



UROLITHIASIS - AN AYURVEDIC APPROACH

Sruthi Sajeev¹, Arun Pratap², Lekshmi R³

¹Final year PG scholar, ²HOD & Professor, ³Assistant Professor, Department of Kayachikitsa, Pankajakasthuri Ayurveda Medical College and PG Centre, Kattakada, Thiruvananthapuram, Kerala, India

Corresponding Author: sruthi.sajeev23@gmail.com

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ABSTRACT

Urolithiasis is the formation of urinary calculi at any level of the urinary system. It is the third most common and distressing disease of the urinary tract. The signs and symptoms as well as the morphology of stones found in Urolithiasis are similar to that of *Mutrashmari*. *Acharya Sushruta* included it under *Astamahagadas*, which may be due to its potentiality to cause complications of the urinary system and also being difficult to treat. All the *Acharyas* have mentioned different types of *Ashmari* based on *Dosha* predominance i.e *Vataja*, *Pittaja*, and *Kaphaja Ashmari* which can be correlated to Calcium Oxalate, Uric Acid, and Calcium Phosphate stones respectively. The main feature of *Ashmari* is renal colic, the nature of pain depends on the location of the stone where it is lodged. Renal Function test, USG abdomen & pelvis, urine routine examination along with the symptoms helps in easy diagnosis of the disease and the *Chikitsa* is based on the vitiation of dosha involved. An alarming rise in the incidence as well as the increase in the recurrence rate of Urolithiasis make it necessary to explore the possibility of discovering a cure on a traditional line. The *Chikitsa* includes *Ashmaribhedana*, *Ashmari Patana*, *Vasti Shoolaghna*, and *Mutrala* which have the potential to act as antilithogenic by multiple actions such as diuretic, alteration of physiological pH, regulation of crystalloid imbalance, antimicrobial activity, anti-inflammatory, analgesic activity and improve renal function. Multidimensional therapy like lifestyle modification through diet (*Aahara*), internal medicines (*Aushadhas*), and *Vasti* are highly effective in the management of renal stones. If proper counselling and guidance are provided to Urolithiasis patients at the right time regarding *Pathyapathya*, it can be helpful in preventing further complications including the recurrence of the disease.

Keywords: Urolithiasis, Mutrashmari

INTRODUCTION

The Urinary system, also known as the urinary tract or renal system consists of the kidneys, ureters, bladder, and urethra. The urinary tract is the body's drainage system for the eventual removal of urine. The kidneys have an extensive blood supply via the renal arteries which leave the kidneys via the renal vein. Each kidney consists of functional units called nephrons. Following filtration of blood and further processing, wastes (in the form of urine) exit the kidney via the ureters, tubes made of smooth muscle fibres that propel urine towards the urinary bladder, where it is stored and subsequently expelled from the body by urination (voiding)¹. Urolithiasis is the formation of urinary calculi at any level of the urinary tract². In Asia, about 1-19.1% of the population suffers from Urolithiasis. However, due to variations in socio-economic status and geographic locations, the prevalence and incidence have changed. In India, upper and lower urinary tract stones occur frequently with a prevalence of Urolithiasis as high as 7.6% in certain parts of India. The recurrence rate ranges from 21% to 53% after 3-5 years³. The treatments used are extracorporeal shock wave lithotripsy (ESWL) and drug treatment. Even though improved and besides the high cost that imposes, compelling data now suggest that exposure to shock waves in therapeutic doses may cause acute renal injury, a decrease in renal function, and an increase in stone recurrence⁴. Furthermore, in spite of substantial progress in the study of the biological and physical manifestations of Urolithiasis, there is no satisfactory drug to use in clinical therapy. The approaches of *Ayurveda* may give solutions to many perplexing challenges in medicine. Urolithiasis is one such challenge and relevant studies related to Urolithiasis in *Ayurveda* help in increasing the knowledge of this condition and its application in the treatment and prevention of the disease.

Mutrashmari is one among the eight *Mahagada*. The reason for considering the disease as *Mahagada* is because this disease is *Tridoshaja*, it is *Mar-*

mashrayee, and *Vyakthasthana* of *Ashmari* is *Basti* which is one among the *Dashavidha Pranayatana*. In *Ashmari*, the *Mutravaha Srotas* are mainly involved. The *Mula* of *Mutravaha Srotas* is *Basti* and *Vankshana*⁵. *Basti* here to be taken as the entire urinary system. This is the place where *Dosha Dushya Sammurchana* takes place and according to the site of *Khavaigunya*, the *Doshas* get lodged, and ultimately *Ashmari* formation takes place.

DISCUSSION

Nidana

Acharya Susruta explained two main causes of *Ashmari* *Asamshodhanasheela* and *Apathya Sevana*. Improper purificatory procedures result in the accumulation of *Malarupa Doshas* in *Basti*. *Apathyasevana* like *Samashana*, *Adhyashana*, and *Vishamashana* and indulging in food rich in *Madhura*, *Snigdha Guna*, *Guru Ahara*, *Sheeta Ahara*, *Tikshna*, and *Ushna Ahara* alter the biochemical properties of urine. Animal protein (*Mamsasevana*), dairy products, or a high-fat diet can be considered as *Guru*, *Snigdha Ahara* which produces acidic urine. *Ati Vyayama* is another important *Nidana* for *Ashmari*, as it leads to *Vata Prakopa*. *Ati Vyayama* will cause excessive sweating there by reducing the quantity of urine output which leads to the concentration of urine which in turn favors the formation of stones. All these factors cause alteration in the urinary pH, ionic strength, and solute concentration and cause super saturation of urine. Supersaturated urine favors stone formation. *Mutra Vegadharana* which is one of the most important *Nidanas* for the formation of *Ashmari* causes *Apanavayu Prakopa* and also at the same time results in stasis of urine leading to supersaturation of solutes resulting in *Ashmari*. *Madya Sevana* leads to the vitiation of all *Tridoshas*. *Divaswapna* is also a *Nidana* of *Ashmari* which causes *Kapha Prakopa*. Most of the *Nidanas* mentioned are of the *Dosha Hetu* variety, especially the ones which cause *Kapha Prakopa* and *Apana Vata Vikriti*. Because in the formation of

Ashmari, the etiological factors responsible for the vitiation of neither *Kapha* alone nor the factors responsible for the provocation of *Vata* alone can independently cause the disease. *Ashmari* can result only from the combination of the above said etiological factors. These factors should invariably include the *Kapha* vitiating factors resulting in an increase of *Kledatva* of *Mutra* on one hand and *Apana Vata* vitiating factors causing *Rukshata* on the other hand.

Samprapti

As per the etiopathogenesis of *Ashmari*, it is mentioned in the classics that the person who does not undergo proper *Shodhana* and those who indulge in *Apathya Sevana*, the *Doshas* get aggravated in the *Mutravaha Srotas*. The site of *Mutravaha Srotas* is *Apana Sthana*, *Apana Vata* vitiation happens. So, the normal function of *Apana Vata* like the elimination of *Mutra* and *Mala* gets hampered leading to stasis of Urine in *Basti*. The *Tridoshas* which are already in a vitiated state act on the stagnated *Mutra* thereby altering the biochemical properties of urine. The *Kapha* is the *Samavaya Karana* for the formation of *Ashmari*. This *Kapha* present in *Mutra* can be considered as the matrix component told in modern science. *Vata*, *Pitta*, and *Kapha* act upon the *Kledatva* of urine, and urine gets solidified by the action of *Shoshana Guna* of vitiated *Vayu*. *Sleshma* forms the nidus for the formation of *Ashmari* which has an adhesive character and forms the ground substance for the formation of *Ashmari*. For the formation of stone, nidus serves for crystal aggregation, which is said, as *Kapha Sangatana* in our classics. Crystal aggregation and retention within the kidney are prerequisites for urinary crystals to be converted to urinary calculi. Stone formation requires Super saturation of urine, this super saturation may result from any cause like decreased urinary output, and excessive perspiration - all these can be put into one-word *Vishoshana* which brings about the concentration and supersaturation of urine.

Samprapti Ghataka

- *Nidana* : *Kapha, Vata Prakopa*
- *Dosha* : *Kapha Pradhana*
Tridosha
- *Dushya* : *Mutra*

- *Srotas* : *Mutravaha*
- *Srotodushti* : *Sanga*
- *Agni* : *Jatharagnimandya*
- *Ama* : *Jatharagni*
- *Dosha Marga* : *Koshta, Shakha*
- *Roga Marga* : *Abhyantara*
- *Udbhava Sthana* : *Pakvashaya (Apana Kshetra)*
- *Adhishthana* : *Basti (Mutravaha Srotas)*

Purvarupa

In *Purvarupa* of *Ashmari*, *Avila Mutra* suggests abnormal content in the urine, which could be the product of metabolic defects like Glycine metabolism and uric acid. *Mutrakrichra* is caused due to irritation of the bladder by calculi which causes difficulty in micturition. *Basti Shiro Vedana*, *Aasannadesha Ruja*, and *Basti Peeda* are the pain experienced due to *Ashmari*. *Basti Adhmana*, *Jwara*, and *Aruchi* may be due to the infection which is one of the important causes in the formation of *Ashmari* by increasing urinary matrix, which in turn promotes crystal adherence. These crystals are retained in the kidney and can become the nidus for stone formation. *Bastagan-dhatva* can be considered as the abnormal hyper concentration of urine resulting in increased ammonical odors in urine.

Rupa

Rupa of *Ashmari* such as *Nabhi Basti Vedana* and *Sarudhira Mutra* is quite similar to the symptoms mentioned in Urolithiasis. The clinical history of renal calculus consists of attacks of renal colic, the symptom of renal colic consists of severe paroxysms of piercing pain, starting in one loin, shooting down to the front of the thigh or testicle or vulva on that side. This is associated with retraction of the testicle and with the frequency of when an impacted stone moves downwards due to vigorous movements there will be bleeding due to injury caused to the urothelium of the ureter leading to hematuria and is presented with nausea or vomiting. These symptoms in most cases are followed by dysuria which may be due to *Visheernadhara of Mutra* or due to *Mutradhara Sangha*. Even *Acharya Vagbhata* has mentioned the symptom as *Rudhira Mutrata* due to *Kshata*. Based

on these clinical features and other factors, the disease can be co-related to Urolithiasis.

Ashmari Bheda

Calculi can form anywhere in the urinary system, but the most common site is the Kidney. The commonest form dark brown in color, consists of calcium oxalate which can be compared to *Vataja Ashmari* and it is spiky which means it is covered with sharp projections, which cause bleeding due to injury to the adjacent tissues which gives rise to more acute symptoms, this calculus can be compared to the appearance of *Kadamba Pushpa* in our classics. Another form consists of uric acid and urates mixed in varying proportions which can be compared to *Pittaja Ashmari*. These form light brown stones, round or branching and are the commonest stones in gouty subjects which resembles *Bhallataka Beeja*, and those who have highly acidic urine habitually deposit urates and also, and they may have multiple calculi. In alkaline urine, phosphate stones are sometimes found which can be compared to *Kaphaja Ashmari*, usually when the infection is present, and these calculi resemble *Kukkutanda* or *Madhuka Pushpa*. Cystine and xanthin are extremely rare types of renal calculi.

Ashmari Chikitsa

Treatment of *Ashmari* can be one or more of the following four types.

1. *Aushadha Chikitsa*
2. *Basti Chikitsa*
3. *Kshara Chikitsa*
4. *Shashtra Chikitsa*

Aushadha Chikitsa - *Acharya Sushruta* has advised treating the disease in the *Purvarupa* stage itself. A newly formed *Ashmari* is curable with medicines while big or chronic calculi can be treated with surgical interventions only.

Different types of *Ashmari Chikitsa* The different mentioned recipes are advised below,

a) *Vataja Ashmari* : *Pashanabheda, Vasuka, Vashira, Ashmantaka Shatavari, Gokshura, Kulattha* and *Kataka* fruit, *Ushakaadi Gana*. *Ghritha* should be prepared for the decoction of the above drugs. This *Ghritha* destroys the *Ashmari* caused by *Vata*. *Yavagu, Yusha, Kwatha*, milk (preparations), and food

prepared from these *Vata* alleviating groups of substances should be administered.

b) *Pittaja Ashmari*: *Ghritha* should be prepared from the decoction of the following drugs - *Kusha, Kasha, Shara, Gundra, Itkata, Morata, Pashanabheda, and Shalimula*. This recipe quickly disintegrates the calculi caused by *Pitta*. *Yavagu, Yusha, Kwatha, Kshara*, milk (preparations), and food prepared from these *Pitta*-allying groups of substances should be administered.

c) *Kaphaja Ashmari*: Drugs of *Varunadi Gana, Guggulu, Harenu, Kushtha, Maricha, Chitraka*, and *Ghritha* from goat's milk should be processed with the decoction of the above drugs to which the drug of *Ushakadi Gana* should be added. This recipe quickly destroys the calculi caused by *Kapha*. *Yavagu, Yusha, Kwatha, Kshara*, milk (preparations), and food prepared from these *Kapha*-allying groups of substances should be administered.

Basti Chikitsa - In this management, the decoction of latex trees administered through the urethral douche, flushes out the calculus immediately along with the blood collected in the bladder. *Basti* treatment in *Mutrashmari* is indicated by all the *Acharyas*.

Kshara Chikitsa - *Acharya Sushruta* has advocated the preparation of *Kshara (Til, Apamarga, Kadali, Palasha, Yava Kalka akshara)*. This *Kshara* destroys calculi, abdominal swelling (retention), and urinary gravel.

Shashtra Chikitsa - *Shashtra Karma* is indicated when the calculi are not curable by treatment with *Ghritha, Kshara*, decoctions, milk preparations, and *Uttarabasti*. The operation should be considered a last resort and must be performed after proper consent.

CONCLUSION

Kapha Pradhana Tridosha is the main contributing factor in the pathogenesis of *Ashmari* i.e., binding the *Ashmari*. Usually, when the urine gets stagnated in the urinary system, it tends to get concentrated and infected. Thus, there is an increased chance of calculi formation. Hence, the main line of treatment should be *Tridoshahara, Srotoshodhana, Vatanulomana* es-

pecially *Apana Vayu Anulomana* proper maintenance of *Agni*, and removal of excess waste material. The drugs with *Madhura*, *Tikta*, *Kashaya Rasa*, *Katu Vipaka*, and *Ushna Virya* will do *Kapha Vata Shamana* which is the main *Dosha* in formation, and also *Apana Vayu Shamana*. Pain control is an important measure to be taken in *Mutrashmari*. Acute spasmodic or colicky pain results when calculus moves downwards through the urinary tract or lodges at a certain junction. The pain explained as *Tuni* can be taken into consideration for understanding pain related to *Ashmari*. It is explained as pain which originates from *Mutrashaya* and radiates downwards towards *Guda* and *Upastha*. As mentioned by our *Acharyas* that pain cannot occur without the involvement of *Vata* and *Basti* is *Ardha Chikitsa* mentioned for *Vata Dosha*, the action of *Basti* can be understood in 2 parts –*Avasthika* and *Roga Shamana*. *Sushruta Acharya* has mentioned *Basti* with *Sneha* and *Lavana*, *Hingwadi Taila*, and *Hingu (Pragada Matra)* with *Yavakshara* is helpful in *Avasthika Avastha*. For *Roga Shamanartha*, *Sushruta Acharya* has mentioned the usage of *Uttara Basti* with *Ashmarighna Dravyas*. According to *Astanga Hrudaya*, 3-4 *Basti* should be given. *Sharangadhara Acharya* have mentioned *Matra* of *Basti Dravya* to be 1 *Pala*. In *Bhaishajya Ratnavali*, *Varunadi Taila* is mentioned as *Basti Dravya* for *Ashmari*.

A proper understanding of etiological factors is important to prevent the occurrence of *Mutrashmari*, treat it as an individual patient and proper *Pathyapathya* with regular *Shodhana* at intervals can combat the *Mutrashmari*

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