothers Medical Publishers. 2012. p.1318.
4. Amarasimha. Amarakosa (Ramasrami commentary of Bhanuji Diksita). 2nd ed. Varanasi: Chaukambha Sanskrit Samsthan; 2006. p. 664.
5. Raja Radhakantadev Bahaddur. Shabdakalpadruma. 2nd ed. Delhi: Naga Publishers; 2003. Dwithiya khanda, p. 315.
6. Joshi VM, Joshi NH, editors. Ayurveda Sabdakosa (Sanskrit-Sanskrit Dictionary), Vol. 1, 2. 1st ed. Mumbai: Maharashtra Rajya Sahitya and Sanskruti Mandal; 1968.
7. Sushruta. Sushruta Samhita (Nibandha Sangraha commentary of Acharya Dalhana), Part 1. Kaviraja Ambikadutta Shastri, editor. 1st ed. Varanasi: Chaukhamba Sanskrit Sansthan; 2007. Purvardha, Nidana sthana, 3/3. p.240.
8. Vagbhata. Astanga Hridaya (Sarvanga Sundara of Arunadatta and Ayurveda Rasayana of hemadri Commentaries). 1st ed. Varanasi: Chaukhamba Surbharati Prakashan; 2007. Nidana sthana, 9/6. p.498.
9. Vagbhata. Astanga Sangraha, Vol. 2. Srikanthamurthy KR, editor. 5th ed. Varanasi: Chaukambha Orientalia; 2005. Nidana sthana, 9/8. p. 200.
10. Madhavakara. Madava Nidana (Madhukosha Sanskrit commentary by Sri Vijaya rakshita and Srikantadutta with Madhava vimarshini Hindi commentary), Vol. 1. Ananthram Sharma, editor. 1st ed. Delhi: Chaukambha Samskruta Pratisthana; 2007. p.506.
11. Bhavamishra. Bhavapraksha Uttardha, Bhrama Shankara Shstry's Vidyotini teeka, Chaukhamba Samskruta Samsthana, Varanasi, 8th edition, Reprint- 2003,37/1, pp-372.
12. Sharangadhara. Sharangadhara Samhita (Dipika Hindi commentary by Brahmanand Tripathy). 9th ed. Varanasi: Chaukambha Surbharati Prakashan; 2013. Purva khanda, 7/59. p.69.
13. Anonymous. Yogaratnakara (Uttardha with Vidyotini Hindi commentary by Vaidya Lakshmipati Shastri). Bramha Shankar Shastri, editor. 6th ed. Varanasi: Chaukhamba Prakashan; 2010. Mutrashmari nidana, 1. p. 68.
14. Craka. Charaka Samhita (Ayurveda Dipika's Ayushi Hindi commentary). Harish Chandra Kushwaha, editor. 5th ed. Varanasi: Chaukhamba Orientalia; 2012; Chikitsa sthana, 26/37. p.678.
15. Das S. A Concise Text Book of Surgery. 6th ed. Kolkata: SD Publishers; 2010. p.1073-1074.
16. Bailey & love. Short Practice of Surgery. 20th ed. New York: British Publishers; 1988. p.1223-1224.
17. Harrison. Principles of Internal Medicine, Vol. 2. Eugene Braun Wald, Anthony S Fauci, et. al., editors. 16th ed. USA: McGraw-Hill medical publisher; 2005. p.1710.
18. Bailey & love. Short Practice of Surgery. 20th ed. New York: British Publishers; 1988. p.1224, 1230.
19. Thameem Mohammed, Hemantha Kumar P, Rao PN. Diagnosis of urinary calculus - An Ayurvedic perspective. [MD Dissertation] Hassan: Dept. of Shalya Tantra, S. D. M. College of Ayurveda and Hospital.

Source of Support: Nil

Conflict of Interest: None Declared