INTRODUCTION
Urinary calculus is a stone-like body composed of urinary salts bound together by a colloid matrix of organic materials. The prevalence being high at any part of the world, males are affected more than females. Though causes for calculi formation are not fully understood, multiple factors are enlisted. In Ayurveda, the disease urinary calculus has been described in detail under the heading of Mutra Ashmari. Sushruta, "The Father of Surgery," has described its etiopathogenesis, symptomatology, medical and surgical management and prognosis in detail. Urinary stone has become a burning problem in the era of the modern medicine because of its high recurrence rate even after best available treatment. Acharya Sushruta explained the cause for the recurrence as not undergoing the Shodhana (~purification treatment). An Ayurvedic explanation on treatment of urinary stone is based mainly on the type of Ashmari and Dosha. But it may prove hard to diagnose it only on doshic symptoms as the urinary stones are obscured from external vision. Thus it needs an attempt to understand contemporary science, diagnostic tools to give a better approach for its management.

Conceptual Study: Detailed description regarding etiopathogenesis, classification, clinical features, prognosis and treatment are found in several authoritative texts of Ayurveda.
Pathogenesis of Ashmari: Sushruta explains the pathogenesis of Ashmari with the simile of water kept in earthen pot. He explains long stasis of urine in bladder as precursor of urinary calculi, explains with an example of sedimentation of mud at the bottom of an earthen pot, after prolonged storage of even clear water. And the process
is continued by the influence of Vayu and Agni in bladder in the presence of vitiated kapha\(^3\). According to Charaka, by the action of Ruksha Guna of Vata against Shukra or Pitta or Kapha dries up Mutra, the Ashmari is formed in the Basti, as the bile hardens in the Gallbladder of the cow to form the ‘Go-rochana’\(^4,5\).

**Types of Ashmari** \(^6,7,8\)

<table>
<thead>
<tr>
<th>Ashmari</th>
<th>Charaka</th>
<th>Sushrutha</th>
<th>Vagbhata</th>
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<tbody>
<tr>
<td>Vataja Ashmari</td>
<td>+</td>
<td>+</td>
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</tr>
<tr>
<td>Pittaja Ashmari</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Kaphaja Ashmari</td>
<td>+</td>
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<tr>
<td>Shukra Ashmari</td>
<td>+</td>
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</tbody>
</table>

**Table 1: Showing the classification of Ashmari according to various authors**

**Signs and Symptoms** \(^6,7,8\)

The clinical symptoms presented by a person who is suffering from Vataja Ashmari will have excruciating pain during micturation, pain at the umbilical region and passes Vata, Mutra and Purisha with high difficulty. The Vataja Ashmari is having the characteristics such as; it is blackish in Color, hard, rough with uneven surface and thorny like Kadamba flowers.

The person suffering from Pittaja Ashmari will present with different types of burning sensation, the Ashmari has characteristics such as, it is reddish and yellowish in color and surface is like kernel of marking nut or honey.

The person suffering from Shleshmaja Ashmari will present with mild pain, Ashmari is having characteristics such as white in color, slimy in texture, large in size similar to hen’s egg or having color of Madhuka flower.

**Urinary calculus**

It is an organic matrix, mixture of muco-proteins and muco-polysaccharides. It consists of a nucleus around which concentric layers of urinary salts are deposited.

**Types of urinary calculus** \(^9,10,11,12\)

These stones are usually formed in acidic urine and usually consist of calcium oxalate, uric acid, urates, cystine, xanthine or calcium carbonate. Calcium Oxalate Calculus is a type of stone usually single and is extremely hard. It is dark in color due to staining with blood. This stone is popularly known as Mulberry stone. The peculiarities of this stone are - it is often impacted in the ureter, it causes bleeding due to its rough surface. There may be deposits of secondary phosphate on its surface leading to formation of mixed stone. Due to high calcium content it casts an exceptionally good shadow radiological view (radio-opaque). The rough surface may also be evident in x-ray.

Uric Acid and Urate Calculus: The majority contains urates and enough calcium oxalate to render such calculi radio-opaque. These stones usually occur in multiples and so are typically faceted and are of moderate hardness. Their color varies from yellow to dark brown. On section the stones display wavy concentric markings, with smooth surface. These stones usually occur in Acidic urine. These stones are yellow, soft and friable. But unfortunately if these do not contain some impurities like calcium
oxalate, so may not be visible on straight x-ray.

Cystine Calculus usually appears in patients with cystinuria, sometimes in young girls. Cystine is an amino acid rich in sulphur, Cystine calculi usually occurs in multiple. These calculi are soft and yellow or pink in color. When these are exposed outside, they gradually change to green. Such stones also occur in acidic urine. Xanthine calculi are extremely rare. These are smooth, round and brick red in color.

Phosphate Calculus: Are Majority of these stones composed of calcium phos-

Clinical Features

Table 2: Showing clinical feature of calculus, depending upon the site of the calculi

<table>
<thead>
<tr>
<th></th>
<th>Signs</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal Calculus</td>
<td>Renal angle tenderness, renal point tenderness, Swelling-when there is hydronephrosis, Pyelonephritis, associated with renal calculus then swelling may be palpated in the flank, muscle rigidity- found only in cases with acute infection</td>
<td>Pain in flanks, blood mixed urine, nausea and vomiting, cloudy or odorous urine, frequent urination, strangury, fever and chills</td>
</tr>
<tr>
<td>Ureteric Calculus</td>
<td>Patient is usually in agony, tossing over bed, tenderness over part where calculus lies, skin is cold and clammy and there may be other signs of mild shock</td>
<td>Radiating, colicky, agonising pain, Nausea and vomiting, Blood mixed urine. Urgency and frequency</td>
</tr>
<tr>
<td>Vescical Calculus</td>
<td>Giant calculi can be felt suprapubically, Rectal examination – Relaxed anal sphincter</td>
<td>Increased frequency, Pain and discomfort at the end of micturition, terminal haematuria, Dysuria, Acute retention of urine.</td>
</tr>
<tr>
<td>Urethral Calculus</td>
<td>–</td>
<td>Male-Obstructed flow, dribbling of urine, radiating pain in glans penis.</td>
</tr>
<tr>
<td></td>
<td>Female-Increased frequency, dysuria, nocturia, Pyuria and in rare haematuria, dyspareunia.</td>
<td>DISCUSSION</td>
</tr>
</tbody>
</table>

By above review it is clear about various considerations of Ashmari. The symptoms mentioned under calcium oxalate stone mimic with Vataja Ashmari mentioned in authoritative books of Ayurveda. Uric acid stones, Urate Calculus appear yellowish.
brown in color comparative to authoritative version of Pittaja Ashmari. Color changes of
cystine stone initially yellow and green on
exposure to external atmosphere again com-
pares with basic color representation of
Pitta. Phosphate stone impart white color,
smooth surface, larger size, lesser pain com-
pared to other types of calculi, correlates
with classical features of Kapha. Thus we
can draw a conclusion of near relation be-
tween authoritative explanations of appear-
ance of calculi in both treatises of Ayurveda
as well as modern.

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Type of Ashmari</th>
<th>Type of calculus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe pain, obstruction to flow of urine or intermittent flow of urine, stone- blackish in colour, hard, rough with uneven surface, and thorny like Kadamba flowers.</td>
<td>Vataja Ashmari</td>
<td>Oxalate lime calculus</td>
</tr>
<tr>
<td>Obstruction to flow of urine, burning type of pain with haematuria, stone is reddish, yellowish, black in Color and surface is like kernel of marking nut or honey Colored.</td>
<td>Pittaja Ashmari</td>
<td>Uric acid calculus, Urate calculus, Cystine calculus.</td>
</tr>
<tr>
<td>Obstruction to the urine flow with mild ache, it is white in Color, unctuous in texture, large in size similar to hen’s egg or having Color of Madhuka flower.</td>
<td>Kaphaja Ashmari</td>
<td>Phosphate calculus</td>
</tr>
</tbody>
</table>

CONCLUSION
The explanations given by the authoritative texts of Ayurveda can be con-
verted into standard norms for the diagnosis of Ashmari with the help of modern science. By comparing the external appearance of Ashmari with renal calculus we find that both are similar. By this comparison we may conclude that Vataja Ashmari is calcium Oxalate calculus, Pittaja Ashmari is uric acid, urate, cystine calculus, Kaphaja Ashmari is phosphatic calculus.

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CORRESPONDING AUTHOR
Dr. Mohammed Thameem
PG Scholar, Dept of Shalya Tantra
S. D. M. College of Ayurveda & Hospital
Hassan, Karnataka, India
Email: thameem.dr@gmail.com

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