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Review Article

A CONCEPTUAL PATHO-CLINICAL STUDY ON THE DISORDER OF MUTRABAHA SROTAS W. S. R. TO MUTRASHMARI (UROLITHIASIS)

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ABSTRACT

Now a days, several patients are reporting to the hospitals by regularly affecting with different *Mutrabaha Srotas* disorders like burning micturation, urinary stone diseases etc. *Mutrashmari* is one of the important diseases of *Mutrabaha Srotas*. This may caused due to the intake of adulterated food and polluted water. So, it becomes important to know the details about this disease in terms of *Nidana* (etiological factors), *Samprapti* (Pathogenesis), *Lakshyanas* (symptomatology), *Upadrava* (complications), *Sadhya-sadhya* (prognosis) and *chikitsa* (management) of this disease, in order to treat or prevent the disease. Here an effort was made to describe details about this disease both in Ayurvedic as well as modern view and interpreted each other. It helps physician to know about this disease in detail. So that, they can treat successfully to this disease for the benefits of mankind.

KEY WORDS: *Mutrabaha Srotas*, *Mutrashmari*, *Mutrakrichhra*, *Ashmari*, *Mutraghata*, Urolithiasis.

INTRODUCTION

Ayurveda, the ancient science of life is one of the pride and wealth of India. It deals with many dreaded diseases of *Mutrabaha Srotas* under the heading of *Mutrakricchra*, *Mutraghata*, *Mutrashmari* etc. *Mutrashmari* is one of the most common and distressing maladies among urinary disorders. *Acharya Sushruta*, the pioneer in the art and science of surgery has described widely and comprehensively about *Mutrashmari* along with its classification, symptomatology, etiology, pathology, complications and its management. This is the proof for the depth of knowledge of the *Acharyas* on the subject of urinary disorders as a whole.

ETYMOLOGY

"*Ashmanam Rati Dadati iti Ashmari*"^[1] means the formation and presentation of a substance like stone. "*Ashma*" means "stone"- "*Rati*" means "to present".

DEFINITION

There is no satisfactory definition of *Ashmari* available in any Ayurvedic texts. But, it can be defined as "*Ashmari Mutrakrichhra Syat*"^[2]

Urolithiasis means the presence of stone/calculus in the urinary system.

NIDANA

According to *Sushruta*, those who neglect the *Samshodhana* of internal channels and those who are engaged in unwholesome dietary habits become the victim of *Ashmari*. *Acharya Charaka* explained it under "*Mutrakricchra*". Hence the *Nidanas* of both *Mutrakrichhra* & *Ashmari* can be taken as same. They are practice of excessive exercise, Strong Medicines, *Ruksha Madyapana*, excessive intake of *Anupamamsa*, *Adhyashana*, *Ajeerna-bhojana*, *Matsya sevana*^[3]

Etiological Factors According to modern view^[4]

Although urinary calculi are observed everywhere in the universe but there are few countries and localities which are more prone to these calculi and those are called "Stone Areas". The factors responsible for them are diet, water, climate and geographical conditions.

In India, two belts of high index have been observed. First starts from Amritsar in the

north and extends to area in north west including Delhi, Agra and ends up in U. P. Second starts from the west coast of Gujarat and extends inward to central India up to Jabalpur. *Saurashtra* region of Gujarat is very common for Urolithiasis.

Age: Urinary stones may occur in any age but it is more common in between the age of 30-40 years.

Sex: Male are more sufferers than female. The male-female ratio is 41:25. In female, stone formation is less because of low serum testosterone levels, but children have most common oxalate stones.

Climate: Hotter areas are more prone to stone formation because of excessive perspiration and fluid loss due to atmospheric temperature, which leads to concentrated urine and output may be diminished. In hot and humid climate, stones are less common than in hot and dry climate. Seasonal variations in dietary oxalate intake are also an important factor in the formation of stone.

Occupation: High socio-economic group and sedentary workers are more prone to the disease. It has been found in a survey that inadequate physical activity and over saturation may be important factors contributing to the formation of many stones. Occupation like cooking, engine room persons etc. may lead to high environmental temperature. This may be a factor of stone formation.

Diet: Highly rich protein diet. The exact cause and mechanism of stone formation in urinary system is doubtful. But the following factors may be responsible for the stone formation viz. Vit-A deficiency, Water intake, inadequate urinary drainage, Hyperparathyroidism (Absorption of Calcium increase), Stasis, and Infection etc.

But it is again controversial because stone may form in presence of above factors and on the other hand stone may not form in the presence of such factors. The exact cause and mechanism of their formation is still uncertain.

Infection favors stone formation particularly urea splitting organisms like staphylococcus, streptococcus and proteus. They split urea in the urine into ammonia and CO₂ and leading to an alkaline urine in which phosphatic calculi are prone to form stones.

Any foreign body in the bladder e.g. a piece of catheter, nonabsorbable suture after hysterectomy or self introduced material

hairpins etc. may become coated with phosphate and form the calculus. pH of urine plays an important part in the formation of urine calculi and also in the management and treatment. Both crystalloid and colloids are influenced to a great extent by the hydrogen ion concentration of urine. As oxalate stones are more formed in acidic field and phosphate stones in alkaline field.

Normally 300-900 mg/24 hrs. of citric acid is formed which maintains solute in solution form. Decreased output of citrate due to any reason forms insoluble calcium phosphate and carbonate. It is under hormonal control and is decreased during menstruation; estrogen increases citric acid excretion and lowers the output of calcium in urine.

Stones are prone to occur in patients with obstruction to the free passage of urine.

The patients under the prolonged treatment for tuberculosis of the spine, for poliomyelitis or for paraplegia, sometimes follow the formation of stone in the kidney, especially in the lower poles, where stagnant urine is likely to collect. Stasis of urine due to obstruction to urinary flow. This obstruction or stoppage of flow of urine makes the field suitable for growth of bacteria and may be responsible for shifting the pH of urine to alkaline side and may lead to stone formation.

The persons who born with metabolic errors of cystine, oxalates or uric acid may develop calculi composed of one of any these substances. Any congenital anomaly of the urinary system may be associated with stasis and possibility of formation of stone is there.

This condition is one of the most common causes of urolithiasis. The normal concentration of serum calcium are well defined in most laboratories and range from 9.6 mg. to 10.9 mg. / 100ml. However, urinary excretion of calcium ranges from an average of 50 mg / 24 hrs. In the child ranges to 300mg /24 hrs. In the adult, over a range of dietary calcium intake from 150 to 200 mg / day. The presence or absence of calculi does not depend solely on the presence of hypercalciuria, since many patients with no history of calculi, excrete large amount of urinary calcium without forming calculi.

Main causes of Hypercalciuria

Primary cause

Hyperparathyroidism, Vitamin D intoxication Sarcoidosis, Multiple Myeloma,

Metastatic Malignant Neoplasms, Lymphoma, Milk-alkali syndrome, Hyperthyroidism, Immobilization, Cushing's syndrome.

In multiple or recurrent urinary calculi, this cause should be eliminated by biochemical tests. This condition usually manifests abnormal control of serum calcium. So, rise of serum calcium concentration above the normal limit increases, calcium load to the kidney and may result hypercalciuria and lead to stone formation.

So, a parathyroid adenoma should be removed before urinary calculi are treated. Excessive ingestion of vitamin D or D3 (>1 Lac. units / day for longtime) has long been recognized as a cause of hypocalcaemia and leads to hypercalciuria.

In this disease renal calculi (usually calcium oxalate), nephrocalcinosis and generalized calcinosis may be present. The renal calcification occurs within the tubules of the medulla, around the tubules and in the cortical area. It is a neoplasm of plasma cells, which may result in the production of large amounts of abnormal serum globulin, excretion of Bence Jones protein in the urine. Neoplasm of thyroid, prostate, breasts, kidneys and lungs often metastasize to bone and produce hypocalcaemia.

Lymphoma: The patients suffering from lymphomas have been reported significant hypocalcaemia. This syndrome contains eight features. Albright and Howard described a syndrome that had many features similar to primary hyperparathyroidism with secondary renal damage.

It acts in two ways to encourage the production of urinary calculi by impairing renal drainage and by altering calcium metabolism. Immobilization due to casts, traction or quadriplegia may lead to marked loss of calcium from bone, will result hypercalciuria. Renal lithiasis in immobilized patients is a result of skeletal decalcification.

It has been assumed that cystinuria is due to a defect in the intermediary metabolism of cystine or other sulphur containing amino acids. Cystine is one of the least soluble of the amino acids and in patients excreting 0.5 to 1.0 gm. of cystine per day, saturation levels may be reached, particularly at night when urine output is normally decreased because of decreased fluid

intake. Calculi develop in an estimated 65% of cystinuric patients.

The incidence of renal lithiasis in gout patients ranges from 5 to 33% with increased values of serum uric acid and the incidence of renal calculi also increases. Uric acid lithiasis may occur in patients with regional ileitis and ulcerative colitis. It is of two types:

- i. Primary Hyperoxaluria
- ii. Secondary Hyperoxaluria

i) Primary Hyperoxaluria

It is characterized clinically by calcium oxalate nephrolithiasis and in which there is an increased urinary excretion of oxalates not related to dietary ingestion. Calcium oxalates deposit may also be found in extra renal tissue, a condition that is termed as oxalosis.

ii) Secondary Hyperoxaluria

Moderate degree of hyperoxaluria have been noted in association with a number of diseases in which calcium oxalate stones are occasionally found, such as cirrhosis, renal tubular acidosis and sarcoidosis.

SAMPRAPTI

Samprapti can be defined as, it is the process which starts from "*Sanchayavastha*" of *Doshas* to the '*Vyadhi Vayktavastha*'. It is possible through *Samprapti* to assess *Doshas*, *Dushyas*, *Srotodusti* or *Khavaigunya*, *Agni* etc. It is also helpful because proper treatment is only fruitful, if it is applied according to *Samprapti* of disease. It is said that '*Samprapti Vighatanama Eva Chikitsa*'. Different views have been stated regarding *Samprapti*, which are as below :-

Sushruta's View: [5] a) *Apathya*

b) *Asamshodhan Sheela Shlesma* Mixes with *Mutra*, entered into Urinary bladder and turns as shape of gravels (*Ashmari*).

Sushruta's examples for clear understanding of the mechanism of stone formation:-

- i. A new pitcher filled with clear water can also show settling down of muddy particles in due course of time. In the same way the calculi are formed in *Basti*.
- ii. As air & fire of electricity in the sky consolidate water (to form hail storms) similarly *Pitta* located in the bladder, along with *Vayu* consolidates *Kapha* to form calculi.

Charaka: When *Vata* dries-up the *Mutra* entered into the bladder along with *Shukra*, *Kapha* and *Pitta* then, gradually formation of *Ashmari* occurs. *Charaka* has explained the process of formation of *Ashmari* as similar to that of *Gorochana* (Gall stone) in the *Pittashaya* of cows. Both *Kashyapa* and *Vagbhata* accept the views of *Charaka* and further state that the increase or decrease in *Medodhatu* is directly related to the size of *Ashmari*^[6].

Process of manifest of *Ashmari* According to *Shat-Kriyakala*: *Acharya Sushruta* has explained details about the six stages of disease, which are called "*Shatkriya Kala*". This gives a full picture regarding *Samprapti* of a disease and helps in diagnosis and treatment. *Sushruta* has given more stress on these and further says that, the exact knowledge of these stages is the only way to reach up to the disease and their treatment. In reference to the production of the disease *Mutr Ashmari*, following six stages are the proper time for the treatment.^[7]

1) *Sanchaya*

It is the stage when *Doshas* accumulate in their *Ashayas* more than the normal range due to various etiological factors and in case of *Ashmari* these excess accumulated *Doshas* develop the following symptoms :-

Discomfort in hypogastrium, Anorexia, Pyrexial feeling, General debility, Stiffness and fullness of abdomen, Yellowish tinge of the skin & concentrated urine etc.

Acharya Sushruta says that the treatment should start as soon as the symptoms of first *Kriyakala* i.e. *Sanchaya* develops, for the prevention of future disease.

2) *Prakopa*

It occurs when *Sanchyavastha* is neglected or proper corrective majors have not taken. In this stage, the vitiating factors provoked *Doshas* and further to get irritate and undergo a suffering condition. This stage is called *Prakopavastha*. The following are the symptoms found in a patient likely to suffer from *Ashmari*. All symptoms of *Sanchyavastha* with more prominence and in addition to them are:- Pain over the bladder region, anal region and testicular region, Painful micturition with thickness, Thirst, Nausea etc.

3) *Prasara*

Prasara avastha is a progressive stage of *Prakopa avastha*. In this stage the melted *Doshas*

overflow and move all over the body after leaving their *Ashaya* under the influence of *Vayu* in search of weak spot in the body for their restraint. Following symptoms are develops in this stage: - *Anaha*, *Atopa*, *Daha*, Burning micturition & Anorexia etc.

But the patient who suffers from *Ashmari* will complain of:-

i. Frequent pain over the bladder area, ii. Dysuria, iii) Pain in the testicles along with previous symptoms.

4) *Sthanasamshtaya*

This stage is also known as *Dosha Dushya Sammurchhana*, where there is duel between the *Doshas* and *Dushyas*. In the stage the previously irritative and disseminated *Dosha* may finally settle down at a place where they find maximum favorable place (*Khavaigunya*).

The following symptoms develop to a patient who is going to suffer from *Ashmari* :- Fever, Pain in the bladder region, Dysuria, Pain in the region of the bladder neck, the scrotum & the penis, Goat like smell in urine, Distaste of food etc.

5) *Vyakti*

Vyakti is the fifth stage and here the disease comes out with clear picture. In this stage, the disease can easily be identified, where one can do the proper diagnosis and treatment. Hence, this is also called *Rupa Avastha*. Following are the symptoms in which patient feels at this stage:-Excruciating pain in umbilical region during micturition, Pain in bladder, Perineal raphe & penis, Obstruction to the flow of urine, Haematuria, Turbid and Sandy urine with a shining like *Gomeda* gem.

6) *Bheda*

Bheda Avastha is that condition, where the disease takes one of the two natural courses - either spontaneous subsiding or leading into chronicity. This is the last stage of management and it is suggestive stage for the complications and the prognosis of the disease. In case of spontaneous recovery, the patient of *Ashmari* experiences gradual relief of all the symptoms and improvement in general health. If the disease leads to chronicity, then the patient complains of obstruction of the urinary outflow with a complication involving the upper urinary system due to backward pressure i. e. involving the ureter and kidney.

Pathogenesis According to modern view

Various theories have been put forward regarding its pathogenesis, but it is still complex and ill understood.

- i. Crystalloids e.g. uric acid, urea, sodium, potassium, ammonium-magnesium phosphate, calcium carbonate, cystine etc.
- ii. Mucin and chondroitin, sulphuric acid, urochrome are usually classified as colloid but it behaves like a crystalloid.

The calculus consists of a nucleus of organic material and urinary salts deposited in layers around it, bound together by an organic colloid matrix. These crystalloids are present in the urine as shape less granules or crystals. So many theories have been adopted but none has been able to define the exact cause of stone formation in every patient. Following are the main groups of the theories :- i) these theories define that in stone formation; firstly the nucleus takes place either within the cells of the renal papillae or the renal lymphatic system. This nucleus when comes to renal pelvis, provides a nidus for stone formation.

- ii) Under these theories the process of stone formation takes in four stages as follows:
 - a) Nucleation phase, during which crystal embryos are formed in the urinary tract.
 - b) The stage in which the initially formed embryos rapidly grow and aggregate to form larger particles.

c) The retention of one of these secondary particles, which becomes large enough, is trapped at some narrow point in urinary tract.

d) This last stage is the stage of the growth of the trapped particle into a stone.

Formation of Renal calculi

According to Randall, minute concretions firstly form in the tubules of the kidneys at the tip of pyramid and extend to the pelvis, where further increase in the size takes place. Here occasionally multiple stones form but usually the stones grow by further deposit and form the shape accordingly.

A small stone often passes along the ureter to the bladder, producing the renal colic, associated with haematuria. When arrested or impacted, it causes hydronephrosis. When the obstruction is intermittent, the hydronephrosis may acquire a large size. The stone may be arrested at the narrow part of ureter i. e. the upper end, the middle part and the lower end, where there are natural anatomical constrictions.

PURVARUPA

The signs & symptoms which are indicative of a future disease are known as Purvarupa. Purvarupa play a very important role in the diagnosis and treatment of any disorder. It is a stage where the disease is reversible with very little residual damage. Different classics have mentioned about the prodromal signs and symptoms of *Ashmari* viz.

Table 1: Purvarupa of Mutr *Ashmari* according to different Acharya's View

| Sl. No. | Purva-rupa | Su. | A. Hr. | A. S. | M. N. | B. P. | Y. R. | G. N. |
|---------|-----------------|-----|--------|-------|-------|-------|-------|-------|
| 1. | Basti Pida | + | + | + | + | + | + | + |
| 2. | Aruchi | + | + | + | + | + | + | + |
| 3. | Mutrakricchra | + | + | + | + | + | + | + |
| 4. | Bastisirovedana | + | - | + | - | - | - | - |
| 5. | Mushka Vedana | + | - | + | - | - | - | - |
| 6. | Shepha Vedana | + | - | - | - | - | - | - |
| 7. | Jwara | + | + | + | + | + | + | + |
| 8. | Avasada | + | - | - | - | - | - | - |
| 9. | Bastigandhatwa | + | + | + | + | + | + | + |
| 10. | Sandra Mutra | + | - | - | - | - | - | - |
| 11. | Avila Mutra | + | - | - | - | - | - | - |
| 12. | Basti adhma | - | + | + | + | + | - | - |

7) RUPA: Signs & Symptoms when fully manifested are called Rupa. This is the stage when the disease comes out with full signs and symptoms indicating the specific characteristics of the disease like the dominance of Doshas. Different texts have mentioned the Rupas of *Ashmari* has shown in following table:-

Table 2: Rupa of Mutr Ashmari according to different Acharya's View

| Sl. No. | Rupa | Su. | Ch. | A. Hr. | A. S. | Har. | K. S. | M. N. | B. P. | Y. R. |
|---------|-------------------|-----|-----|--------|-------|------|-------|-------|-------|-------|
| 1. | Nabhi Vedana | + | - | + | + | + | - | + | + | + |
| 2. | Nabhi Vedana | + | + | + | + | + | - | + | + | + |
| 3. | Sevani Vedana | + | + | + | + | + | - | + | + | + |
| 4. | Mehana Vedana | + | + | - | - | + | - | - | - | - |
| 5. | Mutra Dhara Sanga | + | - | - | + | - | - | - | - | - |
| 6. | Mutra Vikirana | + | - | - | - | - | - | - | - | - |
| 7. | Gomeda Prakasha | + | - | + | + | - | - | + | + | + |
| 8. | Atyavilam | + | - | - | + | - | - | - | - | - |
| 9. | Sasiktam | + | - | - | + | - | + | + | + | + |
| 10. | Dhavan, Plavan | + | - | - | + | - | - | - | - | - |
| 11. | Vishirna Dhara | - | + | + | - | - | - | - | - | - |
| 12. | Sarudhira Mutra | + | + | + | + | - | - | + | + | + |
| 13. | Mrudanti Medhra | - | + | - | - | - | - | - | - | - |
| 14. | Mutrarodha | - | - | + | - | + | - | + | + | + |
| 15. | Atimutraram | - | - | - | - | - | + | + | - | - |
| 16. | Pratatam roditi | - | - | - | - | - | + | - | - | - |
| 17. | Kasamana | - | - | - | - | - | + | - | - | - |

UPASHAYA-ANUPASHAYA

The factors which relieve the signs and symptoms of disease are called Upashaya, while the factors which aggravate the disease are called Anupashaya. None of the Ayurvedic texts have mentioned about Upashaya-Anupashaya in relation to Mutr Ashmari. But main factor involved in Ashmari formation is Kapha Dosha. Hence, all the measures leading to control of Kapha are considered as Upashaya and those which vitiate Kapha are Anupashaya of Ashmari.

CLASSIFICATION OF ASHMARI^[8]

All Acharyas except Charaka have classified the disease Mutr Ashmari into four types:

- i) Shleshmaja Ashmari ii) Pittaja Ashmari iii) Vataja Ashmari iv) Shukraja Ashmari

Acharya Charaka has considered Mutr Ashmari as a variety under Mutrakrichhra and classified it into Mridu Ashmari and Kathina Ashmari on the basis of consistency. Shukraja, Pittaja and Kaphaja varieties are the Mridu where as Vataja Variety is Kathina. Different varieties of Ashmari, according to different Acharyas are as in under mentioned table.

Table 3: Classification of Ashmari according to different Acharya's View

| Sl. No. | Ashmari | Su. | Ch. | A. Hr. | A. S. | M. N. | B. P. | Sha. | Y. R. |
|---------|------------|-----|-----|--------|-------|-------|-------|------|-------|
| 1. | Shleshmaja | + | - | + | + | + | + | + | + |
| 2. | Pittaja | + | - | + | + | + | + | + | + |
| 3. | Vataja | + | - | + | + | + | + | + | + |
| 4. | Shukraja | + | - | + | + | + | + | + | + |
| 5. | Mridu | - | + | - | - | - | - | - | - |
| 6. | Kathina | - | + | - | - | - | - | - | - |

FEATURES & LAXANAS OF DIFFERENT ASHMARI^[8]

- Shleshmaja:** White, slimy, big like Kukkutanda, Colour-Madhuka Pushpavat, Heavy in weight, Heavy & cold sensation in bladder area, Cutting, incising, pricking pain.
- Pittaja:** Reddish/Yellowish-black or honey like colour, Resembles Bhallataka seed. Burning, hot sensation and inflammatory changes in urinary tract, Reddish / Yellowish-

black or honey like in colour, Resembles Bhallataka seed.

- Vataja:** Dusty coloured, Hard, Irregular, Rough, Nodular like Kadambapushpa, Severe bladder pain, umbilical pain and pain in the anus, Frequent passage of flatus, Urethral burning, Dysuria, Difficulty in defecation.
- Shukraja:** Dysuria, Scrotal swelling, Lower abdominal pain, and Special characteristic feature are, it can be crushed into powder by pressure.

Classification of Calculus (According to Modern View)^[9]

Different types of calculus are found according to their size, constituents and origins.

- A. i. Primary ii. Secondary
- B. i. Small stones ii. Large stones
- C. i. Oxalate calculus ii. Phosphatic calculus
iii. Uric acid and urate calculus iv. Cystine calculus v. Rare calculus.

Features of Calculus

1. Primary stones

Those stones which arise in apparently healthy urinary tract and are composed of substances either present in normal urine or derived from metabolic disorders are primary stones. They are aseptic and arise in acidic urine and require no performed nuclei. Usually they are calcium oxalate and rarely uric acid, cystine and xanthine.

2. Secondary Stones

This type of stone occurs in the presence of pre existing disease of the urinary tract and there formation requires a performed nucleus of a primary stone, a foreign body or a malignant tumor. These stones are infective in origin and usually occur in alkaline urine and are composed of ammonium, magnesium phosphate or calcium phosphate.

On the basis of size

i. Small stones: All the small stones come under this category. They usually pass through or become impacted in ureter and damage the epithelium, leading to haematuria, then fibrosis and finally stricture.

ii. Large stones: Mostly they are the phosphate calculi. Here one large stone may fill the renal calyces and pelvis, and can cause stagnation of urine, predisposing to infection and kidney tumors. It may cause irreversible kidney damage.

On the basis of stone constituents

i) Oxalate Stones

60 to 70% of are found Calcium oxalate stones. These stones usually arise in the pelvis or calices and are liable to expel out down to ureter. These are hard, nodular like mulberries, covered with sharp projections and the modified blood is precipitated on the surface of stone. Calcium oxalate stones occur more frequently in men than in women.

ii) Phosphatic Stones

Mainly these stones occur in bladder and grow rapidly in alkaline urine. They are smooth, greyish-white in color and chalky in consistency. Usually occur bilaterally and have the tendency to recur on removal. Phosphatic calculus or Stag horn calculus are radio- opaque in nature, they grow to a large size and fill the cavity in which they lie. Usually these stones are composed of triple phosphate i.e. the phosphate of calcium, magnesium and ammonium.

iii) Uric Acid and Urate Stones

Uric acid stones arise in the renal pelvis or in the urinary bladder. They are usually multiple and occur in acidic urine. These are hard, finely granular, round to oval in shape and color varies from yellow to reddish brown. Pure uric acid stones are not opaque to radiation i. e. radio-translucent. Usually these stones contain some calcium oxalate crystals which make them radio-opaque. Stones of ammonium and sodium urate are sometimes found in children, as they contain impurities, they do not cast radio-opaque shadows.

iv) Cystine Stones

These are uncommon (0.4%) and formed due to inborn error of metabolism. These are hard with smooth surface, pink or yellow colored and waxy in appearance. Usually found in renal pelvis and calices and usually multiple. These too have the tendency to recur after removal by operation.

v) Rare Stones

These are xanthenes, calcium carbonate, Indigo, Ammonium acid, urate calculi, matrix calculi, silicate calculi, rarely bacteria may form small soft concretions.

Table 4: Incidence of types of urinary stones in India

| Sl. No. | Types of Stones | % of Stone analysed |
|---------|-------------------------------------|---------------------|
| 1. | Pure calcium oxalate | 86 % |
| 2. | Mixed calcium oxalate and Phosphate | 01 % |
| 3. | Pure calcium Phosphate | 4.9 % |
| 4. | Magnesium Ammonium | 1.9 % |
| 5. | Phosphate | 2.7 % |
| 6. | Uric acid | 1.2 % |
| 7. | Cystine | 0.4 % |
| 8. | Others | 2.6 % |

(Cambell's urology).

Correlation of different *Ashmari* with Modern view

Vataja Ashmari can be co-related with oxalate stones, *Pittaja Ashmari* can be co-related with Uric acid and Urate stone, *Kaphaja Ashmari* can be correlated with Phosphatic stone and *Shukraja Ashmari* can be co-related with Spermolith. Because, their symptoms are related to each others.

SADHYASADHYATA

In our classics *Acharyas* have described about '*Ashta Mahagadas*' and these *Mahagadas* are not easy to treat and they are not having good prognosis. As *Ashmari* is mentioned as one of them, so it requires great attention for its cure. In children because of the smaller space occupying lesion and less fat in subcutaneous and perinephric region the prognosis is better. Similarly early detected *Ashmari* can be treated with medicines because of its recent origin and small size, while an *Ashmari* of long time origin is difficult to cure and large *Ashmari* is also an indication for surgical treatment. [10]

Ashmari associated with complications and *Arishta Lakshanas* should be avoided.

UPADRAVA

No particular *Upadravas* of *Ashmari* are mentioned in Ayurvedic classics except *Mutra sharkara*, described by *Acharya Sushruta*. It is nothing but the disintegrated particles of *Ashmari*, passes along with the stream of urine.

Laxanas of Upadrava: Pain in the pericardium, Weakness of lower limbs, Pain in the flanks and shivering, Thirst, Blackish discoloration of body, Dislike for food and indigestion, Pale appearance of the body etc. [11]

TREATMENT

Mainly two types of *Chikitsa* are described in our *Shastras* for every disease viz.

i. *Samanya Chikitsa* (General) ii. *Vishesha Chikitsa* (Specific)

Here, *Samanya Chikitsa* is more of a supportive nature and does not cure the disease completely but gives a little relief, where as the *Vishesha Chikitsa* is advocated after knowing about the type of disease, *Doshas* involved, status of *Dhatu*s etc.

'*Nidana Parivarjana*' is the main method of keeping one self free from the disease. As *Ashmari* is *Kapha* predominant diseases, hence the measures aggravating *Kapha* are to be avoided

and the treatment to control *Kapha* is to be followed. The below said is the treatment of choice in *Ashmari* viz. [12]

1. *Aushadha Chikitsa* 2. *Basti Karma Chikitsa* 3. *Kshara Chikitsa* 4. *Shastra Chikitsa*

1. *Aushadha Chikitsa*

Because, *Ashmari* has been considered a grave disease and said to be as fatal as death. So it is necessary to diagnose and treat the disease at the earliest. *Acharya Sushruta* has advised to treat this disease in *Purvarupa* stage itself. He has prescribed following medications depending upon the varieties of *Ashmari*.

Aushadha used by *Maharsi Sushruta* for different types of *Ashmari*

Vataja: *Pasanabheda, Vasuka (SwetaArka), Vasir (Gajapippala), Ashmantaka (Changeri), Shatavari, Gokshuru, Brihati, Kantakari, Kapotavanka (Brahmi), Khasa, Gunja, Shyonaka, Varuna, Yava, Kulatha, Bera, Nirmali.*

Pittaja: *Kusha, Kasha, Ikshumoola, Pasanabheda, Satavari, Vidarikanda, Root of Shali Dhanya, Dhanyaka, Gokshuru, Shyonak, Patala, Patha.*

Kaphaja: *Varunadigana, Guggulu, Elaichi, Kutha, Devdaru, Haridra, Maricha, Chitraka.*

2. *Basti Karma Chikitsa*

Acharya Sushruta has advised to use *Uttarabasti*, for the management of bladder stone. The decoction of *Kshiri brikshya* (latex tree), when used as *Uttarabasti*, it flushes out the calculus and collected blood in bladder immediately. *Basti* treatment in *Ashmari* is indicated by all ancient *Acharyas*.

3. *Kshara Chikitsa*

Maharsi Sushruta has described that, the *Kshara* prepared from the drugs *Varunadigana* is helps to destroy the *Ashmari, Gulma* and *Sharkara*.

The *Kshara* prepared from the *Kalka* of *Tila, Apamarga, Kadali, Palasha* and *Yava* should be used with sheep's urine to destroy urinary gravel.

Again he told that, *Kshara* of *Patola* and *Karavira* used in above process also destroys the urinary gravels.

4. *Shastra Chikitsa*

Shastra chikitsa is indicated when *Ashmari* will not cure after treatment with *Ghritha, Kshara, Kasaya*, milk preparations and *Uttara Basti*. In this regard, *Maharsi Sushruta* told that, If *Shastra*

Karma not done, then definitely patient will die. After *Shashtra* karma also, it is doubtful, patient will cure or not.

PATHYAPATHYA

Pathya means, the *Ahara & Vihara* which is always suitable to patient and aids in relief or cure of a disease without developing other diseases. Those *Ahara* and *Vihara*, which are causes complications and aggravate the same disease is known as *Apathya*. No *Pathyapathya* has been directly mentioned by *Acharya Sushruta* in relation to *Ashmari*. But *Charaka Samhita*^[13], *Harita Samhita*^[14], *Bhaishajya Ratnavali*^[15] have mentioned about it for *Ashmari*.

Pathya: *Basti, Vamana, Virechana, Langhana, Avagaha sweda* are useful in case of *Mutrashmari*.

Dietetic items advocated are: *Yava, Kulatha, Puranashali, Mudgha, Ginger, Yavakshara* and all the *Vatanashaka Ahara*.

Medicines Advocated are: *Gokshura, Yavakshara, Varuna, Punarnava* and *Pashanabheda*.

Apathya: *Ativyayam* (Excessive exercise), suppression of micturition, ejaculation, incompatible constipation and heavy diets.

Dietetic items non advocated are: *Shushka Ahara, Kapitha, Jamun, dry Dates, Kshaya Ras Sevana* etc.

Table 5: Useful items in *Ashmari*

| S. No. | Types | Items |
|--------|------------------|--|
| 1. | Grains | <i>Yava, Old Rice</i> |
| 2. | Pulses | <i>Kulatha</i> |
| 3. | Vegetables | <i>Kushmanda, Cucumber, Tender Shoot of Bamboo.</i> |
| 4. | Fruits | <i>Cucumber, Amalvetasa</i> |
| 5. | Fish and Meat | Meat of animals of any dry region |
| 6. | Food preparation | <i>Jivanti, Lime & Saindhava, Kulatha Soup, Alcohol and Drinks</i> |
| 7. | Other measures | Emesis, Fasting, sweating, enema, Hot water bath and Purgation. |

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