



## URINARY TRACT INFECTION (TADIYA MAJAR-E-BAUL) IN THE LIGHT OF UNANI SYSTEM OF MEDICINE: AN OVERVIEW

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### ABSTRACT

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 enlighten 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 *Ta'diyah* (infection) and *Ufunah* (Putrefaction). 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*. The review highlights only the Unani descriptions, which are mentioned in classical Unani literature.

**Key words:** Urinary tract infection, Tadiya Majr-e-baul, Unani medicine.

### INTRODUCTION

Urinary tract infections have plagued mankind long before bacteria were recognized as the causative agents of disease and before urology became an established medical specialty. 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.<sup>1</sup> It accounts for more than seven million visits to physicians, offices and necessitate or complicate over one million hospital admissions in the united states annually (Patton et al, 1991 hooton and stamm 1977),<sup>2,3,4</sup> It is a problem that affects all age groups, more common in boys in the neonatal period but becomes more common in girls during infancy and thereafter.<sup>2,5,6</sup>

The microbes live in the human body as a symbiotic as well as a commensal without creating any harm such as *E.coli* in the gut, *Staphylococcus* and *Streptococcus* species in nasopharynx and oropharynx, but they become pathogenic whenever they get chance or opportunities. Normally, colonization of bacteria in the urinary tract is prevented by numerous defense mechanisms, the flow of urine, presence of mucous coat in the stratified squamous epithelium, homocystine, high concentration of urea in the urine, osmolality, lack of nutrients like glucose in the normal urine and certain normal ingredients like Tamm Horsfall protein prevent the adherence of bacteria to the urothelium. When any of these defense mechanisms becomes defective, bacteria may adhere to the urothelium, colonize and cause bacteriuria.<sup>7</sup>

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. Prior to invention of microscope many physicians proposed that some living organisms, which can not be seen with naked eye, are responsible for causing various diseases, they get entry into the body, multiply there and produce disease. After the invention of electron microscope

these living organisms were studied under the microscope and named as microorganism.

Contrary to the brief Urinary tract infection is a disease which has vivid description in modern literature but facts are something else. In ancient literature though there is no disease mentioned with such a nomenclature but there are descriptions of similar disease are present sporadically and mostly by the name of various heading such as *Warm-e-kuliya* (Nephritis), *Warm-e-masana* (Cystitis), *Hurqat-e-baul* (Burning micturition) and *Taqtir-ul-baul* (Dribbling of urine)etc.<sup>8,9,10</sup>

### HISTORICAL BACKGROUND

Urinary tract infection (*Tadiya Majra-e-baul*) is a very common urological ailment since time immemorial. The first written description of Urinary tract infection was present in ancient Ebrus papyri and recommended herbal treatment to ameliorate urinary symptoms without providing insight into pathology of Urinary tract infection. Hippocrates believed that disease was caused by disharmony of the four humours and accordingly diagnosed urinary disorders<sup>11(12)</sup>. He 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<sup>12</sup>

Again in "*Fasool-e-buqratiya*" another famous treatise by 'Hippocrates' (460 B.C.) he asserted that pyuria along with haematuria, 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 haematuria, 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<sup>13</sup>

Desquidous (100 A.D.) in his famous book “*Kitab-ul-Hashayash*” stated that.<sup>12</sup>

1. The douching of butter and milk cream is beneficial in case of *Warm-e-Masana* (cystitis) and *Hurqat-e-Masana* (burning micturition).

2. He also describes that ‘*Habbul Aas*’ is a beneficial drug for *Hurqat-e-Baul*.

Ali Bin Sehal Rabban- Al-Tabri (810 A. D.) mentioned “*Warm-e-Masana ma taqtirul baul*” in his famous text “*Firdaus-ul-Hikmat*”<sup>14</sup>. Rhazes (865-925 A.D.) explained it under the heading of “*Taqtir-ul-baul ma hurqat*” in “*Alhavi fit-tib*”, he also gives emphasis over the efficacy of *mauljubn* to reduce the acidity and burning during urination.<sup>12</sup>

In “*Kamil-ul-Sana'a*” 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.<sup>15</sup>

Ibn-e-Sina (980-1030 A.D.) in “*Cannon of Medicine*” has given an ample space under the heading of “*Hurqat-e-baul*”.<sup>16</sup>

Hakim Akbar Arzani (1134 A.D.) a renowned physician of *Mughal* period has also discussed it in detail in his famous book “*Tibb-e-Akbar*”. It is important to mention here that he hypothesized; the acidic urine is the main cause of *Hurqat-e-baul* mainly due to bilious (Safravi) derangement of liver.<sup>17</sup>

Ismail Jurjani (1140-1236 A.D.) in “*Zakhera-e-Khawarzam Shahi*” described the disease as *Hurqat-e-baul*.<sup>18</sup>

In “*Moalijat-e-nafisi*” by Nafis Bin Auz Kirmani (1438 A.D.) had discussed its etiopathogenesis clinical presentation and management under the heading of “*Hurqat-e-baul*”. He had written that *Hurqat-e-baul* is mainly due to increased bilious (*Safravi*) concentration and heat of the body.<sup>19</sup>

The famous Indian Unani scholar Hakim Azam Khan (1813-1902 A.D.) in his book *Akseeer-e-Azam* has described the disease *Tadiya Majra-e-baul*, as *Warm-e-masana-e-har* and *Hurqat-e-baul*, and given a wide coverage regarding its etiopathogenesis, clinical features and management.<sup>20</sup>

The modern Unani physician like, Hakim Ajmal Khan (1868-1927 A.D.) has given the description of the disease as “*Hurqat-e-baul ma taqtir-ul-baul*” with its etiopathogenesis clinical features and management in details.<sup>21</sup>

“*Asbab-o-Alamat*” the most popular text among Unani scholars translated by Kabiruddin as “*Sharah-e-Asbab-o-alamat*” (Original author Najibuddin Sammarqandi) covers almost entire aspects of disease and its management under the heading of “*Warm-e-masana har*” which is very similar to the description available in modern books of medicine.<sup>22</sup>

## ETIOLOGY

The causes of microbial disease are not only the microorganisms but also the disturbance in *asbab-e-sittah zururiyah* (six essential factors) and weakening of the *Tabi'at mudabbir-al-badan*. Alteration in *kammiyat* (quantity) and *kafiyat* (quality) of *akhlata* (i.e. ensuing of *su'al-mizaj*) is the pathological process, which is primarily caused by any of the *asbab-e-sittah zururiyah* (six essential causes). Thus, when this alteration in *akhlata* takes place it provides favorable culture media for the microorganisms and therefore, it invites the infection. So the causes of infection are not the microorganisms alone but disturbance in *asbab-e-sittah zururiyah* and therefore alteration in *akhlata* with respect to their quality also<sup>23</sup>

According to Unani concepts the following conditions cause *Tadiya Majra-e-baul*

**1. Inflammation or Abscess of urinary tract (*Auram or Qorooh Majra-e-baul*):** According to Rhazes the major cause of discharge of pus is abscess, when passes through the urethra, it contaminates the urethral fluid and causes burning due to its irritative and burning nature<sup>19,20,24,25</sup>

**2. Blood or pus from abscess of adjacent organs (*Dum or Sadeed bairoon-e-majra-e-baul*):** Blood /pus from adjacent organ drained into urinary tract may cause *Tadiya majra-e-baul*. (E.g. Liver abscess, Psoas abscess and Pelvic abscess)<sup>19</sup>

**3. Acute and Hot Humour (*Akhlata-e-haadah or harrah*):** Acute hot humour causes erosion of mucous membrane of urinary tract and causes inflammation or abscess<sup>19,20</sup>

**4. Deranged hot temperament of bladder (*Su-e-mizaj har masana*):** Deranged hot temperament of bladder also favours burning during micturition<sup>19,20</sup>

**5. Severe burning sensation in the bladder neck (*Unuq-e-masana ka hurqat-e-shadidah*):** This refers to the severe burning in the neck of bladder without inflammation and obstruction<sup>26</sup>

**6. Absence of prostatic fluids (*Fuqdan-e-ratubat Ghuddah-e-mazi*):** Decrease or absence of prostatic fluid due to emaciation, excessive sexual contact, erosion and abscess of urethra also cause burning micturition<sup>19,20</sup>

**7. Person having bilious temperament :( *Mizaj-e-safravi*):** Person having bilious temperament is more susceptible to burning micturition in comparison to person of other temperaments<sup>19,20</sup>

## Some worth mentioning Etiological Factors

### Diet

- When healthy volunteers consumed a large amount (100 grams) of refined sugar, the ability of their white blood cells (WBC) to destroy bacteria was impaired for at least five hours<sup>27</sup>
- Consumption of excessive amounts of alcohol has also been shown to suppress immune function<sup>28</sup>
- Use of large amount of animal protein diet (Meat) causes acidification of Urine<sup>29</sup>

## PATHOGENESIS

The basic of infection, which was postulated and hypothesized by renowned ancient scholars of Unani medicine, are based on two factors i.e. *Quwat-e-istedad* (favourable condition) and *Quwat-e-mudabbir-al-badan* (Immunity) of the host for infection. As long as *Quwat-e-mudabbir-al-badan* (Immunity) is strong and *Quwat-e-istedad* (Susceptibility) is low, infection does not occur and vice versa. In Unani system of medicine, it is very much clear that only the *Quwat-e-istedad* (Susceptibility) and *Quwat-e-mudabbir-al-badan* (Immunity) are the main factors that can be elaborated as the microorganism did not do anything, rather these favourable conditions are created inside the human body, tissue and organs by alteration in the original temperament of the concerned organ or body system. *Quwat-e-mudabbir-al-badan* (Immunity) also maintains the four humours, in their specific proportion and maintains health while disproportion leading to manifestation of various pathological states and diseases. Opportunistic infection verifies this fact strongly.

According to Unani concept when body is attacked by the microorganisms, *Quwat-e-istedad* (favourable condition) and *Quwat-e-mudabbir-al-badan* (Immunity) is altered again in following ways<sup>23</sup>

- 1- Good humours (*akhlata mahmooda*) are eaten up by the microorganism.
- 2- Their toxins are added in the *akhlata*.
- 3- Owing to these toxins certain other organs are also affected and therefore, *Mizaj* and *akhlata* 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 FEATURES

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 (*Tadiya 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 suprapubic 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 (*baarid tadabeer*) will bring about some relief in the clinical features<sup>19,20,25</sup>

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<sup>19,20,24</sup>

## DIAGNOSIS AND MANAGEMENT

The diagnosis of microbial diseases is made by Unani scholar on the basis of *Akhlat* (Humours), history, clinical feature and macroscopic examination (Examination with necked eye) of urine. But modern physicians make the diagnosis of urinary tract infection on the basis of clinical features (burning during micturition or dysuria, Urgency, increased frequency, fever with chills and rigors, pain in suprapubic region, haematuria and foul smelling urine), macroscopic and microscopic examination of urine as well as urine culture (to find the presence of causative organism)

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 (*akhlat*) 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.

The first and third function is achieved by *Munzijat* (coctives) and *Mu'addilat* (neutralizing agents) and the second effect is achieved by

*mu'arriqat* (diaphoretics), *mushilat* (purgative) and *muddirrat* (diuretics).

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

The general guidelines for the management (*Usool-e-Ilaj*) described by the majority of Unani scholars are as follows:

i) Correction of *Su'e-Mizaj* (deranged temperament) by appropriate measures and judicious use of drugs<sup>17</sup>

ii) Use of *Fasad* (venesection), *Mu'addilat* (neutralizing agent), *Munzijat* (coctives), *Muffajir-e-auram* (suppurative) *Mushilaat* (purgative), *Khafif muddirrat* (Mild diuretics), and *Muqqiyat* (emetic) as required for the elimination (*tanqiya*) of the noxious matter and the humours<sup>17,24,25</sup>.

iii) Use of *Mohalil-e-auram* (anti-inflammatory) drugs both in systemic and local use<sup>25</sup>

iv) Use of Sitz bath (*Āab zan*)<sup>30,31</sup>

v) An alteration in the daily life style of the patients with special emphasis on sexual activities and alcohol intake.

vi) A special care to the dietary intake<sup>30</sup>

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-e-masana* (cystitis) and *Hurqat-e-masana* (Burning micturition)<sup>12</sup>

2. *Habbul Āas* is a beneficial medicine for *Hurqat-e-baul* (Burning micturition)<sup>12</sup>

3. *Mauljubn* reduces the acidity and burning during micturition<sup>12</sup>

4. *Tukhm-e-khira*, *Tukhm-e-kakri*, *Habb-e-kakraj* are useful in pyouria<sup>17</sup>

5. *Sheerah Tukhm-e-khyar* is useful in burning micturition<sup>12</sup>

6. Banana stem water, *Sheerah-e-khar-e-khasak* and *Sheerah Tukhm-e-khyarain* are useful in cystitis and burning micturition<sup>17</sup>

7. Barely water (*Maaush shaier*) is useful in cystitis (*Warm-e-masana*) and burning micturition (*Hurqat-e-baul*)<sup>17</sup>

8. Use of *Mauljubn* is beneficial in burning micturition<sup>32</sup>

9. Camel milk is very useful in cystitis (*Warm-e-masana*)<sup>32</sup>

## Herbs that may be helpful

1. Modern research has suggested that cranberry (*Vaccinium erythrocarpum*) may prevent urinary tract infections, because it prevents *E. coli*, the bacterium that causes most urinary tract infections, from attaching to the walls of the bladder<sup>33</sup>

2. Blueberry contains similar constituents as cranberry, and might also prevent bacteria from attaching to the lining of the urinary bladder<sup>34</sup>

3. Asparagus (*Asparagus officinalis*), birch (*Betula* spp.), couch grass (*Agropyron repens*), golden rod (*Solidago virgaurea*), horsetail, Java tea (*Orthosiphon stamineus*), lovage (*Levisticum officinale*), parsley (*Petroselinum crispum*), spiny restharrow (*Ononis spinosa*), and nettle are approved in Germany as part of the therapy of people with urinary tract infections. These herbs appear to work by increasing urinary volume and supposedly helping to flush bacteria out of the urinary tract<sup>35</sup>

4. *Buchu* leaf preparations have a history of use in traditional herbal medicine as a urinary tract disinfectant and diuretic<sup>36</sup>

5. The volatile oil of horseradish has been shown to kill bacteria that can cause urinary tract infections<sup>37</sup>

6. Goldenseal is reputed to help treat many types of infections. It contains berberine, an alkaloid that may prevent urinary tract infections by inhibiting bacteria from adhering to the wall of the urinary bladder<sup>38</sup>

### Vitamins that may be helpful

1. The proteolytic enzymes, bromelain (from pineapple) and trypsin may enhance the effectiveness of antibiotics in people with a urinary tract infection<sup>39</sup>
2. Vitamin C is recommended 5,000 mg or more per day for an acute urinary tract infection, as well as long-term supplementation for people who are prone to recurrent urinary tract infections. Vitamin C has been shown to inhibit the growth of *E. coli*, the most common bacterial cause of urinary tract infections<sup>40</sup>

### PREVENTIVE OR PROPHYLACTIC MEASURES

Keeping the etiopathogenesis of disease in mind, Unani as well as Modern writer have mentioned some points to prevent the progression of disease. Which are being listed in coming lines:

1. Fluid intake at least two liter per day.<sup>41,42</sup>
2. Clean the genital and urinary area from front to back<sup>1</sup>
3. Regular emptying of bladder (Three hour intervals by day and before sexual intercourse)<sup>42</sup>
4. Emptying the bladder before and after intercourse<sup>41,43</sup>
5. Avoidance of bubble baths and other chemicals in bath water<sup>41</sup>.
6. Avoidance of constipation, which may impair bladder emptying<sup>41</sup>.

### From the above description following conclusions can be drawn

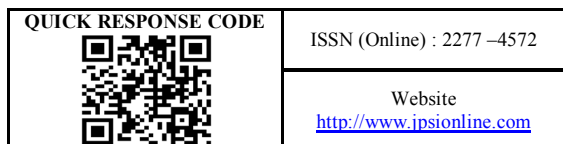
Urinary tract infection is not a single disease of a particular organ of Urinary tract. But it is an infection of any part irrespective of its causal organism and pathogenesis. Therefore the susceptibility of the tract and immunity of the body is playing more important role in occurrence of the infection. The same concept lies in Unani system of medicine regarding infection, in which the individual body susceptibility (*Quwat-e-istedad*) and immunity (*Quwat-e-mudabbir-al-badan*) is the key factors for any infection. In which any alteration in the innate environment i.e. impaired proportion and quality of humours allow the microorganism for multiplication and pathogenesis. The same concept is also applied in urinary tract infection were alteration in urinary pH constituent and development of rotten humours (*Fasid akhlat*) allows the various organisms to multiply for infection.

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