

Rational use of antibiotics in the treatment of urinary tract infection in Aden city

Hussein Ahmed Bakathir

Department of Pharmacology, Faculty of Pharmacy – University of Aden

DOI: <https://doi.org/10.47372/uajnas.2015.n2.a15>

Abstract

The term urinary tract infection (UTI) refers to the presence of majority microbial pathogens in the urinary tract producing signs and symptoms of a disease. The diagnosis of bacterial UTI is usually performed by bacteriological methods of isolation and identification of bacterial strains in voided urine. In Yemen, and specially in Aden, there is a lack of information not only about the pattern of used antibiotics in the treatment of UTI but also the prescribing behavior of these drugs. This is a retrospective study performed by collecting data from 12 selected urology outpatient clinics in Aden city and analyzed by using the excel program. According to the obtained results most pathogen of the UTi was E-coli (79%) and the most used method for the identification of UTI were the routine test (66%) while only 24% were by culture method. Most prescriptions contained single antibiotic (83%) and the most prescribed antibiotics were Fluoroquinolones, Cephalosporins and others.

Key words: Urinary tract infection, E-coli, rational use of antibiotics, fluoroquinolones.

Introduction

The term urinary tract infection (UTI) refers to the presence of majority microbial pathogens in the urinary tract having signs and symptoms of a disease ,the presence of bacteria in the urine is called bacteriuria (10). The UTI as a disease is widely distributed in the world. It is considered as the second most common infectious disease in community practice (5). Worldwide about 150 million people are diagnosed as UTI each year (5), that costed the global economy about 6 billion dollars and the treatment takes long time which is usually expensive (12). UTI is an extremely common condition that occurs in both males and females of all ages. The prevalence and incidence of it is higher in women than in men due to several clinical factors including anatomical differences, hormonal effects and behavioural patterns (1,4,14). UTI is a precise clinical problem because it involves the urethra, bladder, uterus, and kidneys. Many different microorganisms can cause UTI though the most common pathogens are E-coli (about 80 -90 of UTI cases) and other enterobacteriaceae like klebsiella and proteus spp (14).

The diagnosis of bacterial UTI is usually performed by bacteriologic methods of isolation and identification of bacterial strains in voided urine and by culture test guided the choice of the proper sensitive and effective antibiotic drug(s). The unprecise identification, overuse ,and misuse of antibiotics have contributed significantly to the spread of resistance to the prescribed antibiotics for the treatment of UTI ,which counteracted with the rational use of antibiotics that is recently very important and internationally required namely through WHO programs and instructions (3,6). In Yemen, and specially in Aden, there is a lack of information not only about the etiology and resistance pattern of used antibiotics in the treatment of UTI, but also the behaviour method in prescribing these drugs by concerned prescribers.

The aim of this study is to find out the pattern of the pathogens causing UTI and the rationality in prescribing antibiotics for the treatment in Aden city.

Materials and Methods

This is a retrospective cross sectional descriptive study performed by collecting data from 12 selected urology outpatient clinics in Aden city, during the period January – July 2014. The

Rational use of antibiotics in the treatmentHussein Ahmed Bakathir

information obtained from these sources were transferred in questionnaire sheets that cover the needed data (e.g. pathogen specification, prescription diagnosis, type of test, single or combined antibiotics, prescribed antibiotics) and were analysed and calculated by using excel program. The total number of collected prescriptions were 100.

For the identification of the sensitivity and resistance of antibiotics, the well known diffusion method was used.

Results

According to the results analysed from the collected prescriptions of the selected urology outpatient clinics, only 24 of them register the specification of the pathogens of UTI . The most pathogen was E-coli with 79% (see Table 1 and Figure 1). The most of the prescriptions included the diagnosis (90%) (see Table 2 and Figure 2).According to the method used for identifying of the infection only 24% of the cases included culture test while the most cases were identified by using urine routine test (66%) (see Table 3 and Figure 3). Most of the prescriptions contain single antibiotic (83%) in relationship with combined antibiotics (more than one antibiotic)(17%) (see Table 4 and Figure 4).The most prescribed antibiotics were Fluoroquinolones,Cephalosporins and others (e.g. Nitrofurantoin,Augmentin, with 49%,31%,20% respectively (see Table 5 and Figure 5).

Table (1): Pathogen's specification in the prescription

Pathogen's name according to culture test	E.coli:	19	79%
	Enterobacter:	1	4%
	Klebsiella:	1	4%
	Proteus:	1	4%
	Pseudomonas:	1	4%
	Staph.aureus:	1	4%

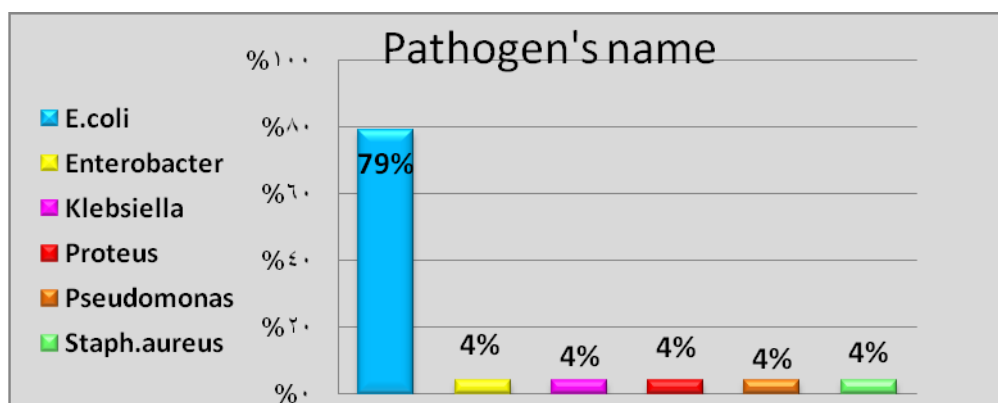


Figure (1): Pathogen's specification in the prescription

Table (2): Distribution according to diagnosis

Prescription	Without diagnosis:	10	10%
	With diagnosis:	90	90%

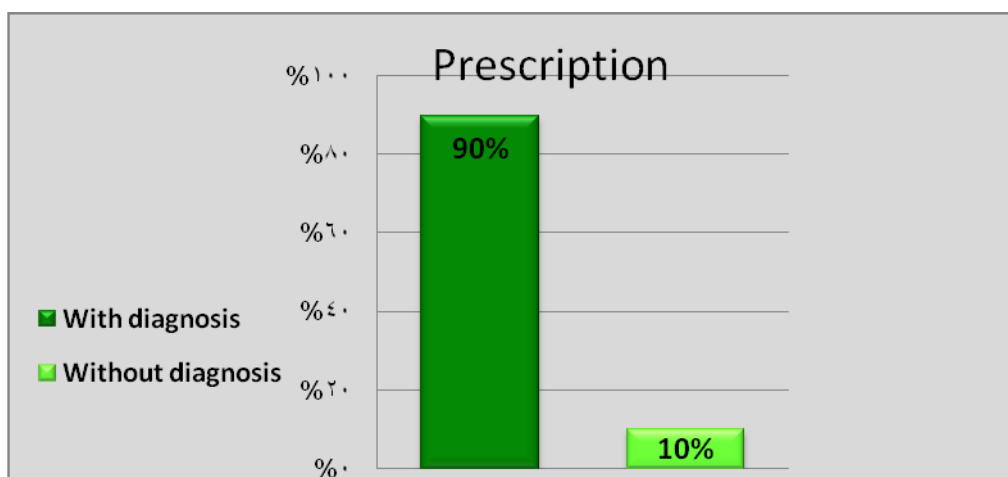


Figure (2): Distribution according to diagnosis

Table (3): Distribution according to sensitivity test or without test

Laboratory test	Without test:	10	10%
	Culture test:	24	24%
	Routine test:	66	66%

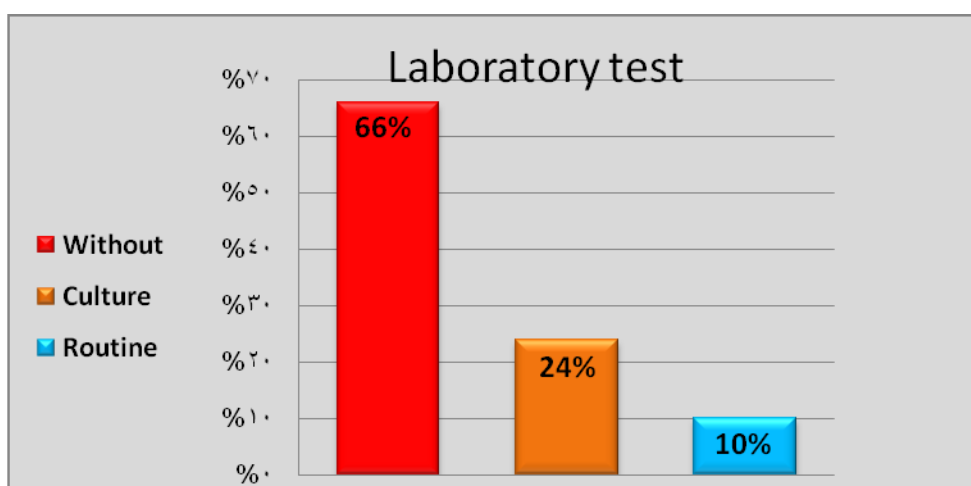


Figure (3): Distribution according to sensitivity test or without test

Table(4): No. of antibiotics prescribed in our prescription

No. of antibiotics	Single:	83	83%
	Combined:	17	17%

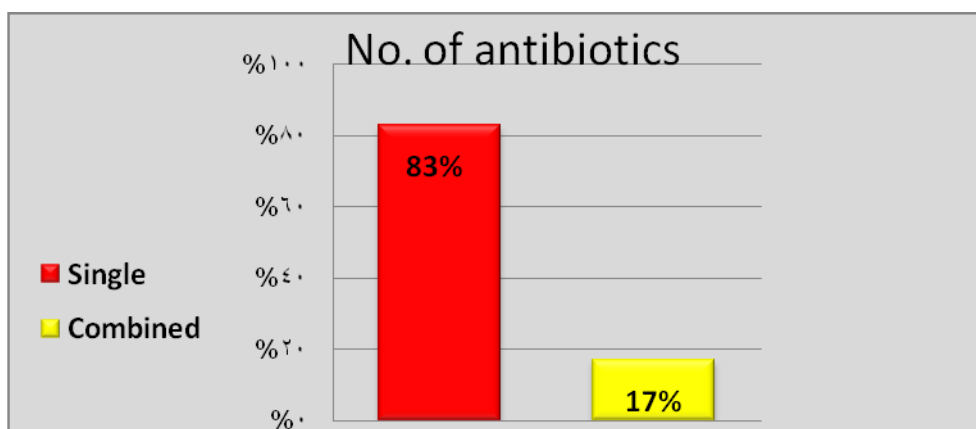


Figure (4): No. of antibiotics prescribed in our prescription

Table (5): Distribution according to the type of prescribed antibiotics

Types of prescribed antibiotics	Fluroquinolon:	50	49%
	Cephalosporin:	32	31%
	Others:	20	20%

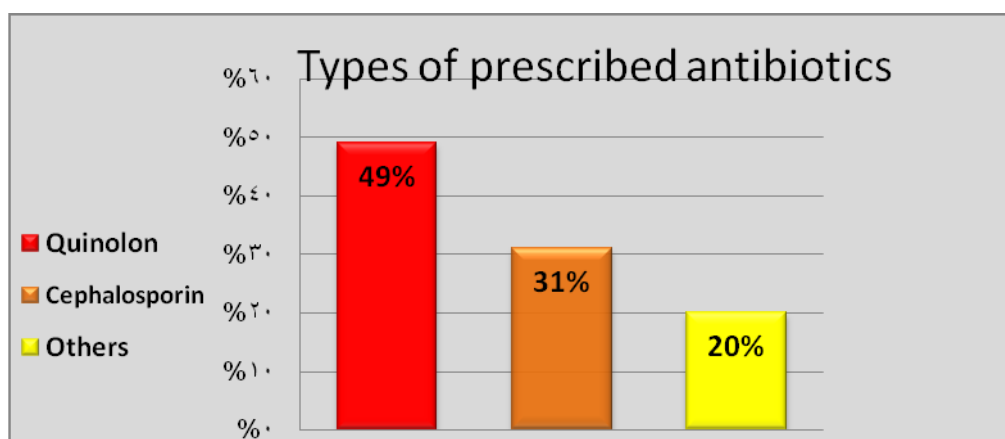


Figure (5): Distribution according to the type of prescribed antibiotics

Discussion

The treatment of UTI is often started empirically and therapy based on information determined from the antibacterial sensitivity to the pathogen. The isolation and identification of the causative pathogen is the useful method for the selection of the effective antibiotic in the treatment of UTI. Resistance to antibiotics is yet another serious problem. This is due to overuse as well as misuse of antibiotics which increase this problem day by day. There is a lack of information about the etiology and the sensitivity and resistance pattern of UTI in Yemen, specially in Aden. Infectious diseases e.g. urinary tract infection are the leading cause of sickness and sometimes death. They are commonly treated with anti-infective drugs which include antibiotics. There is a common misuse of antibiotics that have been proved by experimental (laboratory results) and clinical observation. Regrettably, the increasing choice of antibacterial agents has been accompanied by an increased usage often in situation where such chemotherapy is either inappropriate or of doubtful value. This is waste of money and it increases the likelihood of toxicity

Rational use of antibiotics in the treatmentHussein Ahmed Bakathir

and development of resistance. The consumption of antibiotics continuously to increasing annually .In studies performed in our country (Yemen) it was found that about one in every two to three prescriptions had antibiotics (13).Antibiotic combination was frequently prescribed (18%) and antibiotics constituted about (25%) of all prescribed drugs (13).

To spot a light in this health problem, we concentrated about the use of antibiotics in the treatment of UTI.

According to our results the most common pathogens causing UTI are E.coli ,Enterobacter, Klebsiella, Proteus, Pseudomonas and Staph,aureus (79%,5%,4%,4%,4%,4%) respectively. These results complied with the results obtained from the health laboratories and correlated with references (2,7) (see Table 1and Figure 1).

The Table 3 and Figure 3 illustrated the identification method for the pathogens and related to that the prescribing of antibiotics according to routine test, culture test or without test.

The results demonstrate that the routine test is the common method with (66%), followed by culture test with(24%) and (10%)without test. This pharmacy practice participated in the misuse of antibiotics because the pathogen is not well identified and, accordingly the sensitivity of this particular pathogen is not investigated. This may help in worsen the patient infection or even responsible for increasing resistance ,because the specification of used antibiotic is one of the important criteria of effectiveness of these types of drugs (11,13).Some prescribers explain these results as economical causes.

Table 2 and Figure 2 demonstrate the proportion of prescription with and without diagnosis. From the collected prescriptions (83%) are constructed of one single antibiotic in comparedto (17%) that are constituted of combined antibiotics(see Table 4and Figure 4). This result showed a good practice in rational use of antibiotics which reflected the actually effective antibiotic for this infection which is supposed to be determined by using culture test.This is also correlated with the fact that more than 95% of UTIs are caused by single organism (9).

According to the results illustrated in table 5 and figure 5 the antibiotics prescribed for the treatment of urinary tract infection included fluoroquinolone (49%) cephalosporins (31%) and others e.g. Nitrofurantoin and Augmentin (20%). These results resembles more or less what we have found in the health laboratories results , and are correlated with references (2,7).

Conclusion

- In general the rational use of antibiotics specially in UTI is gotten most concern.
- The most pathogen for this type of infection is E-coli (79%)
- The most referred test of the UTI is the urine routine test (66%)
- The most prescribed antibiotics were from the group Fluoroquinolones, Cephalosporins and others (49%,31%,20%) respectively

Recommendation

- Since UTI is a common problem in Yemen, and specially in Aden, a further research and studies are needed.
- The health authorities should put guidelines for prescribing antibiotics that correlates with international regulations so as to avoid irrational dispensing and prescribing of these drugs.
- Physicians are recommended to advice patients to do urine culture test for the identification of pathogen sensitivity of prescribed antibiotics.

References:

1. Ahmad (2012) S Pattern of urinary tract infection in Kashmir and antimicrobialsusceptibility Bangladesh Med Res Counc Bull; 38: 79-83.
2. AL-Haddad AM , Bin Ghouth AS , (2010) Antimicrobial resistance in patients with urinary tract infection in Al-Mukalla city , Yemen Univ. Aden y. Nat. and Appl. SC. Vol. 14 No.3:643-648
3. Bashrahil K.A. (2005) Correlation between prescribed antibiotics and bacterial resistance in Mukalla district Tikrit med. J. 11(2): 1-5.
4. Gamal A. A-Ameri , MawhoobN.O.Alkadasi, AMH Sallam4 (2014) Urinary Tract Infection of Patients and Antibiotic Susceptibility Patterns of Enterobacteriaceae in IBB city Yemen Int.J.Curr.Microbiol.App.Sci 3(7) 984-994
5. Gonzalez CM , Schaeffer AJ. (1999) .Treatment of urinary tract infections, what's old, what's new and what worts world journal of urology ,17: 372 – 82
6. Hassan N.A.G.;Abdulla A.A.;Bakathir H.A.;Al-amoodi A.A; Aklan A.M.;Devries T.P.G.M (2000) The impact of problem-based pharmacotherapy Eur.J.clinical pharmacology 55:873-876.
7. Hussein A. BaKathir and Nageeb A. Abbas (2010) Survey study on the sensitivity & resistance of urine specimen pathogens to therapeutically used antibiotics in Aden city university of Aden Journal of Natural and Applied Sciences Vol. 14,No(2)
8. Irene E-D; Timothy M.S; Joann . D (1998) Antibiotic resistance in bacterial urinary infections 1991 to 1997 West J . Med , 169:265-268
9. Marie A. Cisholm. Burns,Barbara G. Wells ,Terry L.Schwinghammer,Patrick M.Malone Jill M. Kolesar,Jseph T. (2008) Dipro Pharmacotherapy principles&practice Mc Graw Hill medical page 1153.
10. Roger Walker and Clive Edwards (2003) Clinical pharmacology and therapeutics, third edition page 533 Churchill livingstone.
11. Roger Walker and Clive Edwards (2003) Clinical pharmacology and therapeutics, third edition page 537 Churchill livingstone.
12. Ronald AR, Nicolle LE, Stamm E,Krieger J,Warren J, Schaeffer A,Naber KG, Hooton TM, Johnson J,Chaber S,Andriole V. (2001) Urinary tract infections in adults: research priorities and strategies . Int J. Antimicrob. Agents;17:343-8.
13. The British Embassy , British council Yemeni society Journal of Rational use of drugs (YSRUD) Module 5/pp.1
14. Waiel Kahiry, SausanBakhubaira, Anisa Abood, (2006) urine culture and sensitivity at Al-ghamhuria teaching hospital Univ. of Aden J.Nat, appl,sc, vol. 10 No.3, december: 568-56

الاستخدام الرشيد للمضادات الحيوية لعلاج التهاب المسالك البولية في مدينة عدن

حسين أحمد باكثير

قسم علم الأدوية، كلية الصيدلة، جامعة عدن

DOI: <https://doi.org/10.47372/uajnas.2015.n2.a15>

الملخص

مصطلح التهاب المسالك البولية يرجع إلى وجود مجاميع من الممرضات الدقيقة في المسالك البولية مسببة علامات وأعراض هذا المرض. يتم تشخيص التهاب المسالك البولية البكتيري عادة عن طريق تحديد وعزل الأنواع المختلفة من الممرضات في عينات البول. في اليمن ولاسيما في عدن هناك نقص في المعلومات ليس فقط في المضادات الحيوية المستخدمة في علاج التهاب المسالك البولية وإنما أيضاً في الطرق المتبعة في وصف هذه الأدوية. في هذه الدراسة تم إتباع الطريقة الوصفية الراجعة بواسطة جمع البيانات من 12 عيادة خارجية تخصصية للمسالك البولية في مدينة عدن وتم تحليل النتائج باستخدام برنامج الإكسل. واستناداً لتلك النتائج فإن ميكروب الاي كولاي يسبب معظم الالتهابات بنسبة 79% ومعظم الطرق المستخدمة في تحديد التهاب المسالك البولية هي الطريقة التقليدية (الفحص غير الزراعي) (66%) بينما الزراعي (24%) فقط لان معظم الوصفات الدوائية تحتوي على مضاد حيوي واحد (83%) أما أكثر المضادات الحيوية الموصوفة لعلاج التهاب المسالك البولية فهي من مجموعات الفلوروكوينولونس والسيفالوسبورينس.

الكلمات المفتاحية: التهاب المسالك البولية، أي كولاي، الاستخدام الرشيد للمضادات الحيوية، فلوروكوينولونس.