MONTH: JULY: AUGUST 2014
VOLUME: 2 ISSUE: 4
ISSN: 2348 – 1846

PunarnaV

AN INTERNATIONAL PEER REVIEWED AYURVED JOURNAL
ON LINE BI-MONTHLY AYURVED JOURNAL
www.punarnav.com
Email: explore@punarnav.com, punarnav.ayu@gmail.com

TITLE: A REVIEW ON THE CONCEPT OF UROLITHIASIS IN AYURVEDA

Gajanana Hegde [1], Priya Bhat [2]

PunarnaV ISSN: 2348 1846
AN INTERNATIONAL PEER REVIEWED AYURVED JOURNAL

A REVIEW ON THE CONCEPT OF UROLITHIASIS IN AYURVEDA

Gajanana Hegde [1], Priya Bhat [2]

[1] HOD, [2] M.D.Scholar Department of Kayachikitsa, Govt Ayurveda Medical College, Mysore, Karnataka, India

ABSTRACT:

Urolithiasis is a frequently encountered urological disorder. Urinary calculus is a stone like body composed of urinary salts bound together by a colloid matrix or organic materials. It consists of a nucleus around which concentric layers of urinary salts are deposited. It is a multi-factorial disorder resulting from the combined influence of epidemiological, biochemical and genetic risk factors. Concept of Urolithiasis is very well dealt in Ayurveda under the chapter of Ashmari. The disease Ashmari is described in all major classical text books of Ayurveda. It is one of the prime diseases affecting the mutravaha srotas and is grouped under the eight most difficult to cure diseases - or astamaha gadas. Different varieties of Ashmari are explained in classics and various modalities of treatment are explained for the same. Since the prevalence and incidence of Urolithiasis is reported to be increasing across the world, this article reviews the concept of Urolithiasis with an Ayurvedic perspective for planning a better management of the same.

KEY WORDS: Ashmari, Ashtamahagada, Ayurveda Mutravaha srotas Urolithiasis,

INTRODUCTION

Correspondent:
Dr Priya bhat
M.D.Scholar,
Department of Kayachikitsa,
Govt Ayurveda Medical College, Mysore, Karnataka, India

Urinary calculi are an important health problem in the current era. It is estimated that about 5 % of women and 10 % of men will have at least one episode by the age of 70. In India 5.7 million people are estimated to be suffering from this disease. More than 50 per 10,000 hospital admissions are related to urinary calculi. The explanation of the disease *Ashmari* is

very much similar to Urolithiasis. Word *Ashmari* comprises of two words '*ashma* and '*ari'*. '*ashma'* means stone or a gravel and '*ari'* means enemy. *Ashmari* is a disease in which there is formation of stone, exerting great suffering to man like an enemy. It is one among the *ashtamaha gadas* and a disease of *mutravaha srotas* (urinary system).

ETIOLOGY

There is no definite known cause for urinary calculi, although dehydration is a key risk factor. Kidney stones can also be caused by an imbalance in a person's metabolism causing abnormally high levels of mineral salts to collect in the urine. Stones made up of uric acid occur in people who have diseases such as gout, chronic dehydration, and some cancers. Hyperparathyroidism, a condition in which the parathyroid gland is overactive, can also be linked to kidney stones. In addition, certain disorders of the bowel or intestines and also a chronic bacterial infection of the urinary system can lead to kidney stones,

Among the Ayurvedic classics, Sushruta Samhita is the only text book among *brihattrayee*, which has described *Ashmari* as a separate disease entity with its etiological factors. Hareeta samhita is another primary source of information regarding the causative factors of *Ashmari*.

Two distinct causative factors described in Sushruta samhita are; firstly, *asamshodhana sheelata* (not performing purificatory therapies) and secondly *apathya sevana* (improper dietary habits)[1]. Astanga hridaya mentions *mutravarodha* (suppression of urge of micturition) as important etiology of *Ashmari*. Hareeta samhita adds one more factor to the list of etiology i.e the *pitramatruka dosha* (hereditary factor)[2].

Asamshodhana sheelata mentioned in Sushruta samhita can be interpreted in two ways- nonperformance of purificatory therapies & improper purificatory procedures. The improper purificatory procedures results in the residual accumulation of *kapha* in *basti* (~ bladder, contextually refers to whole of urinary system). They also result in aggravation of *vata* & *pitta dosha* in *mutravaha srotas* (urinary system). Hence all the three *doshas* collectively results in the formation of *Ashmari*. However *kapha* is considered to be the predominant *dosha* for the formation of *Ashmari* as it is the *arambhaka dosha* (initiating factor) as well as the *upadana karana* (prime causative factor) of the disease. This opinion holds good for all the varieties of *Ashmari.* *Apathya* or improper diet is another important factor for the causation of *Ashmari*. The non- judicial intake of

food may be in the form of *samashana* (combining both compatible and non-compatible foods), *adhyashana* (eating foods too frequently), *viruddha ahara* (non-compatible foods) etc. The opinion of Astanga hridaya for considering obstruction to the flow of urine, an important reason for the formation of Ashmari has also been substantiated by Hareeta Samhita and *Gayadasa* the commentator of Sushruta samhita. Here *Ashmari* results due to provocation of *apana vata* which has its seat in *basti*.

The Specific cause mentioned in Hareeta samhita for the formation of *Ashmari* is *pitrumatrika dosha (*passed down from the genes of parents), suggesting the hereditary susceptibility of an individual to the disease. It is evident from the above analysis that most of the etiological factors mentioned cause aggravation of *kapha dosha* and *apana vata.* Apart from the direct causes of *Ashmari* mentioned above, one can find indications of different other causes mentioned in Charaka samhita in the context of *mutrakrichhra* (~dysuria). Over indulgence in *vyayama* (physical exercise), excessive intake of *ruksha madya* (consuming alcoholic beverages), *anupa mamsa* (eating flesh of animals of marshy places), *adhyashana* (eating foods too frequently) and *ajeerna* (indigestion), are all considered to be causative factors of *Ashmari*[3]. They are not only responsible for aggravation *dosha* but also predispose abnormality in *mutravaha srotas* and there by produce *Ashmari*.

TYPES OF ASHMARI:

Urinary stones are classified according to their chemical composition. There are four main types of urinary calculi, classified depending on the chemicals that make up the stones: calcium salts (calcium oxalate, calcium phosphate, mixed calcium oxalate/phosphate), magnesium ammonium phosphate (struvite), uric acid, or cystine. Among them most common are the calcium oxalate crystals.

Table no 1 showing the different types of calculi with their prevalence percentage[4].

Composition	Percentage of all calculi
Calcium oxalate	70
Calcium phosphate	15
Cystine	2
Magnesium ammonium phosphate (struvite)	3
Uric acid	10

Similarly in the classical texts of Ayurveda there is mentioning of four types of *Ashmari*. They are *vataja, pittaja, kaphaja* and *shukraja Ashmari*[5].

PATHOGENESIS

Pathology of urinary calculi depends on super saturation of urine i.e. when the urine solvent contains more solutes than it can hold in solution with one or more calculogenic (crystal-forming) substances, a seed crystal may form through the process of nucleation. Adhering to cells on the surface of a renal papilla, a seed crystal can grow and aggregate into an organized mass. Depending on the chemical composition of the crystal, the stone-forming process may proceed more rapidly when the urine pH is unusually high or low.

Ayurvedic description of pathogenesis of disease *Ashmari* states that, the all the aggravated *doshas* lodge in the bladder by the process of *upasnehana* (osmosis) in the same way as urine reaches bladder. After entering bladder these *doshas* collectively result in the formation of *Ashmari*. Gayadasa the commentator of Sushruta samhita emphasises the role of each individual *dosha* in the formation of *Ashmari*. *Kapha* is considered to be the

predominant *dosha* since it is the *upadana karana* or material cause for *Ashmari*. *Pitta* is responsible for its *ghanata* (solidification) and *vata* is responsible for *shoshana* (dryness). The mass thus formed is again encoated by the vitiated *doshas* and further hardened by *vata*.

On careful dissection of the doshas responsible in the formation of this disease, it is evident that *kledata* (liquid component) of *kapha*, *rukshata* (dryness) of *vata* and *ushmata* (heat) of *pitta* are increased simultaneously. Regarding, *vata dushti* it is clearly seen that the increase of dryness is the main pathogenesis concerned. Dryness is increased by the etiological factors such as intake of alcoholic beverages etc. *Apana vata* is the *dosha* residing in bladder which is provoked locally by its etiological factors such as withholding of urge of micturition. This concept very well matches with the super saturation theory of development of urinary calculi.

CLINICAL FEATURES

Signs and symptoms of urinary calculi depend on the site and size of the stone. Smaller stones are usually asymptomatic whereas larger stones produce renal colic commonly accompanied by urinary urgency, restlessness, haematuria, sweating, nausea, and vomiting.

Common symptoms of all the *Ashmari* as mentioned in the classics are pain in the

region of the umbilicus, perineum and bladder, urinary flow interrupted when blocked by the stone and resuming on its dislodging, urine is clear, having the colour of *gomedaka* gem, mixed with blood due to the bleeding caused by friction and experience of severe pain on movement[6]. The specific symptoms of *vataja Ashmari* include severe colicky pain in the region of umbilicus, penis and perineal region. Patient experiences burning and splitting pain while passing urine. There will be strangury and patient passes urine drop by drop. In *pittaja Ashmari* there will be burning sensation in bladder and the colour of urine will be yellowish red. *Kaphaja Ashmari* also exhibits with pain but it is not as severe as in *vataja* type. The colour of urine will be white and patient experiences feeling of heaviness in the flank or bladder region[7].

Ayurvedic explanation of structure of *Ashmari* gives a clear idea about the composition of the same. *Vataja Ashmari* is said to be black in colour, dry, rough, thorny, irregular and resembles to that of flower of *kadamba* tree (Neolamarckia cadamba). This explanation of *vataja Ashmari* corresponds to calcium oxalate calculi. As this type of stone is extremely hard and is dark in colour due to staining with altered blood precipitation on its surface. It is spiky and covered with sharp projections. *Pittaja Ashmari* is said to have red, yellow or colour of honey and resembles *ballataka asthi* (seed of Semecarpus anacardium) i.e present in the form of clusters, which very well correlates with uric acid stone that has yellowish or reddish brown colour. They are small hexagonal shaped and multiple in number. The *kaphaja Ashmari* is white in colour or has the colour of *madhuka pushpa* (flower of Madhuca indica), bigger in size and resembles hen's egg. Phosphate stones are dirty white or yellowish white in colour. They grow bigger in size in major and minor calyces. They are smooth, round like hen's egg. And hence phosphate stones can be compared to *kaphaja Ashmari*

DISCUSSION

All the samhitas have emphasized on kapha dosha being the prime *dosha* in the formation of *Ashmari*. This *kapha dosha* can be taken as increased amount of calcium, oxalates and purin in circulation caused by intake of food articles which increase kapha such as *snigdha*, *guru* and *madhura* (unctuous heavy sweet food articles) and *dugdha vikruti* (milk products) which can be taken as high protein and fat diet. About 20% of calcium oxalate stone formations are

hyperuricosuric[8], primarily because of an excessive intake of purine from meat, fish and poultry, which again direct towards involvement of *kapha dosha*.

Factors such as *rooksha madya sevana* (alcoholic beverages), *maituna vighata* (coital injury), *ativyayama* (excess physical work), *ashwayana* (horse ride) and *mutra vegadhara* (withholding the urge of micturition) can be taken as factors causing aggravation of *vata dosha.* Alcoholic beverages by its *rukshata* (dryness), *vyavayi* (spreading) and *vikasi* (opening channels) properties leads to aggravation of *vata dosha*. Increased intake of alcohol may alter urinary pH also interferes with the body's ability to excrete uric acid, thereby facilitating formation of calculi[9].

Excessive indulgence in exercise causes aggravation of *vata dosha* and also increased perspiration resulting from exercise leads to increased concentration of urine. By virtue of aggravated *vata dosha* there will be drying of *kapha dosha* there by facilitating the formation of *Ashmari*. It is noted that more incidences of calculi are found in people who are exposed to high temperature and wind and those who perspire a lot[10]. Hot climate usually expose people to more ultra violet rays, increasing Vitamin D3 production. Increased calcium and oxalate excretion has been correlated with increased exposure time to sunlight.

Withholding the urge of micturition is one of the most important causative factors for the formation of *Ashmari*. This causes aggravation of *apana vata* and also at the same time results in stasis of the urine leading to super saturation of the solutes which are the results of excess *kleda* (dampness), a property of *kapha dosha* which attributes to the aggregation of different solutes finally resulting in *Ashmari*. Suppression of urge seen in some of the patients like 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. The mode in which the withholding the urge of micturition operates as a causative factor of *Ashmari* can classifies under three headings. Firstly it may allow time for precipitation of crystals from normally supersaturated urine, The lack of flushing action due to withhold of the urge may result in the growth of the size of the crystal which already exists and finally the susceptibility to repeated infections of urinary system may indirectly play a role in the formation of calculi by altering the pH value of the urine.

Beeja doshaja, comprises of the inborn error in *beeja* (semen/ ovum) and

beejabhaga avayavas (~chromosomes) of both the parents leading to production of *Ashmari*. This aspect can be correlated to the hereditary aspect of renal stones told in contemporary science. One of the most common causes of kidney stones is hypercalciuria. In this condition, the urine has excessively high levels of calcium. Analysis of family members with and without stones demonstrates that this trait (i.e. elevated urinary calcium concentrations) is passed from generation to generation. Another condition called a Primary hyperoxaluria (PH) in which too much of oxalate is produced by the liver and then removed from the body in the urine. When too much oxalate is present in the urine, oxalate crystals may be formed[11].

Aggravated *vata dosha* resulting due to above mentioned leads to drying of *drava bhaga* (liquid component) of body and hence concentration of urine will be increased. This leads to aggregation of different solutes present in the urine causing crystallization, nucleation and thereby stone formation occurs.

CONCLUSION

Urinary calculi can be viewed as a disease caused by aggravation of *tridoshas*. Here *kapha* is considered to be the material cause for its formation, *pitta* is responsible for its solidification and *vata* is responsible for dryness. In the pathogenesis of urinary calculi it is evident that *kledata* of *kapha*, *rukshata* of *vata* and *ushmata* of *pitta* are increased simultaneously. Various types of *Ashmari* are differentiated by their morphological appearance. On basis of this it may be concluded that *Vataja Ashmari* can be compared to calcium oxalate crystals, *pittaja Ashmari* as uric acid crystals and *kaphaja Ashmari* can be viewed as phosphate crystals.

REFERENCES

1. Sushruta: Sushruta Samhita with Nibandha Sangraha commentary of Acharya Dalhana, Edited by Vaidya Jadvji Trikamji Acharya and Narayana Ram Acharya 'Kavyatirtha'; Published by Chaukhamba Sanskrit Sansthan,Varanasi; Edition-reprint-2004; Nidana sthana 3/4; p-277.
2. Harita, Harita samhita, Kshemaraj Shri Krishnadasa's hindi commentary, Sri Venkateshwara mudralaya, Mumbai, 1984, Trithiya sthana, 31/1; p- 398.
3. Agnivesha, Charaka samhita, with Chakrapanidatta's Ayurveda deepika commentary, Edited by Vaidya Jadavji Trikamji Acharya,

Published by Chaukhamba prakashan, Varanasi, Edition-reprint 2007, Chikitsa sthana, 26/32; p- 599.

4. www.merckmanuals.com/.../genito urinary.../urinary_calculi/urinary_calc...;6/5/14
5. Sushruta: Sushruta Samhita with Nibandha Sangraha commentary of Acharya Dalhana, Edited by Vaidya Jadvji Trikamji Acharya and Narayana Ram Acharya 'Kavyatirtha'; Published by Chaukhamba Sanskrit Sansthan,Varanasi; Edition-reprint-2004; Nidana sthana 3/3; p-276.
6. Sushruta: Sushruta Samhita with Nibandha Sangraha commentary of Acharya Dalhana, Edited by Vaidya Jadvji Trikamji Acharya and Narayana Ram Acharya 'Kavyatirtha'; Published by Chaukhamba Sanskrit Sansthan,Varanasi; Edition-reprint-2004; Nidana Sthana 3/7; p-277.
7. Sushruta: Sushruta Samhita with Nibandha Sangraha commentary of Acharya Dalhana, Edited by Vaidya Jadvji Trikamji Acharya and Narayana Ram Acharya 'Kavyatirtha'; Published by Chaukhamba Sanskrit Sansthan,Varanasi; Edition-reprint-2004; Nidana Sthana 3/8-10; Pp-277-278.
8. www.medscape.com/viewarticle/741273_6; 10/5/14
9. alcoholrehab.com/alcoholism/alcohol-and-kidney-stones/;10/5/14
10. Edgar V Lerma, Jeffrey S Berns and Allen R Nisserson's Current Diagnosis and Treatment In Nephrology and Hypertension, The Mc Graw- Hill Companies, New York, reprint: 2009; p- 350.
11. *rarediseasesnetwork.epi.usf.edu/RKSC/studies/6401.htm;10/5/14*