CONCEPT OF LOWER URINARY TRACT INFECTION IN AYURVEDA

Hegde Gajanana  
Priya Bhat
Dept of P.G Studies in Kayachikitsa, Govt Ayurveda Medical College, Mysore, Karnataka, India

ABSTRACT
Urinary tract infection (UTI) is the second most common type of infection in the body. It results in 3.6 million hospital visits each year and greater than 100,000 hospital admissions annually. They may be confined to the lower urinary tract infection resulting in cystitis and urethritis or involve the upper urinary tract and cause pyelonephritis. Urinary tract infection can be understood as a type of Mutrakrichchra in Ayurveda. It is a disease involving the bastimarma. As basti (~bladder) is one among the trimarma (three vital organs), it has greater therapeutic importance. The symptoms of different types of Mutrakrichchra particularly Pittaja Mutrakrichchra are similar to signs and symptoms of Lower urinary tract infection (LUTI). An attempt has been made in this article to understand the etiopathogenesis of Lower urinary tract infection in Ayurveda.

Keywords: Lower urinary tract infection, Mutrakrichchra, Bastimarma

INTRODUCTION
Urinary tract infection is 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). UTIs are subdivided into catheter-associated (or nosocomial) infections and non-catheter associated (or community acquired) infections. Infections in either category may be symptomatic or asymptomatic. Acute community-acquired UTIs are very common and account for more than 7 million hospital visits annually. In the female population, these infections occur in 1–3% of school girls and then increase markedly in incidence with the onset of sexual activity in adolescence.\(^2\)

The diseases of urinary system are dealt under two broad headings in Ayurveda. They are Mutrakrichchra and mutraghata. The symptom complex of both the Mutrakrichchra and mutraghata seems to be overlapping each other, but Acharya Dalhana, Acharya Chakrapani, and Acharya Vijayarakshita have demarcated the difference between them. This difference is based on the intensity of obstruction. The earlier suggest that the disease is characterized with painful micturition whereas the latter with more of obstruction\(^3\).

The term Mutrakrichchra comprises of two words – Mutraand Krichchra. The term ‘Mutram’ is derived from the root ‘Mutra + Ghanzh pratyaya which means Mutra – prasravaneti ooze. The term ‘Krichchra’ is derived from the root ‘Krish – Kaste’ means causing trouble or painful. The disease in which urine is passed with difficulty is called Mutrakrichchra\(^4\). Considering this, it can be inferred that Mutrakrichchra is a condition of urogenital system with dysuria as a prime symptom which includes UTI.

ETIOLOGY
Many different microorganisms can infect the urinary tract, but by far the most common agents are the gram-negative bacilli. Escherichia coli cause 80% of acute infections in patients without catheters, urologic abnormalities, or calculi. Other gram-negative rods, especially Proteus and Klebsiella and occasionally Enterobacter, account for a smaller proportion of uncomplicated infections.
The etiological factors for Mutrakrichchra have been dealt in detail in trimarmiya chikitsa of Charaka samhitha. These etiological factors can be categorised under three headings. They are aharaja (food articles causing the disease), viharaja (habits causing the disease) and vaidhyakrita (iatrogenic factors). Common etiological factors which affect mutravaha srotas (urinary tract) can also be considered as a causative factor for manifestation of the disease Mutrakrichchra.

Intake of Ruksha madya (dry alcoholic beverages), anupamamsa (meat of marshy place), matsya (fish), adyashana (eating before the digestion of previous meal), atikatu amla lavana rasa (excessive spicy, sour & salty food articles), mutritodaka bhakshya (intake of food with the urge of urination) ajeerna bhojana (intake of food during the state of indigestion) are considered as aharaja nidanas for Mutrakrichchra. Viharaja nidanas for Mutrakrichchra are excessive indulgence in vyayama (exercise), nityadruta prusta yana (traveling), stree sevana/vyavaya (sexual intercourse), shrama (labour/physical activity), mutravegadharana (withholding the urge of micturition). Teekshna oushada (drugs of strong potency) is the vaidhyakrita karana for the disease Mutrakrichchra.

TYPES

Charaka samhita classifies Mutrakrichchra into 8 types. They are Vataja Mutrakrichchra, Pittaja Mutrakrichchra, Kaphaja Mutrakrichchra, Sannipataja Mutrakrichchra, Raktaja Mutrakrichchra, Shukraja Mutrakrichchra, Ashmari and Sharkaraja Mutrakrichchra. Susruta samhita also mentions 8 types of Mutrakrichchra but with a slight deviation from that of Charaka samhita. Raktaja Mutrakrichchra, one among the 8 types of Mutrakrichchra mentioned in Charaka samhita is caused due to injury, whereas it is explained as Shalyabhighataya Mutrakrichchra in Sushrutasamhita. Also Sushrutasamhita does not mention Shukraja Mutrakrichchra but instead Pureeshaja Mutrakrichchra is explained.

In majority of UTIs, bacteria gain access to the bladder via the urethra. The vaginal introitus and distal urethra are normally colonised by Diphtheroids, Streptococcal species, Lactobacilli, and Staphylococcal species but not by the enteric gram-negative bacilli that commonly cause UTIs. In females who are more prone to the development of cystitis, however, these enteric gram-negative organisms residing in the bowel colonise the introitus, the perirethral skin, and the distal urethra before and during episodes of bacteriuria. 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 appears to facilitate colonisation by E coli.

Ayurvedic concept of pathogenesis lies in understanding the dosha and dushya involved in the manifestation the disease. Indulgence in causative factors like mutritodakabhakshyasevana, atisreevesana/ atimaithuna, ativayyama, mutravegadharana, katiskhandaatidhara and nityadrutaprustayana leads to aggravation of vata dosha specially apanavata. Excessive intake of madya, matsya and katuamlalavana rasa causes aggravation of pitta dosha. Intake of anupamamsa, adhyashana and ajeernabhojana aggravates kaphadosha which inturn leads to reduced state of agni (digestive power). Hence all the tri-doshas get vitiated.

The vitiated tridoshas along with the state of angimandhya (reduced digestive capacity) invariably produce ama. Ama mixes with the doshas forming samadoshas. Thesesamadoshaproduces symptoms such as peetamutrata (yellowish urine), sadahamatra pravrutti (burning micturition), basti and mutrendriya gurutwa (inflammation of bladder), shweta, snigda and picchila mutra (turbid urine with the presence of leucocytes).
These samadoshas circulates all over the body. As there is pre-existing khaivaigunya (a weak or defective space within an organ / tissue where a pathological condition is likely to begin) in the basti due to indulgence in causative factors, these circulating samadoshas get lodged in basti. This causes vitiation of the dosha residing in the basti i.e kapha dosha and dushya residing in basti i.e mutra. Here kapha dosha is considered because of its ashraya ashrayee bhava with mutra (urine)⁶. The type of kapha dosha involved is debatable. This vitiated kapha causes obstruction to mutra and thereby leads to aggravation of apanavata. Vitiation of apanavata results in the alteration in its normal function and thus causes Mutrakrichchra.

When an individual consumes alcoholic beverages, fish and spicy articles in excess pitta dosha gets vitiates. Also in LUTI there will be increased urine concentration and change in urine pH which is suggestive of pitta dusti. This suggests that pitta, the agantuja dosha (external factor leading to aggravation of dosha) has a major role to play in etiopathogenesis of LUTI.

SYMPTOMS:

The most common presentation of urinary tract infection are; a strong, persistent urge to urinate, burning sensation when urinating, passing frequent, small amounts of urine. Also urine appears cloudy. Many symptoms are mentioned in the classics for various types of Mutrakrichchra. The symptoms like krichchratra (hesitancy), muhurmuhur mutra pravruttī (increased frequency of micturition) and shula (dysuria) are present in almost all types of Mutrakrichchra as explained in the classics. Hence these symptoms can be considered as important clinical features of Mutrakrichchra.

The most present features, Shula and muhurmuhur mutrata are due to aggravation of vata dosha; peeta mutrata and daha are due to aggravated pitta dosha and picchila mutra (turbid urine) and shweta mutra (presence of leukocytes in urine) are due to aggravated kapha dosha. This indicates Mutrakrichchra is a disease resulting from aggravation of tridoshas. These symptoms enlisted above are found in the infections of urinary tract. Among all these symptoms most agonising and predominant symptom of LUTI is burning micturition which suggests pitta dusti in the manifestation of this disease.

DISCUSSION:

Ushna (hot), teekshna (sharp), ruksha (dry) and ashukari (fast acting) qualities of alcohol will cause vitiation of vata and pitta dosha. Hence intake of alcoholic beverage changes the urine pH and inturn makes the bladder susceptible for the infection. Studies have revealed that there is considerable amount of increase in the risk of development of UTI with the intake of alcoholic beverages⁷. Excessive intake of meat of marshy places increases kapha dosha and fish acts as maha abhishyandi (obstruction to channels). This increases kledata (dampness) in dhatus, mala and srotas (channels) especially mutravaha srotas. The vitiated kapha / kleda affects the innate immunity of the individual. The reduced local immunity i.e of the urinary tract makes it vulnerable for infection.

Adhyashana & ajeerna bhojana leads to reduced state of agni which results in the formation of ama and there by aggravates the tridoshas. Thus these causative factors act as viprakrista nidana (distant/ remote cause) in producing the disease Mutrakrichchra. Atikatu amla & lavana rasa are hot in potency and hence cause vitiation of pitta dosha. Increased pitta dosha is responsible for the increase in urine concentration thereby altering the pH and decreases the volume of urine. Thus it creates an environment favourable for the growth of bacteria. Studies have suggested that spicy food articles tend to irritate bladder and thus facilitates cystitis⁸.

When a person indulges in eating or drinks water under the urge of micturition, the apana vayu gets vitiates causing Mutrakrichchra. Nitya druta prusta yana refers to riding the back of fast moving animals. It can be considered as excessive travelling on uneven surface. This cause
khavaigunya in mutravaha srotas and also aggravate apana vata whereas excessive exercise or physical activity causes aggravation of apana vata. Aggravated vata-dosha increases rukshata. Because of this, urine volume decreases and thereby causing increase in the urine concentration. This produces an environment favourable for bacterial growth.

The term atistree sevana refers to excessive sexual intercourse irrespective of the gender. Atistree sevana causes vitiation of vata dosha. The increased vata dosha causes deterioration of dhatus which inturn leads to reduced immunity. This reduced immune component of body makes the individual prone for infections. It is noted that sexual intercourse causes the introduction of bacteria into the bladder and is associated with the onset of cystitis and thus it appears to be important in the pathogenesis of UTI in young women. Also sexual contact with infected partner increases the risk of development of UTI.

Withholding the urge of micturition is mentioned as one of the causative factor of mutravaha srotodushti. It leads to aggravation of apana vata and thereby causing pratiloma gati (upward movement) of apana vayu. Thus it produces symptoms like dysuria, hesitancy and such other urinary symptoms. Because of habit of withholding the urge of micturition, there will be stretching of bladder muscle beyond its capacity, which in overtime causes weakness of bladder muscle. This causes incomplete emptying of bladder. The residual urine left in the bladder acts as a medium for bacterial growth. Also there be will alteration in the pH of the urine which makes an environment favourable for the growth of bacteria.

Intake of drugs with strong potency aggravates pitta dosha. This increases the urine concentration, thereby urine volume decreases and results in change of pH value. This creates an environment susceptible for infections. Studies have revealed that certain medications, particularly the chemotherapy drugs like Cyclophosphamide and Fosfamide can cause inflammation of bladder which is termed as drug induced cystitis.

Detailed analysis of the pathogenesis of the disease suggests that there is increase in ruksha and chalaguna of vata giving rise to impairment in the flow of urine through its channels. The ushna and teeksha gunas of pitta increase and thereby produce burning micturition. The guru and picchila guna of kapha gets vitiated, giving rise to shotha i.e colonization of bacteria leading to inflammation of the urinary tract.

From Ayurvedic perspective any infection is perceived with the involvement of pitta dosha. Pitta dusti is responsible for manifestation of burning micturition as the presenting symptom of LUTI. The change in urine pH is also associated with pitta dusti. This suggests the importance of pitta dosha in the manifestation of LUTI.

CONCLUSION:

Urinary tract infection is a disease of mutravaha srotas produced due to the vitiation of all the doshas. Though there is involvement of tridoshas, etiopathogenesis of this disease suggests that pitta dosha plays a major role. Any factor that increases the urine concentration and alters the urine pH precipitates LUTI.

REFERENCES:

3. Madhavakara, Madava nidana with madhukosha Sanskrit commentary by Sri Vijayarakshita and Srikanandadutta with Madhava vimarshini Hindi commentary by Dr Ananthram Sharma, volume 1, Chau-kambha sanskruta pratisthana, Delhi,1st Edition; Reprint-2007; commentary on 30/1-2; p-491.
4. Madhavakara, Madava nidana with madhukosha Sanskrit commentary by Sri
Vijayarakshita and Srikantadutta with Madhava vimarshini Hindi commentary by Dr Ananthram Sharma, volume 1, Chaukambha samskruta pratisthana, Delhi, 1st Edition; Reprint-2007; commentary on 30/1-2; p-491.


7. voices.yahoo.com/eight-common-causes-urinary-tract-infections-in-806...

8. www.cobfoundation.org/interstitial-cystitispainful-bladder_/icpbs-diet


10. Agnivesha: Charaka Samhita revised by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapani Datta; Edited by Vaidya Jadavaji Trikamji Acharya; Published by Chaukhamba Prakashan; Varanasi; Edition-reprint-2007; vamana Sthana, 5/20; p-251.


**CORRESPONDING AUTHOR**

Dr Priya Bhat

PG Scholar, Dept of Pg studies in Kayachikitsa, Govt Ayurveda Medical College, Mysore, Karnataka, India

Email id: dr.priyabhat23@gmail.com