THE U.T.I. AND ITS UNANI CONCEPT

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ABSTRACT
Urinary tract infection (UTI) refers to both microbial colonization of the urine and tissue invasion of any structure of the urinary tract, or the presence in an appropriately collected mid—stream specimen of urine (MSU) of more than colony forming units per ml of urine. UTI occur predominantly in females specially during the child bearing age. Its incidence among school girls is 1-2%; it is only 0.03% in boys of the same age. Also the incidence in females rises about 1% per decade. Gram- negative bacteria E-coli is most commonly responsible. although yeast. Fungi and viruses may produce UTI. In unani literature there is no specific term coined for Urinary tract infection. But the aetiopathogenesis, clinical features and managements have been described by most of the Unani Physicians under different heading i.e. Warn-e-kulliya, Warrne-masana, Hurqat-e-baul and Taqtir-ul- baul. The term 'Hurqat-e-baul (burning micturition) is one of the symptoms of urinary tract infection. It was customary that time that the diseases were given nomenclature on their prominent sign or symptom. Though the term warm-e-majra-e-baul (urinary tract inflammation or infection) has not been mentioned as such in Unani literature. but the etiology, symptoms and treatment with Muhallilat (anti inflammatory) and Dafe-afoonat (antiseptic) clearly indicate that the term warm-e-majra-e-baul has been described with the term Hurqat-e-baul.

KEYWORDS: Urinary tract infection Gram- negative bacteria E-coli Unani literature.

INTRODUCTION
Urinary tract infections are next to respiratory tract infections as a problem encountered by practicing physicians. It has been calculated that worldwide there are at least 150 million cases of symptomatic urinary tract infections each year. Urinary tract infection (UTI) refers to both microbial colonization of the urine and tissue invasion of any structure of the urinary tract, or the presence in an appropriately collected mid—stream specimen of urine (MSU) of more than 100,000 colony forming units per ml of urine. UTI occur predominantly in females specially during the child bearing age. Its incidence among school girls is 1-2 %; it is only 0.03% in boys of the same age. Also the incidence in females rises about 1% per decade. Gram- negative bacteria E-coli is most commonly responsible. although yeast. Fungi and viruses may produce UTI. Infection is most often from the patients own flora, transfer to the urinary tract may be via the bloodstream, the lymphatics or by direct extension (from a vesicocolic fistula), but is most often via the ascending transurethral route. Structural abnormalities of the urinary tract, obstructive lesions, presence of foreign bodies such as calculi or catheters, vesico ureteric reflux, pregnancy and diabetes mellitus predispose to urinary infection.

Concept of infection and infestation are being postulated by various ancient as well as modern scholars’ dates back. Robert Koch (1843-1910) is supposed to be the pioneer for enlighting the concept of infection and its association with microbes. Although there is no description of any kind of microorganism by name in the ancient literature, but from the careful survey of the Tibbi literature it is evident that the Arab Physicians were well conversant with the process of infection to which they named as Tadyiah (infection) and Ufoonah (Putrifaction). The unique method adopted by Al-Razi (Rhazes) to choose the most suitable and healthiest site for construction of the hospital building also bears testimony to the fact that he was aware of the presence of microorganisms.Avicenna in his famous book Al-Qanoon has mentioned the microorganism as ajsam khabisah.

Warm-e-majra-e-baul means infection or inflammation of urinary tract(UTI) which may be infectious (mutaaddi) or non-infectious (ghair mutaaddi) in type warm-e-majra-e-baul is a term which has been adopted and used recently in unani literature but in classical unani literature, this term does not exist as such but various descriptions of ‘warm-e-majra-e-baul’ are available.
under different nomenclature such as warm-e-masana (Cystitis), warm-e-kulliya (pyelonephritis) [3,5,6] ‘hurqat-e-baul and ‘warm-e-aheel(urethritis)’[3] are present which may be considered as synonymous of urinary tract infection with clinical finding of urinary tract infections described in contemporary literature.

With the advancement in medical science, the concept of infection came into existence. Various uropathogens were identified in the urinary samples, and then the word urinary tract infection as used as a disease. Hence the urinary tract infection implies multiplication organisms in the urinary tract. It may or may not be symptomatic. When it is not symptomatic, the term asymptomatic bacteriuria is used which refer to large number of bacteria in the urine without producing symptoms. The urinary tract is common site for bacterial . It include upper urinary tract infection (Acute Pyelonephritis. Chronic Pyelonephritis) and lower urinary tract infection (urethritis. prostatitis. cystitis).

The symptoms of acute UTI depend on a large extent on the anatomical site of infection i.e., whether the patient has lower or upper U.T.I or both. Lower U.T.I (acute cystitis) characterized by superficial bacterial infection of the bladder or urethra or both. These patients have a short duration of symptoms, including some combination of dysuria, frequency of urination, urgency, nocturia, haematuria and suprapubic pain or tenderness. Fever or flank pain or tenderness are absent. In contrast, patients with acute upper U.T.I (acute pyelonephritis) classically present with localized flank pain or lower back or abdominal pain, and systemic symptoms such as varying degree of fever, headache. nausea, vomiting, rigors, sweats and malaise. A few patients may even develop complications such as intrarenal or penile abscess and gram negative sepsis. Not infrequently, such cases also have antecedent or concomitant symptoms of cystitis.

ANCIENT
In ancient Unani literature there is no description of Urinary tract infection (Tadiya Majra-e-baul) as such because at that time the facility of biochemical analysis of urine was not available.

First of all Hippocrates described the disease in his treatise ‘Al-fasool’ as ‘Taqtir-ul-baul’", in which he stated that in this ailment there is increased frequency of micturition either by debility in urinary bladder, burning during micturition as well as sepsis of urinary tract.’

Again in ‘Fasool-e-buqratia’… another famous treatise by ‘Hippocrates’ (460 B.C.) he asserted that Pyuria along with Hematuria, presence of cast in urine and odouriferous urine indicates that the pathology is related to urinary bladder.

Galen (130-200 A.D.) emphasized in this text that the above mentioned symptoms such as Hematuria, Pyuria, casts and foul smelling urine are related with whole urinary tract pathology rather urinary bladder. If there is pus and blood in urine it indicates the ulceration of urinary tract, while if along with this there is foul smelling urine then the ulceration will be inside urinary bladder. Again he asserted that the casts in urine are present in case of ulceration of urinary bladder.

By the review of the literature, a wide range of definitions were found, some of the referential definitions are as under.

As ….Buqrat quoted under the book of ’ Firdous-ul-Hikmat’ by Rabbau Tabri (810-895 A.D.),[3] ...... quoted that on the enhancement of the heat of the urinary bladder, the neck of urinary bladder get swollen.

As …. Razi (838-925 A.D.) quoted under the ‘Fil warm kullia’ in his book ‘Al-Havi Fit-Tibb’ that ‘Warm-e-kullia’ (Inflammation of the Kidney) occurs either in the membranous part of the kidney (Ghisha-ul-Kullia) or the urinary tract (majra-e-baul).[8]

As….Razi (838-925 A.D.) quoted to the ‘Al-Fasool’ and ‘Sarahiyun’ in his book Al-Havi Fit-Tibb’ that the warm (inflammatory condition) might be either in muscular part of the kidney (Ajza-e-Lehmi) or membranous part of the kidney (Ghisha-ul-Kullia). These membranes may be either on the outer covering of the kidneys or inside the cavities of the kidneys. These membranous cavities are arteries and urinary tract (shirayeen and majra-e-baul).[4]

In Sadisa ininal sabia’ as reported by Razi (838-925 A.D.) in the Kitab Al-Havi Fit-Tibb’, ‘Warm-e-Kullia’ (Inflammation of kidney) may be either in Lehm-e-Kulla’ (renal musculature) or in the Ghisha’ (membrane), which are confined to arteries and urinary’ tracts[4]


Rhazes (865-925 A.D.) explained it under the heading of “Taqtir-ul-baul ma hurqat” in “Al havi fit-tib” Volume-10,.. he also gives emphasis over the efficacy of maul juble to reduce the acidity and burning during urination.[11]

In “Kamil-ul-Sana” Ali ibn-e-Abbas Majusi (930 A.D.) describes the similar disease under the heading of “Warm-e-masana”. He has given a vivid description about etiology, clinical features etc. According to him “Warm-e-Masana” is due to weakness of excretory function and inflammation of neck of urinary bladder.[12]
symptomatic bacteriuria is now defined as 10^5 or more CFU/ml midstream urine plus pyuria (to 5 leukocytes/mm^3 of urine). In women with uncomplicated Pyelonephritis and men with urinary tract infections (UTIs) significant bacteriuria is defined as 1 CFU/ml plus pyuria. In patients with complicated urinary tract infections (UTIs) 10 or more CFU/ml with or without pyuria.[22,23]

CLASSIFICATION
Primary or Recurrent Urinary tract infections: It depends on whether it is the first infection or there are repeated events.

1. Recurrent infection: a) Relapsing infection: This is defined as recurrence of bacteriuria with the same organism within 3 weeks of completing treatment. b) Reinflection: It is defined as eradication of bacteriuria by appropriate treatment, followed by infection with a different or same organism after 7-10 days of treatment.[21,24]

2. Complicated and Uncomplicated infection
a) Complicated infection: In the American literature, there is very wide ranging definition of complicated infection to include all those conditions that increase the risk of acquiring the infection or failing treatment. (Hootan and stamm 1997) [21,23,24]

b) Uncomplicated infection: Uncomplicated infections are only associated with bacterial infection, most often Escherichia coli (E.Coli) they affect women much more often than men. It occurs in young non pregnant women with no previous urinary or vaginal infection, no family history, no anatomical abnormality of the urinary tract, and no associated disease such as diabetes mellitus and analgesic abuse.[21,23,24]

3. Based on symptoms:- a) Asymptomatic infection (Asymptomatic bacteriuria): Asymptomatic bacteriuria is present on more than 10 CFU/ml of the same uropathogen in two separate consecutive clean voided urine specimens in the absence of symptoms.

b) Symptomatic infection: Some patients can also have symptoms of infection with very low bacterial counts. In such cases, the condition is called “Acute urethral syndrome”.

4. Classification based on upper versus lower urinary tract infection:- a) Upper Urinary tract infection: When infection spreads to the upper tract it is called Pyelonephritis. As many as half of all women with cystitis may have infection of the upper urinary tract at the same time as cystitis.[24] b) Lower Urinary tract infection: Cystitis, Prostatitis, Urethritis

ENDEMIOLGY
The incidence of urinary tract infection is higher in females throughout all age ranges with a sex ratio of 20:1 in children young adults but this sex ratio falls in old age due to die increasing incidence of prostatic
hypertrophy. In adult women, the prevalence is 3% to 7% but rises to 10% to 25% in women over age 60. In adult men, the prevalence is much lower, less than 0.1%, but again increases in later years to 4% to 15%. The prevalence of bacteriuria in the elderly is dependent on the level of functional and anatomic impairment and may exceed 50% highly functionally disabled persons. 

Epidemiologically UTI should be subdivided in catheter associated (or nosocomial) infections and non-catheter-associated (or community-acquired) infections in either category may be symptomatic or asymptomatic.

Etiology

The causes of microbial disease are not only the microorganisms but also the disturbance in ashab-e-sittah zururiyah (six essential factors) and weakening of the Tabi ‘at mudabbir-al-badan. Alteration in kammiyat (quantity) and kaifyat (quality) of akhlat (i.e. ensuing of su ‘al-mizaj) is the pathological process, which is primarily caused by any of the ashab-e-sittah zururiyah (six essential causes). Thus, when this alteration in akhlat takes place it provides favourable culture media for the microorganisms and therefore, it invites the infection. So the causes of infection are not the microorganisms alone but disturbance in ashab-e-sittah zururiyah and therefore alteration in akhlat with respect to quality also. According to Unani concepts the following conditions cause Tadia Majra-e-baad.

It is found that pyelonephritis which is considered in modern medicine as an infectious condition other then kidney is called Warm-e-Gurda in unani medicine. The causes of warm or inflammation of kidney have been mentioned by various unani physicians in their respective works as.

Buqrat has been referred to ‘firdous-ul-Hikmat’ by Rabban Tabri (810-895 A.D.) that Ghalba-e-Hararat’ (Dominance of heat) in the kidney is responsible for the ‘Warm-e-Gurda’.

Jakaria Razı (838—925 A.D.), quoted under the ‘Afashir minal miyameer in the Kitab Al havi Fit-Tibb, the excessive heat is the main cause of Warm-e-Gurda and also mentioned in Al-Iskander’minal Tazkirah’, when pungent urine passes through the kidney for a longtime, and sometime can even causes Warm-e-Gurda by excess of coldness. 

Ibn-Sina (980-1037 A.D.) mentioned the causes of Warm-e-Haar Gurda by concentrated blood (Ghaleez khoon) and diluted bilious blood (Raqeeq safraavi Khoon) and it may also caused by displacement of renal stone which may leads to injuries to the tissue and ulceration in the renal musculature. Warm-e-Barid Gurda due to ‘Balgham’ (Phlegm) and ‘Sauda’ (Black bile) and ‘Intala-e-Badan’ (Body Congestion) or congestion of matter in the organs which related to kidneys, generally this congestion of matter may either be due to a defect in the quality or quantity of the blood and Avicenna also mentioned the cause of it is retention of urine due to calculi obstructing in the urinary tract.

Ahmad-ul-Hasan Jurjani (1110 A.D.) quoted under the book zakheero-e-khwarzam Shahi’ that Warm-e-Gurda is caused by diluted pungent bile, external assaults over Renal area occasionally due to hanging of hard and heavy objects, tied around the waist and displacement of renal stone.

Mohd.Azam Khan (1772-1902A.D.) quoted under the book Aksir-e-Azam’ that Warm-e-Gurda is caused by pure bile (Khalsi Safra) and rarely it occurs due to infected phlegm (Mutaffun Balgham), sometimes it occurs due to infected blood and phlegm (Mutaffun Khoon and Balgham) and bearing excessive pressure during lifting the heavy weight and transfer of any other Maddah (matter) towards the kidneys.

Warm-e-Sulb Gurda is caused by Ghalba-e-Hararat in the temperament of kidney (Buqrat as reported by tabri in his book ‘Firdaus ul hikmat’, over whelming absorption of sauda in the kidney which is calcified either due to action of the cold on the sauda or by the heat which concentrated it. It may also be caused by an excess of hotness or coldness in the Mizaj of kidney, which act on the matter and make it hard or it may be due to excessive cold, which squeezes the matter.

The Warm-e-Gurda may also caused by frost bite getting soaked in the rainy water. during and after the infectious fevers like:- Erysipelas, Yellow fever, Malaria, Measles, Small box, Cholera, Syphilis, Tuberculosis and diseases which affect the large area of the skin e.g. Eczema (Narfarsi) or Burns of the body especially hip region.

It may also be caused by use of toxic substances which produce irritation in the kidney e.g.- Lead, Tar-pine, Carbolic acid, Cantharides and Excessive alcohol consumption. impact of weight of uterus exerted over the kidneys during the pregnancy, excessive sexual intercourse, starvation, old aged persons having the history of gout.

Causes of warm-e-masana

Warm-e-Masana may caused by excessive heat in urinary bladder (Buqrat as reported by Tabri in his book ‘Firdous-ul-Hikmat’) and pungent bile’ passage of stone through urinary bladder. excessive accumulation of Khilt Kham (immature humour), (Jalinoos as reported by Razı in his hook ‘Al-Havi Fit-tibb’), taking of excessive and irregular food in childrens age between 7-15 years (Jalinoos as reported by Razı), coldness in the urinary bladder due to phlegm (Balgham), passage of Khilt-e-har
through urinary bladder \cite{34,7,8} external assault over the urinary bladder area. \cite{34,7,8}

Warm-e-Masana may also caused by progression of Warm-e-Ahleel’ (Urethritis) towards urinary bladder external or internal use of drugs, which are hot in nature eg. use of cantharid etc Syphilis Gout and Diabetes mellitus, presence of irritant matters in the urine, proctitis or Metritis (Warm-e-Raham)\cite{25,27} Frostbite, Willfully cessation of nocturnal emission.

**Causes of warm-e-ahleel (uretheritis)**

Inflammation of urethra due to gonorrhea. \cite{8,25}

**Causes of Hurqat-e-baul(burning micturation)**

It may be due to loss of mucoid secretions (sehrooj), produced by Lahoom-e-ghudoody (Cowper’s gland), which spreads in the majra-e-baul to make a protective layer. It decrease the acuteness of the urine the cause of loss of this mucoid secretion is excessive sexual intercourse, debilitating disease\cite{6,8} hot spicy foods, arid strong diuretics pungent and alkaline urine with preponderance of bile in the body and its excretion. It may be due to ulcers in the urinary bladder and in the penis, irritation of kidneys & bladder warm of the kidney and bladder eruption and irritation in the urinary tract may be due to urethral stone (Sang-e-Majari).\cite{34,6,8,25}

It may also caused by acuteness of urine may be due to (a) excessive heat in the body (b) prolonged sitting or walking in the sun and taking hot foods especial, baked turnip by a child or foster mother produce burning,while passing urine through urethra Middah lajeh (Irritating pus) and most often gonorrheal toxicity is the cause of it. Occasionally it may be caused by constipation ,hemorrhoid, infestation and indigestion which leads to irritation in the bladder and hence “hurst-e-baul”.\cite{25,29}

By going through classical unani literature, it is concluded that the warm-e-majra-e-baul’ (U T I) is caused by any factor leading to derangement of the temperament of majra-e-baul (urinary tract) towards hotness which may be due to either hot environment, taking of hot food and hot drugs, any other diseases of hot temperament. It may be also caused by its irritation due to either pungent urine or stone etc. and these conditions may cause the lowering of the general resistance as well as of the urinary tract, which may lead to successive invasion and development of microbial infection as well.

**Modern etiology**

Many microorganisms can infect the urinary tract, but by far the more common agents are the gram-negative bacilli. *Escherichia coli* causes approximately 80% of acute infection (both Cystitis and Pyelonephritis) in patients without catheter, urologic abnormalities, or calculi, other gram-negative rods, especially *Proteus*, and *Klebsiella species* and occasionally *Enterobacter species*, account for a smaller proportion of uncomplicated infection. These organisms, along with *Serratia species* and *Pseudomonas species*, assume increasing importance in a recurrent infections and infection associated with urologic manipulation, calculi or obstruction. They play a major role in nosocomial catheter associated infection, *Proteus species* (through the production of urease) and *Klebsiella species* (through the production of extra cellular saline and polysaccharides) predispose to stone formation and are isolated more frequently from patients of calculi.\cite{31}

**CAUSES OF UTI**

Causes of urinary tract infection (Tadia-majra-e-baul) can be described as follows:

1. Jarasimi Tadiya (Bacterial infection). Majority of urinary tract infections are caused by a single gram-ve bacilli. i.e E.Coli which accounts for 80% derived from the bowel flora of the patient. In general organisms causing UTI childhood are listed as under.

**Table-7**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.coli</td>
<td>40%</td>
<td>88%</td>
</tr>
<tr>
<td>Proteus</td>
<td>52%</td>
<td>5%</td>
</tr>
<tr>
<td>Staphylococci</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Streptococcus faecalis</td>
<td>4%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Among them E.coli accounts for 90-95% of all childhood urinary tract infections. The ‘0’ serotypes most often responsible for childhood urinary tract infections are 01,02,04,06,07,018, -25, 058 and 078).

Some organisms causing UTI in domiciliary practice are listed as under.\cite{235}

**Table-8.**

<table>
<thead>
<tr>
<th>Organism</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli</td>
<td>68</td>
</tr>
<tr>
<td>Proteus inirabilis</td>
<td>12</td>
</tr>
<tr>
<td>Klebsiella aerogenes</td>
<td>4</td>
</tr>
<tr>
<td>Enterococcus faecalis</td>
<td>6</td>
</tr>
<tr>
<td>Streptococcus saporphyticus</td>
<td>10</td>
</tr>
</tbody>
</table>

Less frequently other organisms are involved such as 39,40

- Klebsiella 5%

**PATHOGENESIS**

The normal urinary tract is free of bacteria except for some organisms normally present near the external meatus and some staphylococci and diphtheroids normally found in the distal urethra. Urine, as a culture medium, generally supports bacterial multiplication. However; high concentrations of urea and hyper osmolarity (which are present in the renal medulla), an acid pH and urinary organic acid are generally unfavorable to bacterial growth. In addition, the dynamics of the urinary flow (washout) and antibacterial properties of the living membrane of the urinary tract and of the vaginal and periurethral epithelial cells appear to be important defense mechanism. The urinary tract should be viewed as a single anatomic unit that is united
by a continuous column of urine extending from the urethra to the kidney. In the vast majority of urinary tract infection, bacteria gain access to the bladder via the urethra. Ascend of bacteria from the bladder may follow and is probably in pathway for most renal parenchymal infections.\textsuperscript{[18]}

In most patients with U.T.I, the infecting organism are derived from the patient’s own faecal flora. This is thus a form of endogenous infection. There are two routes by which bacteria can reach the kidneys. (1) Through the blood stream (haematogenous infection), and. (2) From the lower urinary tract (ascending infection). Although the haematogenous route is the common of the two, acute pyelonephritis does result from seeding of the kidneys by bacteria from distant foci in the course of septicemia or infective endocarditis.

(3) Haematogenous infection is more likely to occur in the presence of urethral obstruction, in debilitated patients, in patients on immuno-suppressive therapy, and with non enteric organism such as staphylococci and certain fungi.\textsuperscript{[32]}

Factors which limit multiplication of organism in the Urinary tract,

- A high rate of urine flow.
- Regularly complete bladder emptying.
- Urinary glycosaminoglycans (Tamm-Horsfall mucoprotein).
- E. coli presenting their attachment to urothelium.
- Mucosal defenses; Thin surface layer of glycosaminoglycans, secretion of IgA and IgG, mucosal phagocytosis\textsuperscript{[26]}

**ANCIENT PATHOGENESIS:** According to Unani concept when body is attacked by the microorganisms, the Mizaj (Temperament), akhlat (Rumours) and the culture media, is altered OR when cultured media altered, get attacked by microorganism easily in following ways.

1. Good humours (akhlat mehoodia) are eaten up by the microorganism.
2. Their toxins are added in the akhlat.
3. Owing to these toxins certain other organs are also affected and therefore, Mizaj and akhlat is again altered to the determinant of the body.
4. However, if the tabi’at is strong enough and has not succumbed to the infection, a good and healthy sign is seen and that is the production of specific humours (immunoglobulin) against the microorganisms to get rid of the infection.

**CLINICAL FEATURE**

**Clinical features in Unani literature**

The concept of four humors (Akhlat-e-Arbaa) forms the basis of health and disease in Unani system. It has been already stated that the noxious matter (maddah) responsible for causing urinary tract infection (Tadia majr-e-baul) may be one of the four humors or there may be combination of more than one humor, depending upon the factor responsible, four types are recognized with distinct clinical features. When the causative matter is bilious and sanguinous (Safravi and Damvi),... pain, tenderness, swelling in supra pubic and loin region, difficulty in micturition, dribbling of urine, high grade fever with chills, constipation, cold hands and feet, bluishness of tongue and periphery are present, but in Safravi type,... bilious vomiting, polydipsia (tishnagi ki shiddat), pain and burning is more marked, while in Sanguinous type,... redness of face and eyes, heaviness and distention in lower abdomen is marked. In both of the above cases, the calorific measures (haar tadabeer) will aggravate the condition while refrigerant measures (barid tadabeer) will bring about some relief in the clinical feature.\textsuperscript{[33,34,35]}

Likewise, when matter responsible is phlegmatic (Balghami), difficulty in micturition, weakness of ankle joint, pain, tenderness, burning and heaviness in suprapubic region is less marked. In the melancholic (Saudavi) type, difficulty in micturition and defecation, weakness and numbness of ankle joint, solidification and stretching (salabat and tamaddud) in suprapubic region may be present. In both the cases the refrigerant measures will aggravate the affliction, while, the calorific measures will relieve the intensity of the features.\textsuperscript{[34,35,33]}

**The common symptoms of acute** Frequency of micturition

- Dysuria
- Burning pain on urination
- Urgency
- Supra pubic discomfort
- Fever-hectic or low grade fever
- Rigor (±)
- Fatigu
- passage of cloudy and occasionally blood-tinged urine
- Costo vertebral angle tenderness or flankpain

**ACUTE PYELONEPHRITIS**

Symptoms of acute pyelonephritis generally develop rapidly occur a few hours or a day and include a temperature of >39.4°C (>103°F), shaking chills and flank pain only 60% of patients with this classic tried are subsequently proved to have pyelonephritis. Flank pain may radiate to the epigastrium or the lower abdominal quadrants, but radiation to the groin should suggest urethral obstruction.

**Cystitis**

Patient with dysuria, an abrupt onset of frequency of micturition, urgency, and supra pubic pain usually have cystitis. The urine often becomes grossly cloudy and malodorous and it is bloody in about 30 percent of cases. Fever rarely exceeds 38°C (100.4°F),

Acute prostatitis is not difficult to diagnose as patient has perineal pain, dysuria, urinary frequency, discharge per
urethra and possibly fever. Associated cystitis and epididymitis may be present. Even acute urinary retention may occur. The prostate is usually very tender\textsuperscript{[36,19]}

**Urethral Syndrome**-Up to one-third of women suffering from frequency and dysuria, however; do not have bacteriuria. This condition has been termed the urethral syndrome or abacterial cystitis.\textsuperscript{[41]}

**DIAGNOSIS**

As with many other diseases, appropriate and effective treatment of Tadiya majra-e-baul require accurate diagnosis. Apart from history and clinical feature, unani scholar relied on such parameters like: pulse, urine and stool examination. Some Unani scholar make the diagnosis of nephritis (warm-e-kulliya), cystitis (warm-e-masana), urethritis (warm-e-ahleeel) and prostatitis (warm-e-ghuddahi mazi) on the basis of clinical features and macroscopic examination (Examination with naked eye) of urine. But modern physician make the diagnosis of pyelonephritis, cystitis, prostatitis and urethritis on the basis of clinical features, macroscopic and microscopic examination of urine as well as urine culture (to find the presence of causative microorganism) collectively under the heading of urinary tract infection.

The diagnosis of a urinary-tract infection can only be proven by culturing the urine. Accurate bacteriological diagnosis is the ideal and must be made in all cases affecting infants, children and males. Urine culture is difficult to obtain in women have an isolated episode of cystitis.

(1) **Urine**

Microscopic examination of freshly voided urine and culture of a ‘clean catch or MSU’ specimen are the two most important diagnostic tests.\textsuperscript{[36]}

Naked eye examination, the urine may have a turbid appearance. Proteinuria is often in traces and never exceeds 2 gm. in 24 hours microscopy of the centrifuged deposit showing more than five leucocytes under the high power field in suggestive pyuria.

Leucocyte casts when present are diagnostic of renal parenchymal involvement due to acute pyelonephritis. Examination of the urine in Gram stain is helpful in identification of the organism.

Some erythrocytes may be seen in the urine, and gross hematuria may occur when inflammation in the bladder is intense.

Enzyme studies in urine e.g. lactic dehydrogenase and G.O.T. level are also raised but these are not required routinely.

**Significant Bacteriuria**

The concept of “significant bacteriuria” was introduced to distinguish between those bacteria that actually multiply in the urine and bacteria that are contaminants. The criteria of a single MSU specimen with a bacterial colony of greater than 100000/ ml (>100x10\textsuperscript{6}/l) represents only an 80% confidence level in diagnosing a urinary tract infection in both males and females.\textsuperscript{[114]}

A recent international working party has suggested the use of a bacterial count of greater than 1 000 ml (>1 06/1) of a potential pathogen in a symptomatic female as a diagnostic criteria and in most male(112),if the catheter specimen or suprapubic aspirate contains more than 10\textsuperscript{7} organism, it is strong evidene of U.T.I.\textsuperscript{[41,42]}

**Blood**

In the acute stage, the total leukocyte count is raised and there is polymorphonuclear leukocytosis. Blood cultures are positive in 25% of patients with acute pyelonephritis and should be obtained in all acutely ill patients with suspected upper U.T.I. It is a good practice to assess the basic renal function by estimating blood urea and creatinine for prognosis and future follow-up.

**Urine Samples**

Diagnostic accuracy can be improved by reducing bacterial contamination of the collected urine. The bladder urine can be aspirated supra pubically to provide the highest degree of reliability.

**Dipstick Tests**: Dipstick tests, available over the counter, are quite reliable in making a reasonable diagnosis of urinary tract infections in women with symptoms. Dipstick tests may also be useful for identifying urinary tract infections in children and infants. The test uses a chemical on a stick when dipped in urine reacts to nitrates, substances produced by many of the bacteria that cause urinary tract infection. A positive test (which indicates that an infection is present) often eliminates the need for urine cultures, a more expensive test used to detect bacteria. A negative dipstick test helps to avoid unnecessary antibiotics, which are contributing to the growing problem of antibiotic resistance. These tests are not entirely accurate however, and studies report that they may miss up to 25% of actual urinary tract infections.\textsuperscript{[41]}

**Urinalysis**

A urinalysis involves a physical and chemical examination of urine. In addition, the urine is spun in a centrifuge to allow sediments containing blood cells, bacteria, and other particles to collect. This sediment is then examined under a microscope. A urinalysis offers a number of valuable clues for an accurate diagnosis\textsuperscript{[41]}

1. **Color and cloudiness of urine**: Normal fresh urine is clear. It may become cloudy due to the presence of pus cells (pyuria), often with bacteriuria.
2. **Urinary pH**: In health urinary pH varies between 4.5 and 8.0. In renal tubular acidosis urinary acidification is impaired.[38]

3. **Urinary nitrate**: Most gram-negative bacteria convert urinary nitrate (derived from dietary nitrate) to nitrites[38]

4. **White blood cells (leukocytes)**: A high count of white cells in the urine is referred to as pyuria. (A leukocyte count> per micro liter is considered to indicate pyuria.)[38,39]

5. **WBC Cast in urine**: It indicates Upper tract infection.[38]

**MANAGEMENT**

The distinctive feature of Tibb-e- Unani is that neither the microorganism nor only the disease but the patient as a whole is taken in to consideration while treating a disease. That is why the patient’s temperament (Mizaj) is considered first by Ajnas-e-Ashra and then of the drugs to be administered. In treating a disease the physician helps Tabi ‘at (Physics), it is why it is called physician. Thus every effort is made to strengthen the Tabi ‘at which itself combats the infection and eradicates the microorganisms. This is achieved by various measures

1. **By giving suitable diet to strengthen the Tabi ‘at.**
2. **By giving suitable medicines to strengthen the tabi ‘at.**

The drugs act in various ways

(i) They alter the culture media (akhlatat) and thereby render it unfit for the continuance of metabolic process and multiplication of microorganisms, and ultimately the microorganisms are overpowered by the tabi ‘at (Defense Mechanism).

(ii) They eliminate the toxins and strengthen the Tabi ‘at.

(iii) They neutralize the toxin.

2. **By giving such drugs which acts as mild antiseptic or disinfectant.**

The general guidelines for the management (Usool-e-llaj) described by the majority of Unani scholars and physicians are as follows.

- **Dafa-e-ta’affun (anti-septic) drugs**
- **Mudir-e-baul (diuretic) drugs**
- **Muhallil-e-auream (antiinflammatory) drugs**
- **Musakkin (cooling / refrigerating) drugs**
- **musakkin-e-alam (analgesic) drugs**
- **musaffi-ud-dam (blood purifier) drugs**
- **Dafa-e-humma (antipyretic) drugs**

A number of Unani scholars have shared their valuable experiences in the management of Urinary tract infection (Tadiya majra-e-baul) in various Unani texts. Although the list is very exhaustive, it will be worthwhile to pen down a few of them here.

1. The douching of butter and milk cream is beneficial in case of warm-masana (cystitis) and Hurqat-e-masana (Burning micturition).
2. **Habul Asa** is a beneficial medicine for Hurqat-e-baul (Burning micturition).[13,14,15]
3. **Maul jubn** reduce the acidity and burning during micturition.[13,14,15]
4. **Tukhm-e-khira**, Tukhm-e-kakri, Habb-e-kaknae are useful in pyuria.[13,14,15]
5. **Sheerah Tukhm-e-kiyar** is useful in burning micturition[13,14,15]
6. Barely water (Maul sh shaier) is useful in cystitis (Warm-e-Masana) and burning micturition (Hurqat-e-baul).[13,14]
7. Use of **Maul jubn** is beneficial in burning micturition.[13,14]
8. Qurs e suzaak is beneficial in gonorrhea.
9. Sharbat bazoori motadil is beneficial in burning micturition.[13]

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