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CONCEPTUAL STUDY ON ASHMARI W.S.R TO UROLITHIASIS AND SOME IMPORTANT DRUG USEFUL IN THEIR MANAGMENT

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ABSTRACT

Ashmari is one of the most common diseases of Mutravaha Srotas (Urinary system) which occur due to improper functioning of the filtration in the kidney. Acharya Sushruta considered Ashmari as a grave disease and fatal as death itself (Astamahagada). It has become a global problem but are particularly common in some geographic locations such as India, South Africa, and South -East Asia. Men are affected more than women and the peak age at onset is between 20 and 45 years. It is estimated that approximately 2 -3% of the populations experiences renal stone disease at some time in their life. It is characterised clinically by colicky pain (Renal colic) as they pass down along the ureter and manifest by haematuria, nausea or vomiting. In ancient times, Ashmari was diagnosed only on the basis of the Lakshanas but in present era it's tough to make a diagnosis based just on clinical findings. So, it is confirmed by imaging techniques likes X - ray, CT scan.

KEYWORDS: Ashmari, Urolithiasis, some important drugs in Ayurveda for Ashmari.

INTRODUCTION

Ashmari is a stone like structure present in the urinary system and is made up of urinary salts that bound together by a colloid matrix of organic materials.

Acharya Sushruta mentioned Ashmari in Astamahagada Roga may be due to its potentiality to disturb the structure and functions of Mutravaha Srotas (Urinary system). On the basis of symptomatology, Mutra Ashmari in Ayurveda resembles the renal stone or urolithiasis in modern science. Renal stone are common with a prevalence of about 12% worldwide.

In the northern part of India, where it is 15%. Increasing prevalence is due to westernization of lifestyle habits such as dietary changes, increased body mass index. It is commonly seen in middle age people. The causes of renal calculi are high salt intake in diet, less water intake, excessive use of medicine etc.

Urolithiasis is third most common disease of the urinary tract after urinary tract infections and prostatic disorders. In medical language, renal calculi are termed as nephrolithiasis or urolithiasis, where the root word 'Lith' means a stone. It is a common, painful and costly medical condition.

MATERIAL AND METHOD

1. Ashmari

Definition of ashmari

In Ayurveda, Ashmari comprises of two words, i.e., 'Ashma' and 'Ari.' 'Ashma' means a stone and 'Ari' means enemy thus Ashmari involves formation of a stone or stones, resulting in severe pain as given by an enemy. It is one of the prevalent ailments of the Mutravaha Srotas (Urinary system). Acharya Sushruta explained etiopathogenesis, clinical features, type and prognosis of Ashmari very well. Acharya Madhava stated that Kapha plays important role in pathogenesis of Ashmari as it is Samavayi Karana (Prayo Shlesmashraya).

Etiology

Among the Ayurvedic classics Sushruta Samhita is the only textbook in which Ashmari described as a separate disease entity with its etiological factors. Acharya Sushruta stated that intake of food in the form of Samashana (Combining both compatible and non-compatible foods), Adhyashana (Eating food too frequently), Viruddha Ahara (Non compatible foods), over indulgence in Vyayama (physical exercise), excessive intake of Ruksha Madya (Consuming alcoholic beverages), Anupana Mamsa (Eating flesh of animals of marshy places) and Ajeerna (Indigestion) are all considered to be causative factors of Ashmari. They are not only responsible for aggravation of Dosha but also predispose abnormality in Mutravaha Srotas and thereby produce Ashmari. In Ashtanga Hridaya Mutravarodha

(Suppression of urge of micturition) mentioned as important etiology of Ashmari. In Hareeta Samhita one more factor i.e., the Pitramatruka dosha (Hereditary factor) has been added.

Classification of ashmari

As per Ayurveda, Ashmari can be classified into four types:

1) Vatika
2) Paitika
3) Shlaishmika
4) Shukraja

2. Urolithiasis

Urolithiasis means formation of urinary calculi at any level of the urinary tract. Urinary calculi are worldwide in distribution but are particularly common in some geographic locations such as in parts of the United States, South Africa, India and South East Asia. It affects about 12% of the world population at some stage in their lifetime. It affects all ages, sexes and races but men are affected more than women and the peak age at onset is between 20 and 45 years. Recent studies have reported that the prevalence of urolithiasis has been increasing in the past decades in both developed and developing countries. This growing trend is believed to be associated with changes in lifestyle modifications such as lack of physical activity and dietary habits and global warming. Renal calculi are characterised clinically by colicky pain (Renal colic) as they pass down along the ureter and manifest by haematuria, nausea, vomiting, fever, obstructive uropathy, urinary tract infection and blockage of urine flow. Abnormalities in the urine composition of a number of different chemicals are responsible for the chemical composition of kidney stones. The size, shape, and chemical composition of stones are varied. Supersaturation causes solutes to precipitate in urine, leading to nucleation and the formation of crystal concretions. The transformation from liquid to solid is affected by pH and specific concentrations of excess substances. The level of urinary saturation with respect to stone-forming constituents such as calcium, phosphorus, uric acid, oxalate, cystine, and low urine volume is a risk factor for crystallization.

Therefore, calculi are typically classified into the following five types according to differences in mineral composition and pathogenesis

1) Calcium stones
2) Mixed or Struvite (Triple stones)
3) Uric acid stones

4) Cystine stones
5) Others

1) Calcium stones

Calcium stones are the most common type of renal stone comprising 75% of all calculi. These stones are composed of calcium oxalate (50%), calcium phosphate (5%) or much more commonly in combination with calcium phosphate or calcium oxalate (45%). Hypercalciuria, low urine volume and hypocitraturia all predispose to the development of calcium stones. About 10% of the calcium stone associated with hypercalciuria and hypercalcemia which commonly due to hyperparathyroidism, defect in the bowel or in the kidney. Alkaline urine is a risk factor for the development calcium phosphate stones. Other predisposing factors are decreased urinary volume and increased excretion of oxalate and uric acid. Dietary oxalate may be important in stone development; spinach, beets and rhubarb in particular, contain large amounts of oxalate and they may increase urinary oxalate excretion and predispose to the development of calcium oxalate stones. Calcium stones are usually small, ovoid, hard, dark brown coloured and have granular rough surface.

2) Mixed (Struvite) stones

About 10–15% of urinary calculi are made of magnesium-ammonium-calcium-phosphate, often referred to as infection induced stones and triple phosphate stones or mixed stones. They are formed as a result of chronic urinary tract infections with urea splitting organism that produce urease. The most common organism is Proteus mirabilis and less common pathogens include Klebsiella pneumonia, Pseudomonas aeruginosa, and Enterobacter. Escherichia coli is not capable of splitting urea and is not associated with struvite stones. Struvite stones are yellow-white or grey in colour, soft and friable and irregular in shape. ‘Staghorn shape’ which is a large, solitary stone that takes the shape of the renal pelvis is an example od struvite stone.

3) Uric acid stones

This accounts approximately for 3–10% of all stone types. Uric acid stones are frequently formed in case with hyperuricaemia and hyperuricosuria such as primary gout or secondary gout and those on chemotherapy and administration of uricosuric drugs. High purines rich diet especially animal protein diet such as meat and fish, results in hyperuricosuria, low urine volume, and low urinary pH. The solubility of uric acid at pH of 7 is 200mg/dl while at pH of 5 is 15mg/dl. Thus, as the urine becomes more acidic, the solubility of uric acid in urine

decreases and precipitation of uric acid crystals increases that exacerbates uric acid stone formation. These stones are smooth, yellow-brown in colour, hard and multiple.

4) Cysteine stones

This comprises less than 2-3% of all stone types. It is a genetic defect in the transport of cysteine and other amino acids across the cell membrane of the renal tubules. It results in an excess of cysteine in urinary excretion which is an autosomal recessive disorder caused by a defect in the rBAT gene on chromosome 2 that results in impaired renal tubular absorption of cysteine and leaking cysteine into urine. It does not dissolve in urine and leads to cystine stone formation. These are small in size, round shape, yellow & waxy, smooth and often multiple.

5) Others calculi

Other rare types such as due to inherited abnormality of enzymes metabolism and due to drugs, such as guaifenesin, triamterene, atazanavir, and sulfa drugs induce these stones. This accounts for about 1% of all stone types. People who take the protease inhibitor indinavir sulphate, a drug used to treat HIV infection, are at risk of developing kidney stones.

Risk factors

The risk factors can be categorized as dietary, nondietary and urinary.

- Dietary factors: Dietary factors associated with increased risk include animal protein, oxalate, sodium, sucrose and fructose. Dietary factors associated with lower risk include calcium, potassium and phytate.
- Non-Dietary factors: Age, race, body size and environment.
- Urinary factors: Low urinary volume, higher urine calcium, higher urine oxalate, lower urine citrate excretion, higher urine uric acid, urine pH.
- Genetic factors: The risk of renal stone is more than twofold greater in individuals with a family history of stone.

Diagnosis

The diagnosis of renal calculi made on the basis of the history that includes past or family history of calculi, duration and evaluation of symptoms. The physical examination is often more valuable for ruling out non-urologic disease and urinalysis should be performed. Imaging technique plays a critical role in the initial diagnosis, follow-up, and urological management of urolithiasis that includes plain radiography of the kidneys, ureters, and

bladder, intravenous pyelogram (IVP), ultrasound (US), magnetic resonance urography (MRU), and computed tomography (CT), each with its advantages and limitations.

3. Some ayurvedic herbs for kidney stone

A. Gokshura
B. Punarnava
C. Pashanbheda
D. Kulattha
E. Varuna
F. Gorakshganja
G. Virataaru
H. Yava kshara

Gokshura

- Fruits of gokshura are most widely used in the treatment of kidney stones due to their diuretic, lithotriptic (Stone destroying) and analgesic (pain relieving) properties.
- It is considered to be the best herb to flush toxins from the body and offers relief in painful urination, blood in the urine and kidney stones.
- It is mainly used in the form of a churna (Powder) and decoction.
- Gokshura churna may be given with warm water. For vata ashmari type of kidney stone, the decoction of the fruit is used.

Punarnava

- The entire herb and sometimes roots of punarnava are used in the treatment of kidney stones.
- This herb has diuretic properties and is given alone or in combination with gokshura. Punarnava is used as a decoction, infusion, ghrita or paste made in sugar or honey.
- It is used mostly in pitta ashmari and increases urinary frequency, thereby throwing toxins out of the body.

Pashanbheda

- Pashanbheda is a golden herb found in the Himalayas, and its rhizomes are used in the treatment of kidney stone.
- The rhizomes have a lithotriptic action which dissolves the uric acid kidney stones and gravel.

- It also has diuretic properties and thus helps in flushing out stones from body through urine.
- A decoction of the rhizomes of pashanbheda is effective in kidney stone treatment.
- Its churna can also be given with water to dissolve kidney stones.

Kulattha

- The seeds of kulattha (Horse gram) are used to treat kidney stones.
- They are mainly taken in decoction form and have a diuretic action.
- Kulattha should also be included as a cereal in regular diet if you are prone to kidney stones.
- Kulattha seeds have lithotriptic properties and dissolve calcium oxalate crystals, thereby flushing out stones from the urinary tract.

Varuna

- Varuna mulatwak kashaya It is a decoction of varuna (Three-leaved cape) and shigrumula (moringa).
- Varuna is very effective against kidney stones as it has lithotriptic activity. Shigrumula also has diuretic and lithotriptic properties.
- The decoction is given with water and relieves pain in dysuria along with breaking down kidney stones.

Gorakshganja

- Chemical constituents: Palmitic acid, B-sitosterol and alpha-amyrin Mechanism of Action:
- Quercetin and bot ulin present in Aerava lamata causes inhibition of formation of oxalate by inhibiting the activity of Oxalate oxidase enzyme which is responsible forthe stone formation. Both quercetin and botulin significantly increased the urinary magnesium level.
- Thus, magnesium inhibits the oxalate absorption and excretion and prevents its supersaturation. Thereby, reduces the risk of calcium oxalate stone formation.
- Quercetin and botulin also produce diuretic effect.
- Gorakshganja is used for treating Renal ston es primarily by anti-urolithiatic and diuretic actions.

Virataaru

- Administration of Kwatha of Virataaru was studied in experimental animals and was found to increase urine output in dose-dependent manner may be due to its individual orcombined bioactive components.
- Thus, Virataaru is used as medication for treating renal stones primarily through its diureticactivity.

Yava kshara

- Yava kshara consists of an alkaline preparation of barley.
- It is used in the alkali treatment of ashmari and is available as a churna.
- This formulation contains a combination of potassium chloride, potassium sulphate, potassium bicarbonate and potassium carbonate.
- These are urinary alkalizers that disintegrate the kidney stone.
- The preparation shows significant relief from umbilical pain and dysuria.
- Tenderness in the renal area is also relieved by this medicine.
- If taken in excess amounts, it can result in alkalosis and vomiting.

DISCUSSION

Acharya Sushruta considered Ashmari as a grave disease (Astamahagada). In modern science, it can be correlated with renal stone. The most common presenting symptom of a stone is pain. In Vataja Ashmari pain caused by small, moving calculi that causes periodic colicky pain (renal pain) and is similar to calcium oxalate stones. Pittaja Ashmari is similar to hyper concentration of fluids linked with inflammation and haematuria and is similar to uric acid stones. The stone can be compared to Kaphaja Ashmari because of its dull agony and big size. It is similar to phosphate calculi. The Samanya Lakshana are Nabhi Basti Mehana Vedana, Visheernadhara mutra, Tatsankshobhat sa ashram, Mutradhara Sanga and Sasiktam Mutram Visrijati etc. In ancient times, Ashmari was diagnosed only on the basis of the Lakshanas but in present era it's tough to make a diagnosis based just on clinical findings. In the current practice, the diagnosis is based only on imaging techniques such as radiography, CT scan, ultrasound etc which has enhanced the diagnostic capability of the disease.

CONCLUSION

This article reviews the Ayurvedic concept of Ashmariregarding its classification, symptomatology, etiological factors as well as its contemporary science.

The incidence of Mutrashmari is increasing day by day due to various reasons like altered food habits, change lifestyle, stress, strain, environmental pollutions etc. This Mutrashmari (Urolithiasis) can leads to defects in the formation of urine and micturition. Although there are many treatment options available for the management of Urolithiasis but the conventional treatment is quite expensive and moreover, the recurrence occurs commonly. However, in Ayurveda," the science of life",

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