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

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ABSTRACT:

In Ashtanga Hridaya Nidana Sthana, Mutraroga 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 Usna, Tikna, Baksha Aharu, and Mutra Vegadhara, less water intake, maintaining poor hygiene leads to aggravation of Pitta followed by Kapha and Vata. Lakshanas of Pittaja Mutrakrichra are Patala, Sadalatratratratra, Khalprakatratratra, Mahamahatratratra, Mahamahatratratra, Mahamahatratratra 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, the 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 ≥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 isolate1.

Mutra (urine) is an outcome of digestion of food and metabolism in the body which passes through urethra. Krichhata (i.e. dysuria) and Mutra-avrodha are simultaneously present in both Mutraghata and Mutrakrichchhra, but Krichhata (dysuria) is predominant feature in Mutrakrichcha2.

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’.

Kriccha word is formed by adding “Rak” Pratayya and “Chau” Audhesh to “Kruti Chedana” Dhatus which gives rise to the word Kricchra which means, passing with difficulty, “Krunanati iti kruuccham” kruti Chedana.

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)3.

Acharya Sushruta described eight types of Mutrakrichra which are as follows i.e., Vataja, Pittaja, Kaphaja, Samnipataja, Shalyabhigataja, Ashmarijanya, Sharkarajanya, Pureshajanya Mutrakrichra'4.
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 Vagadharana, 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. Gram-positive bacteria play less role in urinary tract infections.

The symptoms of Pittaja Mutarakrichra such as Saruja/Kruchhra Mutrapravrutti, Sarakta Mutrata, Sadaha Mutrata, Muhurmuhu Mutrapravrutti 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

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### NIDANA (ETIOLOGY):

**व्यायामतीक्ष्णौषधरूक्षमद्यप्रसङ्गतनत्यद्रुतपृष्ठयानात्**

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### NIDANA:

- **a) Mutra vega nigrhana**: suppression of urge of micturition.
- **b) Mutritodak – Bhakya - 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.
- **c) Ksheena**: weak or malnourished persons like immunocompromised persons are more prone to UTIs due to weak immune system.
- **d) 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 Rukshahara-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 Yogaratnakar has mentioned similar Nidanas as that of Acharya Charaka.

### SAMPRAPTI (PATHOGENESIS):

**पृथङ्मलााः स्ववाः कुतपता तनदानवाः सवेऽथवा कोपमुपेत्य बस्तौ**

Excessive exercise, Tikshna Aushadha Sevana, excessive intake of Rukshahara-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.

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In majority of UTIs, bacteria gain access to the bladder via the urethra. The distal urethra colonised by Diphtheroid, 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.
BHEDA (TYPES) OF MUTRAKRICHRA:

Mutarakrichra Classification according to different authors

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PURVA ROOPA:

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

ROOPA / Clinical Features:

Samanya Lakshanas:

All Acharyas explained Lakshanas like Peeta Mutrata, Sarakta Mutrata (haematuria), and Saraja, Sadahayuktta Mutra Pravritti (Burning sensation while urinating), Muhurmutrata (passing frequent small amounts of urine, persistent urge to urinate). Acharya Sushruta added Haridra Mutrata (high coloured urine) and Doha in Misibha and Basti Pradesha and Atishana 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).

Upadrasas:

Upadrasas are the complications which arises if disease is not managed on time. Only Acharya Kashyapa explained the Upadrasas of Mutarakrichra i.e., Karshyata, Arati, Aruchi, Anavastitattwa, 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 urin.

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.

Urinary 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 (Sankshepa 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. Ghrita 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:
   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 Kshere.
   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 3rd generation cephalosporins, cefixime are effective against a variety of gram-negative micro-organisms other than the Pseudomonas as effective as parenteral ceftriaxone.

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 septicemia and renal damage.

Preparations used in Pittaja Mutrakrichra:
   a) Churna: Yastimadhu, Aragvadha, Ervarhijadi.
   b) Kwatha: Haritakyadi, Satavaryadi, Trunapanchamula.
   c) Yogas: Varunanarikeladi, Gandhakadi, Drakshadi, Manthadi.
   d) Kisheerpaka: Trunapanchamuladi, Kakoli Nyagrodhadi.
   e) Vati : Chandraprabha vati, Gokshura Guggulu.
   f) Other Yogas: Yavakshara, Gudanlaka Yoga.
   g) Kshara Prayoga: Yavakshara

Pathya-Apathya:

Pathya:
Ahara:

- Shooka Dhanya Varga: Purana Raktashali, Purana Yava
- Shami Dhanya Varga: Mudha
- Mamsa Varga: Jangala Mamsa
- Shaka Varga: Patola, Tanduleya, Trapusha
- Iksha Varga: Madara Iksha
- Gorasa Varga : Godughda, Dudhi, Takra, Gritha
- Other Dravyas: Kshara, Gokshura, Kumari, Sheetula Annapan, Nadijala, Karpura.

Vihara:

- Sheeta Vayu Sevena
- Sheetagrahamnivas

Apathya:

Ahara:

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

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 Saraja, Sadhayukta 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 Nidanus 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 Arigamana 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 Mutrakruchra pain is Dalayukta type, Rajya is due to result and effect of Pitta Dusti (inflammation). Muharrumaha Mutrapravritti 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 Sarasita Mutrapravritti. Avoiding Vyayama, Atapa, Madhya etc. and taking Shita, Madura, Snighda Ahara Sevana.

Shamana Aashadi for Pittaja Mutrakrichra, Shutavari Kwata, Truna Panchmoolaa, Khairjuriadi Churna along with Anupana like Shankara, Ghrita, 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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