A REVIEW ON CLASSIFICATION OF UROLITHIASIS AND MUTRASHMARI

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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.

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INTRODUCTION

Urolithiasis is a condition characterised by the formation or presence of calculi in the urinary tract. A calculus is polycrystalline aggregates composed of varying amounts of crystalloids 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. 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).

According to the Ayurvedic classics the structure which resembles stone is called as Ashmari or the one which is converted into a hard mass resembling a stone (asma) is called as Ashmari.

Ashmari is the stone formed in the srotas or channel especially in the mutramarga. 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 classified the disease Ashmari into 4 types they are - vatashmari, pittashmari, shleshmashmari and shukrashmari. Ashtanga hrudaya, Ashtanga sangraha, Madhva nidana, Bhava prakasha, Sharangadhar samhita, Yogaratnakara have classified the disease Ashmari similar to that of sushruta samhita.

Charak samhita 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

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 posses 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

<table>
<thead>
<tr>
<th>Vataja Ashmari</th>
<th>Ureteric calculus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tivra vedanam bhavati, Bhrusha peeda</td>
<td>Ureteric colic- The agonizing pain occurs typically at loin and radiates to groin.</td>
</tr>
<tr>
<td>Atyartha peedyamano dantaan khadati</td>
<td>It starts suddenly and patient moves around to find comfort.</td>
</tr>
<tr>
<td>Nabhi peedayati anisham</td>
<td>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.</td>
</tr>
<tr>
<td>Nabhi, mehana, guda shula Mrudgati medhran</td>
<td>Urgency and frequency of urination</td>
</tr>
<tr>
<td>Mehati bindushah</td>
<td></td>
</tr>
</tbody>
</table>

**Pittaja Ashmari**

Pittena dahyate basti, dahyate, pacchate, dushyate iva vedana.

**Vesical calculus**

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**

Dalyate, bhidyate, suchibiriva vedana, Basti guruta Basti Nishthoda

**Fixed renal calculus**

Dull and constant ache at renal angles

Heaviness felt in the region of kidney.

Fixed pain which does not radiate.

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Table 2: Showing the similarity in morphological appearance

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Vataja ashmari</th>
<th>Calcium oxalate stones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Shyavavarna</td>
<td>Calcium oxalate stones – Produces haematuria resulting in deposition of blood over the stone, giving dark color to the stone.</td>
</tr>
<tr>
<td>Surface</td>
<td>Parusha &amp; Kara</td>
<td>Hard, with rough surface</td>
</tr>
<tr>
<td>Edges</td>
<td>Vishama</td>
<td>Irregular</td>
</tr>
<tr>
<td>Shape</td>
<td>Hard studded with thorns like kadamba pushpa</td>
<td>Calcium oxalate stones have sharp projections</td>
</tr>
</tbody>
</table>

**Pittaja ashmari**

Rakta varna / peetavarna / krishnavarna or madhuvarna

**Uric acid, urate or cystine calculus**

Yellowish, Reddish brown

**Kaphaja ashmari**

Ballataka asthi

**Phosphate stone**

Hexagonal shape.

Sweta, madhuvarna, sitavarna, madhuka puspa varnavat, pingala and shuklavarna.

**Phosphate stone**

Dirty white, or yellow white.

Mahati

They grow bigger in size in major and minor calyces.

Snigdha

They are soft

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


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