

Urinary Tract Infection in South of Iran

Emily Cooper*

Editorial Office, Journal of Kidney, Brussels, Belgium

Corresponding Author*

Emily Cooper
Editorial Office, Journal of Kidney,
Brussels, Belgium
E-mail: info@longdom.org

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Abstract

The study's goal is to determine the incidence of bacteria from urinary tract infections and their antibiotic susceptibility patterns (UTIs). From 2015 to 2017, Shiraz University Laboratory performed a retrospective examination of urinary pathogens and their antibiotic susceptibility on urine cultures. Antimicrobial susceptibility testing was performed according to CSLI standards, utilizing the disk-diffusion technique. 3489 samples were culture positive during the course of the two-year investigation. The most common isolate was *Escherichia coli* (84%) followed by *Klebsiella* sp. (10.7%) and *Enterococci* sp. (22%). Trimethoprim-sulfamethoxazole, ceftriaxone, and ciprofloxacin resistance rates were 56.1 percent, 47.2 percent, and 37 percent, respectively. *E. coli* was the most often isolated bacterium, with resistance rates of 58.6%, 49.1% to TMP-STX, and cefixime, as well as nitrofurantoin sensitivity rates of 95.1 percent (FM). Resistance to fluoroquinolones and cephalosporin was common in the research region. Because most isolates were responsive to FM and aminoglycoside, these antimicrobials are recommended for empirical therapy of UTIs until urine culture findings are available.

Introduction

Urinary Tract Infections (UTIs) are one of the most common bacterial illnesses in humans, putting a significant strain on the health-care system (approximately 1.6 billion dollars per year in the United States of America). Antibiotics are connected with inappropriate emergency resistant pathogens when they are used extensively and has been classified in several ways, including community-acquired, hospital-acquired, and iatrogenic. Other classifications include difficult and uncomplicated, upper and lower UTIs (kidneys and ureters), and Urinary Tract Infections (UTIs) (bladder and urethra). Isberg et al. found no difference in dues incidence between men treated with narrow-spectrum antibiotics and those treated with broad-spectrum antibiotics within 30 days. Patient acceptability, cost, and insurance support; duration of treatment; medication adverse effects; and bacteria that cause illness and their antibiotic resistance are all significant aspects to consider while administering antibiotics. Many research had been undertaken across the world to analyze the microorganisms that cause UTIs and antibiotic resistance among them since it leads to empirical correct medication, which reduces problems and patient morbidity. The most common pathogens that cause UTIs in most studies is *Escherichia coli* (75%-95% in various societies) and other

Enterobacteriaceae such as *Klebsiella pneumonia* and *Proteus mirabilis*, as well as other pathogens such as *Staphylococcus saprophytius*.

Trimethoprim/sulfamethoxazole (STX), nitrofurantoin (FM), and fosfomycin are the first-line treatments for cystitis, according to the current Infectious Diseases Society of America (IDSA) recommendation. Quinolone antibiotics, such as ciprofloxacin, levofloxacin, and ofloxacin, are the second line of antibiotic treatment. Amoxicillin-clavulanate, cefdinir, cefaclor, cefpodoxime, and cefuroxime are some more options. Fluoroquinolones, trimethoprim-STX, aminoglycosides, ceftriaxone, and aztreonam oral beta-lactam are some of the ambulatory therapies for pyelonephritis (with less efficacy). Until now, studies have revealed increasing resistance among antibiotics such as STX-trimethoprim, which was previously recommended as the first line of empirical therapy for both cystitis and pyelonephritis in outpatient settings, but can now only be used as empirical therapy in communities with a low level of resistance. STX-trimethoprim, for example, was shown to be the second line of empirical cystitis therapy in a trial done in Spain and published in 2017. These findings have prompted us to reexamine UTI bacterial populations and resistance trends in various regions and communities. Some of these research focused on community-acquired UTIs, which account for the majority of UTIs, in order to recommend appropriate empirical therapy and uncover bacterial and resistance trends in community-acquired UTIs. Many studies have been conducted in Iran, but none have focused only on community-acquired infections. There hasn't been a single study in Shiraz or Fars province to investigate the bacterial profiles and antibiotic resistance patterns of community-acquired UTI. With roughly 300 samples, the sole study looked at seasonal variations and *E. coli* bacterial resistance in three neighboring cities: Shiraz, Marvdasht, and Saadat Shahr. As a result, in this study, we attempted to identify bacterial and antibiotic resistance patterns among ambulatory patients referred to an OPD diagnostic Centre in Shiraz, Fars, with a high referral population from southern Iran, Shahid Motehari Diagnostic Center, which means community-acquired UTI, which includes upper and lower UTIs (pyelonephritis) (cystitis).

Conclusion

The situation in Iran is difficult because germs are becoming increasingly resistant to current antibacterial, resulting in a growing dearth of appropriate treatment alternatives for urinary tract infections. The widespread use of third-generation cephalosporin for every possible infectious condition has resulted in an increase of ESBL among Gram-negative bacteria. The rise of resistant *Klebsiella spp.* in the community, as well as the emergence of ESBL-producing *E. coli*, is quite concerning. Many factors influence which medicine is best for treating a patient with UTIs. Each agent has advantages and disadvantages associated with its use or abuse, and therapy selection is decided on an individual basis. The local pattern of resistance is one of the most important criteria to consider when selecting a first-line drug. In light of these findings, we recommend a 5- to 7-day course of FM as the first-line empirical therapy for uncomplicated lower UTIs. Patients with tissue involvement symptoms and developing indicators of an upper UTI should be given special care. FM should not be considered as a treatment option for this population due to the medicine's low tissue penetration. The outpatient management of upper UTIs with empirical therapy is a disaster. We don't have any oral medications with a sensitivity profile that we can use. Our treatment alternatives are rapidly dwindling. In terms of resistance rates, parenteral aminoglycoside usage should be regarded first-line empirical therapy in all cases with upper UTI, with antibiotic susceptibility patterns varying dependent on individual urine culture results.