

Urinary Tract Infection in Elderly Patient in Nephrology Department of University Hospital Donka

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Abstract

Urinary tract infection (UTI) is the most common bacterial infection in the elderly. The objective was to determine the frequency of urinary tract infection in the elderly subjects in the nephrology department of Donka University Hospital. **Methods:** The study involved patients aged 65 years and over with a urinary tract infection confirmed by the biology admitted to the Nephrology Department for a period of 6 months from July 01 to December 31, 2023. The study variable focused on identifying the bacteria in the urine of the patients. We looked for associated comorbidities: high blood pressure, diabetes, HIV and chronic kidney disease. **Result:** Of the 38 patients with urinary tract infection, there were 18 men (47.37%) and 20 women (52.63%), the sex ratio was 0.9. The mean age was 73 +/- 8 years, the age group 65 - 70 years was the most common. The clinical examination showed in the general signs the association of chills and fever in 23 cases (60.5%), urinary burning 19 (50%). Urinary signs were dominated by suprapubic pain 15 (39.5%), gross hematuria 9 (23.7%), pyuria 18 (47.4%), suspibic pain 15 (39.5%). **Conclusion:** Urinary tract infection was more common in women than in men. Housewives are the socio-professional category most affected by urinary tract infections. The germ isolated was *Escherichia coli* in 36.8%.

Keywords

Urinary Tract Infection, Elderly Person, Kidney Disease

1. Introduction

Urinary tract infection (UTI) is an infection in any part of the urinary system

(kidneys, ureters, bladder and urethra). The UTI is the most common bacterial infection in the elderly. It represents the first gateway for bacteria [1]. According to the WHO, we talk about the elderly, people whose age is 65 years old or more [2]. The management of urinary tract infection in the elderly remains complex, and the collection of symptoms is difficult in these patients whose cognitive functions may be impaired. Asymptomatic bacteriuria or colonizations are very common in these patients [3].

Catheter-associated urinary tract infections are one of the most common nosocomial infections and can lead to many complications [4]. In Algeria, S. Benamar *et al.* reported a frequency of urinary tract infection in the elderly at 35%. The most common clinical signs were urinary burning and pollakiuria. The common germs were *Enterobacteriaceae* (85.2%) and non-fermenting bacilli (4.1%) [5]. The coexistence among the elderly, the fact of sharing caregivers and the very significant exposure make infection frequent in this population [6]. The high frequency of UTI in the elderly motivated us to conduct this research, the main objective was to determine the frequency of urinary tract infection in the Nephrology Department of Donka University Hospital.

2. Materials and Methods

The study involved all patients aged 65 years and over with a confirmed urinary tract infection at the urinary cytology and bacteriology admitted to the nephrology department of teaching hospital Donka in Guinea for a period of 6 months from July 01 to December 31, 2023. The head of chair nephrology received and approved the study protocol and transmitted to the hospital administration, all the patients are informed about the consent process. Inclusion criteria were patients ≥ 65 years of age presenting with urinary track infection (UTI) and isolated germ on ECBU while in the hospital. Patients without UTI and ECBU negative were excluded. The variables in the study focused on age (elderly was considered when the patient was 65 years old or older), sex (man and women), level of education, occupation, and marital status. We looked for associated comorbidities: high blood pressure, diabetes, HIV and chronic kidney disease (CKD). We also looked for a history of surgery in urology. The interrogation and the clinical examination allowed us to look for urological functional and physical sign. In biology, we confirmed the biological inflammatory syndrome, isolated the germ responsible by the biology and the analysis laboratory attached the antibiogram for the sensitivity of the germs to antibiotics. Renal ultrasound made it possible to look for the impact on the upper urinary tract but also to confirm if a patient has chronic kidney disease (CKD). On the therapeutic level, we have used the antibiogram to treat the urinary tract infection according to international recommendations. Our data was collected using the Epi info application version 7.2.6.0, saved in the database, then downloaded in Excel files and analyzed. The results were presented in tabular form (**Table 1**, **Table 2** and **Table 3**). Discrete variables were presented as frequency and percentages. The variables were presented as

mean, number and percentage. For statistical analysis we used a P values < 0.05 were considered statistically significant, and presentations were done respectfully using World, Excel and software from the Office Pack 2013.

3. Results

During six months, we received 232 hospitalizations, of which 159 (68.5%) were elderly. In 47 patients (20.2%), urinary cytobacteriology examination (ECBU) was performed, of which 38 (16.4%) cases came back positive and germs were isolated. Of the 38 patients with urinary tract infection, there were 18 men (47.37%) and 20 women (52.63%) and the sex ratio was 0.9. The mean age of patients was 73 +/- 8 years, the age group 65 to 70 years was the most common. Clinical examination shows in the general signs the association of chills and fever in 23 cases (60.5%), urinary burning 19 (50%). Urinary signs were dominated by suprapubic pain 15 (39.5%), gross hematuria 9 (23.7%), pyuria 18 (47.4%), and suprapubic pain 15 (39.5%) see **Table 1**.

Table 1. Patient according to urinary sign.

Urinary sign	Patient	Percentage (%)
Urinary burning	19	50
Prineal pain	13	34.2
Macroscopique hématuria	9	23.7
Pollakuria	9	23.7
Dysuria	17	44.7
Pyuria	18	47.4
Pelvic pain	15	39.5
Pain in the urethral track	13	34.2
Lombar pain	14	36.8
Bladder globe	6	15.8
Oliguria	7	18.4
Urinary retention	2	5.3

The urinary catheter was present in 30 patients (78.9%) and absent in 8 (21%). The appearance of urine was haematic 8 (21%), citrine yellow 12 (31.6%) and cloudy in 18 patients (47.4%). At biology, 12 (31.6%) patients had CKD and 17 patients (44.7%) had AKI. Biological inflammatory syndrome was present in 26 patients (68.4%). The ECBU made it possible to isolate the following germs: Gram-positive Bacilli 4 (10.5%), Gram-negative Bacillus 15 (39.5%), Gram-positive Cocci 12 (31.6%), Gram-negative Cocci in 5 (13.1%), fungus spores 2 (5.3%). The isolated bacteria were dominated by *Escherichia coli* 14 (36.8%) see **Table 2**.

Table 2. Germs from laboratory analysis by ECBU.

Germs	Number	Percentage (%)
<i>Escherichia coli</i>	14	36.8
<i>Proteus mirabilis</i>	3	7.9
<i>Klebsiella pneumoniae</i>	7	18.5
<i>Enterococcus spp</i>	5	13.1
<i>S.liquefaciens</i>	3	7.9
<i>Candida albicans</i>	3	7.9
<i>Neisseria gonorrhoeae</i>	2	5.3
<i>Clostridium perfringens</i>	1	2.6
Total	38	100%

Depending on the sensitivity of the bacteria, in simple urinary tract infection we used quinolones and fluoroquinolones, in case of resistance, patients received imipenems, vancomycin, the duration of treatment varied between 14 and 21 days. The diagnosis was dominated by acute pyelonephritis 5 (13.2%), cystitis 9 (23.7%), asymptomatic bacteriuria in 2 (5.3%). For statistical analysis, we observed the recurrent urinary infection when the patient came to the nephrology ward with a catheter placed by a nurse (**Table 3**).

Table 3. Patient according to urinary sign.

Variables	UTI	P value
Sex		
Man	18 (47.37%)	0.416
Woman	20 (52.63%)	
Comordities		
Hypertension	8 (21.05%)	
HIV-infection	6 (15.78%)	0.125
Diabetes	10 (26.31%)	0.046
CKD	28 (73.68%)	
Catheter use	21 (55.26%)	0.023

4. Discussion

The difficulties encountered during the study were related to the performance of certain examination, in particular the ECBU, by most patients with signs pointing to a urinary tract infection. Patient with suspected UTI with sign, the urine sample most collected and delivery to labotory for analysing, antimicrobial testing per-

formed [7]. This hospital frequency shows that in the care of the elderly, the search for urinary tract infections is important in their management, there are some use catheterization in the elderly in emergency, when they are coming with urinary symptom before to referral in nephrology ward. In the study by Fongoro D [8] the signs of urinary were represented by abdominal pain, low back pain, dysuria, pol-lakiuria, urination burning and suprapubic pain. Coudert reported the same symptoms [9]. The signs of a UTI are all inconsistent and vary depending on the location of the infection. Systemic symptoms and even sepsis can occur in pyelo-nephritis.

The germs found at Gram staining are varied. These are, in order of frequency, Gram-negative bacilli (BGN), Gram-positive Cocci (CGP), Gram-negative Cocci (CGN), Gram-positive bacilli (BGP). Haber and Coudert reported gram-negative bacilli in 88.5% and 83.6% of cases, respectively [9] [10]. Haber found only 11.5% Gram-positive Cocci [10] compared to 31.6% in our study. The gram-negative bacilli frequently found are *Escherichia coli* (36.8%) and *Klebsiella pneumoniae* (18.5%) Gram-positive cocci: *enterococcus spp* in 13.1% of germs. *Candida albicans* is the only isolated and *Neissiria Gonorrhoea*, for NGCs. In the study of Bah and all [11] conducted in the Urology Department of Teaching Hospital in Guinea, the urinalysis performed in 55 patients revealed urinary tract infection with *Staphylococcus aureus* representing the most frequently isolated germ after two weeks with catheter using. The predominance of *Escherichia coli* in the urine culture. Gram-positive bacillus (BGP) was less common with only *clostridium per fringes*. According to the literature, BGN is the most incriminated in urinary tract infection (UTI). Their leader, the *E. coli* is present a lot in the intestinal flora and can be ingested by diet and is able to migrate to other organs, particularly in the kidney by the hematogenic route. Imipenem 23.7% and ciprofloxacin 36.8% are the most commonly used antibiotics for the treatment. Two of our patients were on anti-tuberculosis drugs, the duration of treatment was six (06) months of treatment for patients. Ceftriaxone was the most prescribed ahead of Amoxicillin and clavulanic acid and ciprofloxacin. The evolution was marked by a disappearance of urinary and/or general symptoms with recovery of the infection in patients who had undergone urinary biology. However, the poor prescription of antibiotics could partly explain the evolution of the frequency of resistance, hence the interest in always adapting antibiotic therapy according to the sensitivity of the germs. To avoid catheter infection in elderly patients, indwelling catheters should be placed only when they are indicated Indwelling urinary catheters should not be used for the management of urinary incontinence. In exceptional cases, when all other approaches to management of incontinence have not been effective, it may be considered at patient request and routinely doing ECBU after 14 days catheter insertion for the screening of UTI.

5. Conclusion

This study confirms a classic knowledge, that urinary tract infection was more

common in women than in men. Housewives are the socio-professional category most affected by urinary tract infections. The main germ isolated was *Escherichia coli* at 36.8%. This study more or less confirms the effectiveness of urinary infection treatment based on the performance of an ECBU and the antibiogram, with increased cure and clear clinical and biological satisfaction. It highlights the important work to be done to reduce urinary tract infections in the elderly.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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