



## Understanding of *Pittaja Mutrakrichra* W.S.R. to Lower Urinary Tract Infections – A Review.

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### ABSTRACT:

In *Ashtanga Hridaya Nidana Sthana*, *Mutaroga* are classified as *Mutra-Apravritijanya* and *Mutra-Atipravritijanya Roga*. *Mutrakrichra* and *Mutraghata* are two main diseases which are included under the *Mutra Apravritijanya Roga*. *Mutraghata* means the *Alpapravriti* of urine and *Mutrakrichra* means painful micturition.

*Pittaja Mutrakrichra* is one of the types of *Mutrakrichra* and is explained in detail in classical texts of Ayurveda with its specific characters. Due to consumption of *Ushna*, *Tiksha*, *Ruksha Ahara*, and *Mutra Vegadharana*, less water intake, maintaining poor hygiene leads to aggravation of *Pitta* followed by *Kapha* and *Vata* *Prakopa*. *Lakshanas* of *Pittaja Mutrakrichra* are *Peetamutrata*, *Sadahamutrata*, *Krichhramutrata*, *Saraktamutrata*, *Muhurmuhur Mutra Pravrutti* which can be correlated to Lower urinary tract infections (LUTI) on theoretical and clinical symptomatology of disease i.e., dysuria with burning micturition, frequency and urgency.

UTI are the second most common type of infection in the body, prevalence was significantly higher in females than in males.

This purpose of the article is to understand the *Ayurvedic* concept of *Pittaja Mutrakrichra* with modern concept of lower urinary tract infections.

**KEYWORDS:** *Pittaja Mutrakrichra*, Lower Urinary Tract Infection, Cystitis, Urethritis.

### INTRODUCTION:

*Pittaja Mutrakrichra* is the main and leading disorder of the urogenital tract. Since *Vedic* period the *Mutra Rogas* are prevalent and well acknowledged in *Samhitas* with different treatment modalities, which can be concurrent to lower urinary tract infections on theoretical and clinical symptomatology of disease.

The UTI prevalence was 53.82% in patients; however, the prevalence was significantly higher in females than in males. Females within the age group of 26-36 years and elderly males of  $\geq 48$  years showed higher prevalence of UTI. Gram negative bacteria (90.32%) were found in high prevalence than Gram positive (9.68%). *Escherichia coli* (42.58%) was the most prevalent gram-negative isolate<sup>1</sup>.

*Mutra* (urine) is an outcome of digestion of food and metabolism in the body which passes through urethra. *Krichhrata* (i.e. dysuria) and *Mutra-avrodha* are simultaneously present in both *Mutraghata* and *Mutrakrichchra*, but *Krichhrata* (dysuria) is predominant feature in *Mutrakrichra*<sup>2</sup>.

*Mutrakrichra* is made up of two words i.e. *Mutra* + *Krichra*. *Mutra* word is derived from the root '*Mootra Prasravane*' meaning 'to ooze or exude profusely and get collected in Basti'<sup>3</sup>.

*Kriccha* word is formed by adding "*Raka*" *Pratyaya* and "*Chaa*" *Aadhesh* to "*Kruti Chedana*" *Dhatu* which gives rise to the word *Kricchra* which means, passing with difficulty, "*Krunanati iti krucchram*" *kruti Chedana*.

मूत्रस्य कृच्छ्रेण महता दुःखेन प्रवृत्ति || (M.N. 30/1)

*Mutrakrichra* can be defined as painful discharge of urine or strangury or difficulty in micturition and UTI (Urinary tract infection) can be defined as multiplication of organisms in the urinary tract. It is usually associated with the presence of neutrophils and  $> 10^5$  organisms/ml in a midstream sample of urine (MSU). When the infection is restricted to the lower urinary tract i.e. urethra, bladder and prostate then it is called as Lower urinary tract infection (LUTI)<sup>4</sup>.

*Acharya* Sushruta described eight types of *Mutrakrichra* which are as follows i.e., *Vataja*, *Pittaja*, *Kaphaja*, *Sannipataja*, *Shalyabhogataja*, *Ashmarijanya*, *Shakarajanya*, *Pureeshajana Mutrakrichra*<sup>5</sup>.

When person indulges in *Nidanas* like intake of *Ati Ruksha*, *Ushna*, *Tikshna Ahara* and the person indulges in *Vyavaya* or intake of *Ahara* and *Udakapana* during the urge of micturation, *Mutra Vegadharana*, *Ati Vyavaya* and *Atigamana* on *Gajavaji*, leads to stasis of urine for longer duration and it paves the way for micro-organisms to grow and that leads to infection mostly caused by Gram-negative bacteria i.e., *E. coli* is the most common bacteria responsible for causing more than 80% community acquired UTI<sup>6</sup>. Gram-positive bacteria play less role in urinary tract infections.

The symptoms of *Pittaja Mutrakrichra* such as *Saruja/Kruchhra Mutrapravrutti*, *Sarakta Mutrata*, *Sadaha Mutrata*, *Muhurmuhu Mutrapravrutti*<sup>7</sup> can be correlated with the symptoms of LUTI.

All forms of urinary tract infections start as a minor ailment, they often have a tendency to recur and relapse. Repeated lower urinary tract infection has a tendency towards ascending involvement of upper urinary tract.

### Adhikarana of disease in Samhitas

Samhita	Sthana	Adhyaya
<i>Sushruta Samhita</i>	<i>Uttaratantra</i>	59 <sup>th</sup>
<i>Carak Samhita</i>	<i>Chikitsasthana</i>	26 <sup>th</sup>
	<i>Siddhisthana</i>	9 <sup>th</sup>
<i>Astanga Hridaya</i>	<i>Nidana Sthana</i>	9 <sup>th</sup>
	<i>Chikitsasthana</i>	11 <sup>th</sup>
<i>Astanga Sangraha</i>	<i>Nidanasthana</i>	9 <sup>th</sup>
<i>Madhav Nidana</i>		30 <sup>th</sup>
<i>Kashyapa Samhita</i>	<i>Sutrasthana</i>	25 <sup>th</sup>
	<i>Chikitsa Sthana</i>	10 <sup>th</sup>
<i>Bhela Samhita</i>	<i>Chikitsasthana</i>	12 <sup>th</sup>

### NIDANA (ETIOLOGY):

व्यायामतीक्ष्णौषधरूक्षमद्यप्रसङ्गनित्यद्रुतपृष्ठयानात्  
आनूपमत्स्याध्यशनादजीर्णात् स्युर्मूत्रकुच्छ्राणि नृणामिहाष्टौ|| (Ch.Ch.26/32)

### NIDANA :

- Mutra vega nigrhana:** suppression of urge of micturition.
- Mutritodak – Bhaksya - Stri sevana :** Who indulges in *Maithuna Karma*, *Aahara Sevana* under the urge of urination, leads to stasis of urine for longer duration and it paves the way for micro-organisms to grow and that leads to infection.
- Ksheena:** weak or malnourished persons like immunocompromised persons is more prone to UTIs due to weak immune system.
- Kshata:** Injury to *Mutravaha Srotas* by instrumentation like cystoscopy, catheterization and in surgeries like use of urethral dilators in urethral stricture etc.

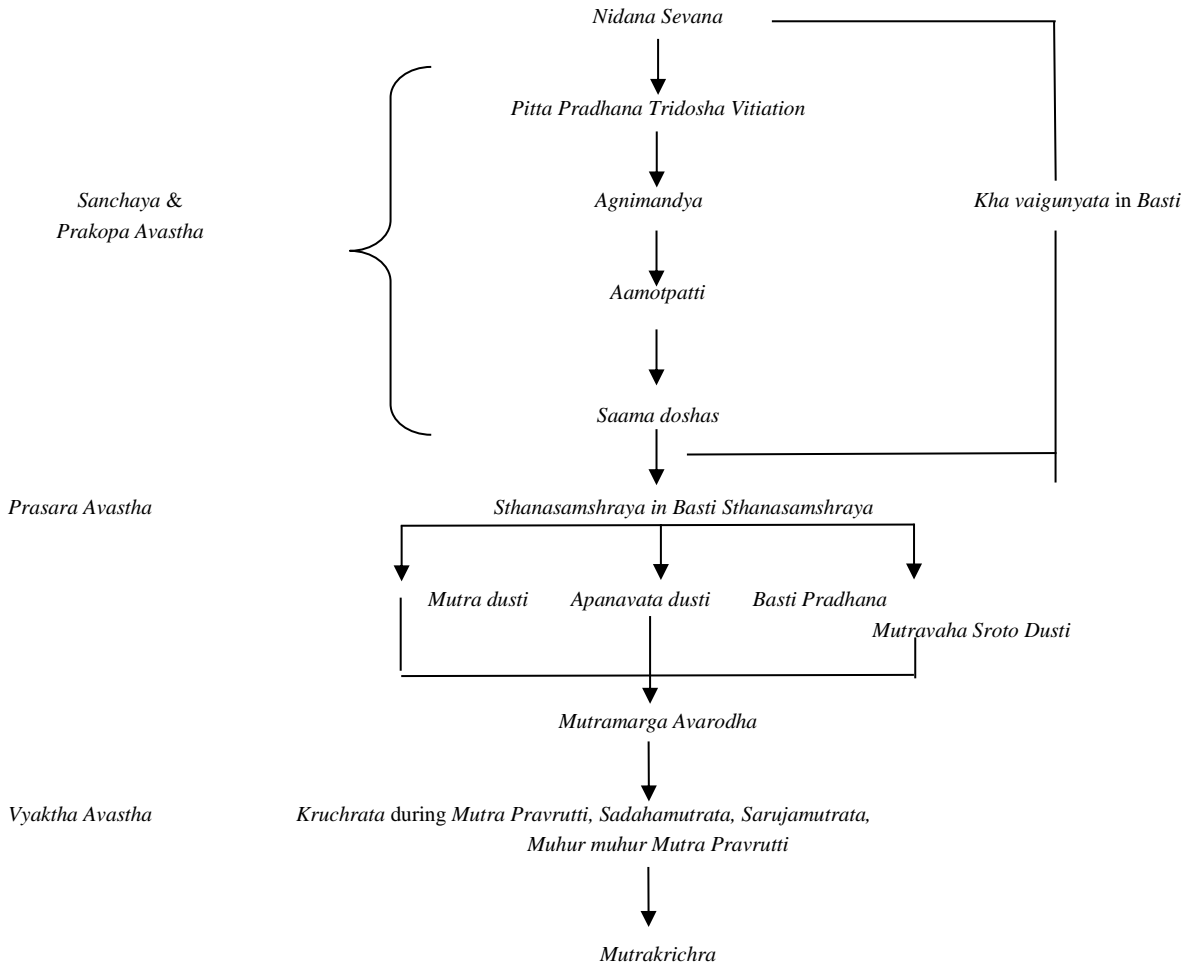
### Visista Nidana:

Excessive exercise, *Tikshna Aushadha Sevana*, excessive intake of *Ruksahara-madhya*, *Anupa Mamsa*, *Adhyasana*, *Ajirna* and journey on fast moving vehicles or horse-riding leads to metabolic derangements in body. It alters the normal composition of urine and pH of urine, thus cause inflammation in urinary tract e.g., dehydration makes the urine concentrated and thus increase in urinary pH. Likewise, strong oral medication or *Ahara*, are excreted through urine, causes inflammatory changes in urinary tract.

*Acharya Sushruta* and *Vagbhata* have not mentioned *Nidana*, while *Yogaratanakar* has mentioned similar *Nidanas* as that of *Acharya Charaka*.

### SAMPRAPTI (PATHOGENESIS):

पृथङ्गलाः स्वैः कुपिता निदानैः सर्वेऽथवा कोपमुपेत्य बस्तौ|  
मूत्रस्य मार्गं परिपीडयन्ति यदा तदा मूत्रयतीह कुच्छ्रात्|| (Ch.Ch.26/33)



**SAMPRAPTI GHATAKAS:**

Doshas : Pitta Pradhana Apanavata (Tridosha)

Dooshya : Mootra, Rasa Dhatu

Agni : Jatargni: Manda

Dhatwagni: Manda

Srotas : Mootravaha, Rasavaha

Srotodustiprakara : Sanga

Udbhava Sthana : Amashaya, Pakwashaya

Sanchara Sthana : Mootravahasrotas

Roga-Marga : Madhyama

Adhithana : Vasti

Vyaktasthana : Mootra marga

Vyadhiswabhava: Ashukari, Chirakari

In majority of UTIs, bacteria gain access to the bladder via the urethra. The distal urethra colonised by Diptheroid, Streptococcal species, Lactobacilli, and Staphylococcal species but not by the enteric gram-negative bacilli that commonly cause UTIs. Females are more prone to development of cystitis, however, enteric gram-negative organisms residing in the bowel colonise the introitus, the periurethral skin, and the distal urethra. The factors that predispose to periurethral colonisation with gram-negative bacilli remain poorly understood, but alteration of the normal vaginal flora by antibiotics, other genital infections, or contraceptives (especially spermicide) appears to play an important role. Loss of the normally dominant H2O2- producing lactobacilli in the vaginal flora appears to facilitate colonisation by E coli<sup>8</sup>.

**BHEDA (TYPES) OF MUTRAKRICHRA:**

वातेन पित्तेन कफेन सर्वैस्तथाऽभिघातैः शकृदशमरीभ्याम् |

तथाऽपरः शर्करया सुकष्टो मूत्रोपघातः कथितोऽष्टमस्तु || (Su. Ut. 59/3)

**Mutrakrichra Classification according to different authors**

S.NO.	Prakaras	Ca	Su	Ah	As	Ks	Mn	Bp	Cd	Yr	Br	Gn
1	Vataja	+	+	+	+	+	+	+	+	+	+	+
2	Pittaja	+	+	+	+	+	+	+	+	+	+	+
3	Kaphaja	+	+	+	+	+	+	+	+	+	+	+
4	Sannipataja	+	+	+	+	+	+	+	+	+	+	+
5	Dwandwaja					+						
6	Raktaja	+				+			+		+	
7	Shalyabhogataja		+				+	+		+	+	+
8	Ashnarjanya	+	+				+	+	+	+		+
9	Shakarajanya	+	+				+	+	+	+	+	+
10	Pureeshajana		+				+	+	+	+	+	+
11	Sukrajanya	+					+	+	+	+	+	

**PURVA ROOPA:**

No specific *Purvaroopas* are mentioned in Ayurvedic classics, for the *Mutrakrichra*.

**ROOPA / Clinical Features:****Samanya Lakshanas:**

अतिसृष्टमतिवर्द्धं प्रकुपितमल्पाल्पमभीक्षणं वा बहलं सशूलं मूत्रयन्तं दृष्ट्वा मूत्रवहान्यस्य स्रोतसि प्रदुष्टानीति विद्यात् | (Ch.Vi.5/8)

1. *Ati Srasta – Adhika Mootrata* (increased frequency)
2. *Ati Badhdha* – interruption during *Mootra Pravritti*
3. *Prakupita – Vikruta Mootra*
4. *Alpa Alpa Abheekshana – Shoola Yukta Alpa Alpa Pravritti* (Dysuria)

Burning pain while urinating, Frequent or urgent urination.

**Vishista Laskhanas<sup>9</sup>:**

All Acharyas explained *Lakshanas* like *Peeta Mutrata*, *Sarakta Mutrata* (haematuria), and *Saruja*, *Sadahayukta Mutra Pravritti* (Burning sensation while urinating), *Muhurmuhurmutrata* (passing frequent small amounts of urine, persistent urge to urinate). *Acharya Sushruta* added *Haridra Mutrata* (high coloured urine) and *Daha* in *Mushka* and *Basti Pradesha* and *Atiushana Mutrata*.

Lower urinary tract infection includes Cystitis (infection of urinary bladder), Urethritis (infection of urethra), Asymptomatic bacteriuria (significant number of bacteria are present in the urine without usual symptoms), Urethral syndrome (symptoms of Urethritis, without any evidence of bacterial or viral infection as a cause, may be due to irritation of the urethra or structural problems, such as narrowing of the urethra).

**Upadravas<sup>10</sup>:**

*Upadravas* are the complications which arises if disease is not managed on time. Only Acharya Kashyapa explained the *Upadravas* of *Mutrakrichra* i.e., *Karshyata*, *Arati*, *Aruchi*, *Anavastitatwa*, *Thrishna*, *Shula* and *Vishada*.

**DIAGNOSIS:**

UTI can be diagnosed on the basis of history and clinical examinations. Microscopic examination of urine. A properly collected early morning sample of urine is ideal. Random samples may also be used for regular testing. Complete urine examination reveals haematuria, pyuria and presence of bacteria, WBC casts in urine<sup>11</sup>.

Dipstick test are used to detect nitrate in the urine. This test detects significant pyuria depend on the release of esterase from leukocytes. Positive dipstick test for both leukocyte esterase and nitrate are highly predictable for acute infection<sup>12</sup>.

Urine culture and sensitivity is the gold standard for diagnosis of UTI. This diagnostic method is used to determine the antimicrobial therapy for UTI. Other non-invasive techniques like renal ultrasonography and CT scan can be used to obtain urinary tract images and thus UTI can be diagnosed with more consistently.

**CHIKITSA:**

The *Mutrakrichra* comes under *Samanya Vyadhi*, general treatment is advised as per predominance of *Dosha*. According to Acharya Sushruta to treat *Mutrakrichra* first avoid the *Hetu* that causes *Mutrakrichra* (*Sankshepata Kriyayoga Nidana Parivarjan*). Factor predisposing to infection, such as obstruction and calculi should be identified and corrected if possible.

Acharya Charaka explained treatment as per *Dosha avastha*:

- a) *Alpa Dosha – Langana*
- b) *Madhyam Dosha – Langhana Pachana*
- c) *Bahu Dosha – Shodhan.*

Acharya Sushruta has explained *Chikitsa of Pittaja Mutrakrichra* in *Mutrakrichra Pratishedha Adhyaya*<sup>13</sup>. *Ghruta* or *Ksheera* prepared from *Trunapanchmula*, *Utpaladi gana*, *Kakolyadi gana*, *Nyagrodhadi Gana Siddha Kalka* for *Paana*, *Niruha*, *Anuvasana* and *Uttara Basti* to treat *Pittaja Mutrakrichra*.

After *Basti Ikshu Rasa*, *Ksheera*, *Draksha rasa* mixed with any *Virechaka Aushadha* should be used for producing purgation.

According to Acharya Caraka, *Chikitsa of Pittaja Mutrakrichra*<sup>14</sup>:

- a) *Pariseka*: with *Sheetal Jala*.
- b) *Avagaha*: with *Sheeta Dravyas*.
- c) *Pradeha*: *Sheeta dravyas* applied generally or locally.
- d) *Ritucharya*: *Grishma Ritucharya*.
- e) *Kshirapana*: *Siddha Ksheera*
- f) *Basti* : *Siddha Ksheera*.
- g) *Virechana Karma*.
- h) *Draksha*, *Vidarikanda*, *Ikshu Rasa Pana*.
- i) *Ghruta pana*.

According to modern science the aim is symptomatic relief in patient of UTI. Symptomatic relief includes adequate hydration, frequent voiding and alkalinisation of urine.

In all cases of UTIs antibiotics are advised for minimum 3 days along with water intake of at least 2 – 3 litres /day. Urine alkalinising agents such as potassium citrate may help symptomatically. The choice of antibiotic depends upon the result of urine culture and sensitivity of urine. Commonly used antibiotics include cotrimoxazole (trimethoprim and sulfamethoxazole, ampicillin, amoxicillin, nitrofurantoin and quinolones. Oral 3<sup>rd</sup> generation cephalosporins, cefixime are effective against a variety of gram-negative micro- organisms other than the *Pseudomonas* as effective as parenteral ceftriaxone<sup>15</sup>.

Treatment failure, with persistence of the causative organism on repeat culture, suggests that an underlying cause is present, which should be investigated and treated, if possible. If the underlying cause cannot be removed, suppressive antibiotic therapy can be used to prevent recurrence and reduce the risk of septicaemia and renal damage<sup>16</sup>.

**Preparations used in Pittaja Mutrakrichra:**

- a) **Churna**: *Yastimadhu*, *Aragvadha*, *Ervarubijadi*.
- b) **Kwatha**: *Haritakyadi*, *Satavaryadi*, *Trunapanchamula*.
- c) **Yogas**: *Varunanarikeladi*, *Gandhakadi*, *Drakshadi*, *Manthadi*.
- d) **Ksheerpaka**: *Trunapanchamuladi*, *Kakoli Nyagrodhadi*.
- e) **Vati** : *Chandraprabha vati*, *Gokshura Guggulu*.
- f) **Other Yogas**: *Yavakshara*, *Gudamalaka Yoga*.
- g) **Kshara Prayoga**: *Yavakshara*

**Pathy-Apathya:****Pathya**<sup>17</sup>:

**Ahara:**

- *Shooka Dhanya Varga: Purana Raktashali, Purana Yava*
- *Shami Dhanya Varga: Mudhga*
- *Mamsa Varga: Jangala Mamsa*
- *Shaka Varga: Patola, Tanduleya, Trapusha*
- *Phala Varga: NarikelaPhala, Kushmanda, Karjura, Ela, Amalaki, Haritaki.*
- *Ikshu Varga: Madura Ikshu*
- *Gorasa Varga : Godughda, Dadhi, Takra, Gritha*
- *Other Dravyas: Kshara, Gokshura, Kumari, Sheetala Annapana, Nadijala, Karpura.*

**Vihara:**

- *Sheeta Vayu Sevena*
- *Sheetagrahmnivas*

**Apathya<sup>18</sup>:****Ahara:**

- *Rasa: Amla, Lavana, Kashaya*
- *Anna: Shushka, Rooksha, Pistanna, Viruddashana, Vishamashana, Vidahi*
- *Shooka Dhanya: Tila, Sarshapa*
- *Shami Dhanya : Masha*
- *Kritanna Varga: Tilabrasta Peenyaka*
- *Mamsa Varga: Mastya*
- *Madya Varga: Madya*
- *Other Dravyas: Hingu, Tambula, Atiteekshna Ahara, Shaluka, Kapitta, jambu.*

**Vihara:**

- *Vyayama*
- *Vegadharana*
- *Vyavaya*
- *Adika Sharma*
- *Gaja Ashwayana.*

**DISCUSSION & CONCLUSION:**

*Mutrakrichra* is condition where, *Krichrata* is more and *Vibandha* is less and it can be defined as painful discharge of urine or strangury or difficulty in micturition. *Mutrakrichra* can be correlated to urinary tract infections. Acharyas considered *Mutrakrichra* is of 8 types and one among them is *Pittaja Mutrakrichra* possess *Lakshanas* like *Peeta Mutrata*, *Sarakta Mutrata*, and *Sarija*, *Sadahayukta Mutra Pravrutti*.

Some of them considered *Ashmarija* and *Sharkaraja* as same. Acharya Sushruta, considered *Sharkaraja Mutrakrichra* as a different type, but *Sharkaraja* is a type of *Ashmari*.

When person indulges in *Nidanas* like intake of *Ati Ruksha*, *Ushna*, *Tikshna Ahara* and the person indulges in *Vyavaya* or intake of *Ahara* and *Udakapana* during the urge of micturition, *Mutra Vegadharana*, *Ati Vyavaya* and *Atigamana* on *Gajavaji*, leads to stasis of urine and that pave the way for bacteria to grow and that microbe causes further infection of the urinary tract. *Agantujakaranas Doshaprakopa* is the main cause for the *Vyadhi* Also, the modern theories of pathogenesis describe that, the ascending of bacteria from Urethra to bladder leads to LUTIs., mostly by Gram-negative bacteria i.e., *E. coli*. Gram-positive bacteria play less role in urinary tract infections and other factors like pregnancy, low water intake, genetic factors, comparatively shorter urethra in females, spicy food intake etc. predispose LUTI. Diabetic patients are more prone to urinary tract infection due to frequent urination and high blood sugar level that provides favourable growth environment to pathogens.

Though Ayurvedic classical text contains references of *Krimi*, causation of *Mutrakruchra* by *Krimi* has not been mentioned.

Lower Urinary Tract Infection are often considered as superficial infections and are common in female because of anatomical reason. It can be inferred that; in *Pittaja Mutrakrichra* pain is *Dahayukta* type, *Ruja* is due to result and effect of *Pitta Dusti* (inflammation). *Muhurmuhu Mutrapravrutti* is due to inflammation of the bladder wall, Dysuria (includes pain, burning, and strangury), increased frequency, Urgency, suprapubic pain and pyuria are the symptoms of lower LUTI i.e., cystitis and urethritis. Dysuria is the painful and difficult urination that is usually caused by inflammation. Pain occurring at initial stage of urination may indicate urethral pathology, if pain occurs at the end of the micturition is usually of bladder origin, Increased frequency of micturition is due to decreased bladder capacity with resultant decrease in the volume of urine per voiding and irritation of inflamed bladder. Urgency is strong and sudden impulse to void. Urgency is main symptom present in cystitis and absent in urethritis which distinguishes it from cystitis. Pyuria is presence of pus cells in urine. Urine pus cells diagnostic of Lower urinary tract infection are living or dead leukocytes (white blood cells), specifically neutrophils, which attack the bacteria and prevent infection.

In *Pittaja Mutrakrichra*, *Nidanaprivarjanam* is the first line treatment in both Ayurveda and modern management. *Snehana* and *Swedana* in the form of *Abhyanga* and *Avagaha*, *Pradeha* are the *Upashaya*. *Avagaha Sweda* is a *Drava Sweda* which specially indicated in *Pitta Samsruta Vata*, keeping in view of local lesions and inflammation. *Sheeta Sheka* and *Sheeta Pradeha* and *Greeshma Vidhi* is described in *Pittaja Mutrakricchra* in order to pacify the *Ushna*, *Tikshna Guna* of *Pitta* which is responsible for *Sadaha*, *Sapeeta* and *Sarakt Mutrapravrutti*. Avoiding *Vyayama*, *Atapa*, *Madya* etc. and taking *Shita*, *Madura*, *Snighda Ahara Sevana*.

*Shamana Aushadi* for *Pittaja Mutrakrichra*, *Shatavari Kwata*, *Truna Panchmoola*, *Kharjuradi Churna* along with *Anupana* like *Sharkara*, *Ghruta*, *Madhu* is most commonly used. All these drugs have *Mutrala*, *Pittahara*, *Dahanashaka*, *Shoolahara* properties by the virtue of *Madhura* and *Kashaya Rasa*, *Shita Virya* and *Madhura Vipaka*.

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