

DETECTION OF BACTERIAL PATHOGENS CAUSING URINARY TRACT INFECTION AND STUDY THEIR SUSCEPTIBILITY TO ANTIBIOTICS AT ASUQ-ALSHUKH HOSPITAL IN THE PROVINCE OF DHI -QAR

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ABSTRACT: *This study of urinary tract infection has been planned to isolation and identification of bacterial pathogens. The urine were collected from 60 patients for a Suq-Alshukh hospitals they were including 23 male and 37 female . Patients aged between 15 to 70 years . Urine culture had been done for all the 60 patients who were included in this study . Only 45 patients had positive urine culture they were including 15 male and 30 females . The most common organism was Escherichia coli which was isolated from 14 patients with percentage of 31.1% . E.coli was the most prevalent followed by Proteus mirabilis 22.2% (10), Pseudomonas aeruginosa 15.5% (7) , Staphylococcus aureus 11.1% (5) , Klebsiella pneumonia 13.3 % (4) , Staph.saprophyticus 4.4% (2) and Serratia marcescenes 2.2% (1) . The antibiotics susceptibility test was done for all isolates to 8 antibiotics , Amikacin was more antibiotic that effect on all kinds of isolate , the sensitivity of isolates to this antibiotic was registered (95.7%) followed by Ciprofloxacin (80.7%) , while the highest resistant of all isolates was to Amoxicillin , it was registered (9.2%) .*

KEYWORDS: UTI, Antibiotics, Bacteria, Asuq-Alshukh Hospital

INTRODUCTION

Urinary tract infection (UTIs) are some of the most common infections experienced by humans, exceeded in frequency among ambulatory patents only by respiratory and gastrointestinal infections [1] . Neonates, girls , young woman , and older men are most susceptible to UTIs . in woman , bacterial cystitis is the most common bacterial infection . Every woman has a 60% lifetime risk of developing bacterial cystitis , which develops mostly before the age of 24 . by contrast men have alifetime risk of only 13% [2] . Inchildren approximately 5% of girls and 1 % of boys have a UTI by 11 years of age [3] . it is also the most common cause of nosocomial infections in adults. Urinary tract infection is said to exist when pathogenic microorganisms are detected in the urine, urethra, bladder , kidney, or prostate with or without the presence of specific symptoms [4] . the vast majority of uncomplicated UTIs are caused by the gram negative bacillus *Escherichia coli* , with other pathogens including *Enterococcus* . Spp , *Staphylococcus saprophyticus* , *Klebsiella*.Spp and *Proteus mirabilis* [5] . the extensive and inappropriate use of antimicrobial agents has invariably resulted in the development of antibiotic resistance which , in recent years , has become a major problem worldwide . in patients with suspected UTI. antibiotic treatment is usually started empirically, before urine culture results are available . to ensure appropriate treatment , knowledge of the organisms that cause UTI and their antibiotic susceptibility is mandatory . as both temporal and local variables can modify these data, they need to be constantly reevaluated to achieve a maximal clinical response before the antibiotic susceptibility the isolate is known [6] . the aim of the present

study was to determine the bacterial etiology of UTI and study susceptibility of isolates to some antibiotics.

METHOD

Source of Specimens: The sample collected from Suq-Alshuhq hospital . The number of the patients was 60 and they were including 23 male and 37 female . Patients aged between 15-70 years . This study was conducted in the laboratory of department of Pathology analysis College , University of Thi- Qar .

Preparation of culture media: Media used in this study were prepared according to manufactures instructions Oxoid , England culture of urine specimens on (Mannitol salt agar, Macconkey agar , blood agar , Eosin methylene blue , Kliglar Iron agar , Simmon citrate test , Mueller-Hinton Agar , Peptone water and Methylene blue – Voges proskauer broth) .

Identification of bacteria: Use Microscopic examination , cultural appearance and biochemical tests Growing on Kliglar Iron agar, Catalase test ,Oxidase production , Simmon citrate test , Indol test, Methyl red test ,Voges- Proskaur (VP) test , [13] .

Antibiotic susceptibility testing: In vitro susceptibility of the bacterial isolates to twelve different antibiotics Processed from the Turkish Bio analyse company was determined using Kirby-Bauer disk-diffusion [14] .The turbidity of growing broth culture was adjusted with sterile broth to obtain concentration optically comparable to the 0.5 MacFarland standards tube (growth equivalent to 1.5×10^8 cell/ml).The diameter of growth inhibition zones were measured by using transparent ruler. compared with the standard inhibition diameter of the CLSI (2007). The commercially available discs containing the following antibiotics: Trimethoprim , Amoxicillin , Amikacin , Gentamicin , Ciprofloxacin , Nalidix acid , Cefotaxime and Tobramycin

RESULT

Gender distribution on patients

Urine culture had been done for all the 60 patients who were included in this study . only 45 patients had positive urine culture . total 45 positive urine sample were comprised of 23 (65.2%) sample from male and 37 (81.08 %) from females(table 1)

Table 1 : Gender distribution on patients

Gender	Number of tested patient	Number of positive growth	Percentage of Positive growth
female	37	30	81.08%
male	23	15	65.2 %
total	60	45	75%

Bacterial isolates from urine Cultures

The most common organism was *E.coli* which was isolated from 14 patients with percentage of 31.1% *E.coli* was the most prevalent followed by *Proteus mirabilis* 22.2% (10) , *Pseudomonas aeruginosa* 15.5 % (7) , *Klebsiella pneumonia* 13.3%(6) , *Staphylococcus aureus* 11.1% (5), *Staphylococcus saprophyticus* 4.4% (2) and *Serratia marcescenes* 2.2 % (1) . Fig 1

Antimicrobial susceptibility testing

Antibiotic sensitivity test was carried out using disc diffusion technique for all the bacterial isolates to the most commonly antibiotic agents that used in this study as it was shown in figure 10 it was found that different bacterial pathogens were highly sensitive to amikacin , ciprofloxacin they were registered 95.7% and 80.7 % and most of them were also highly resist to amoxicillin (9.2%) and nalidixic acid (36.4%) . the present study also shows that the most resistant bacteria were *Ps. aeruginosa* and almost (100% and 85%) of its isolates were still sensitive to amikacin and ciprofloxacin *E.coli* isolates were resistant to nalidixic acid . Most of the pathogens isolated were moderately sensitive to gentamicin . *Staph.aureus* isolates were highly resistant to amoxicillin (100%) figure 3

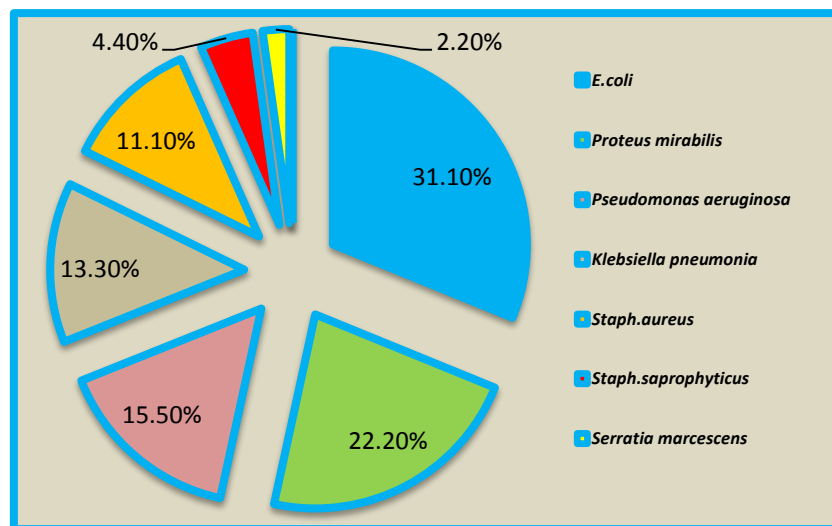


Figure 1. Types and percentage of isolated bacteria from urine samples

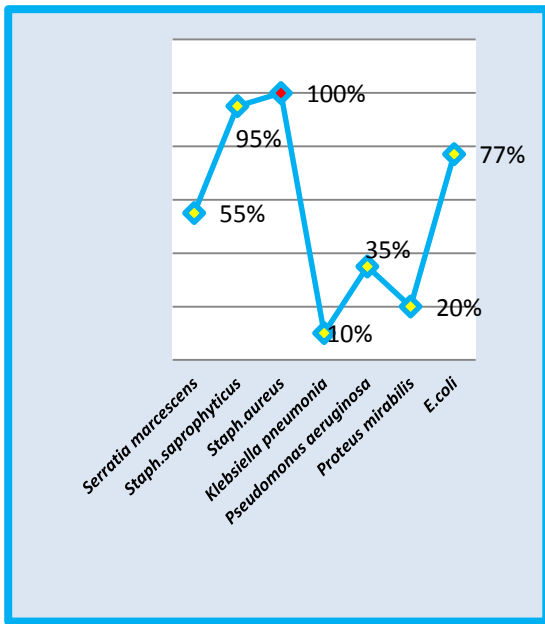


Figure 3 . Sensitivity of isolated strains to Amoxicillin

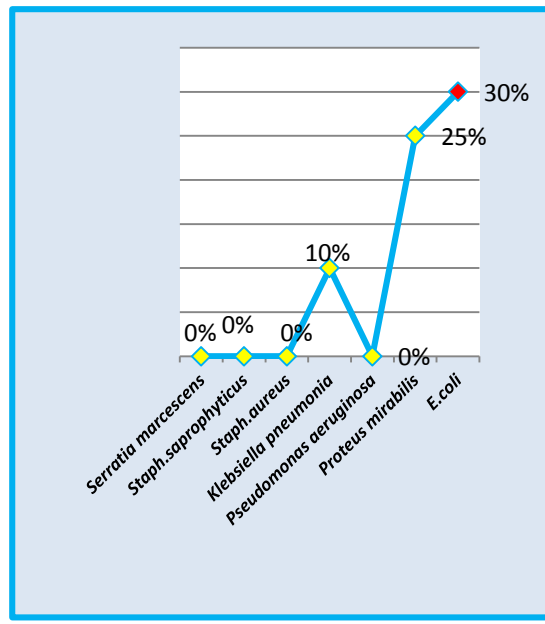


Figure 2 . Sensitivity of isolated strains to Trimethoprim

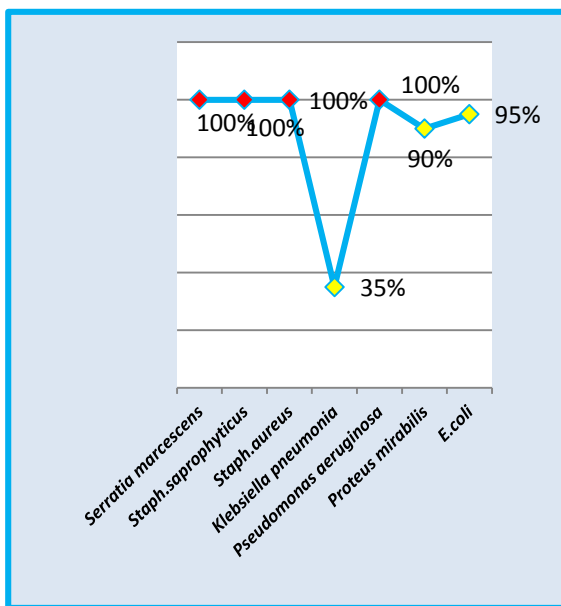


figure 4 . Sensitivity of isolated strains to amikacin

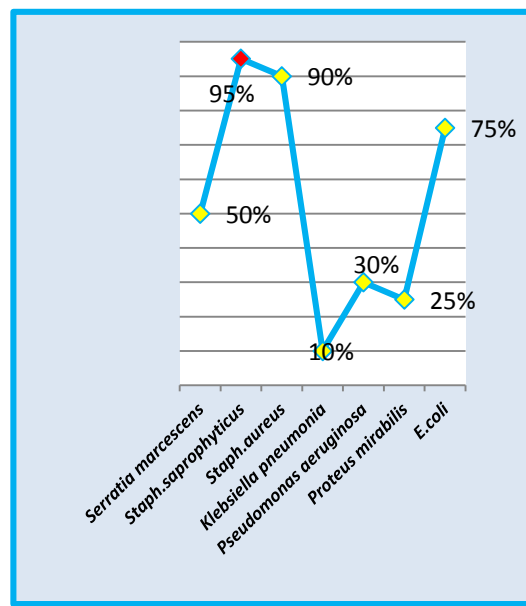


Figure 5 Sensitivity of isolated strains to gentamicin

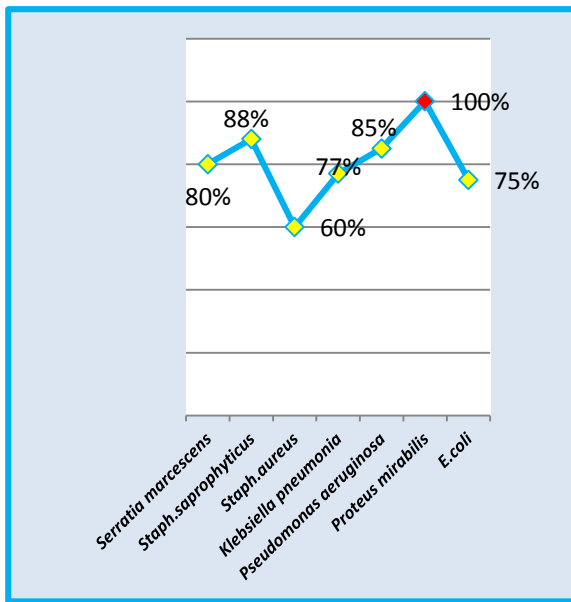


Figure 7 . Sensitivity of isolated strains to nalidixic acid

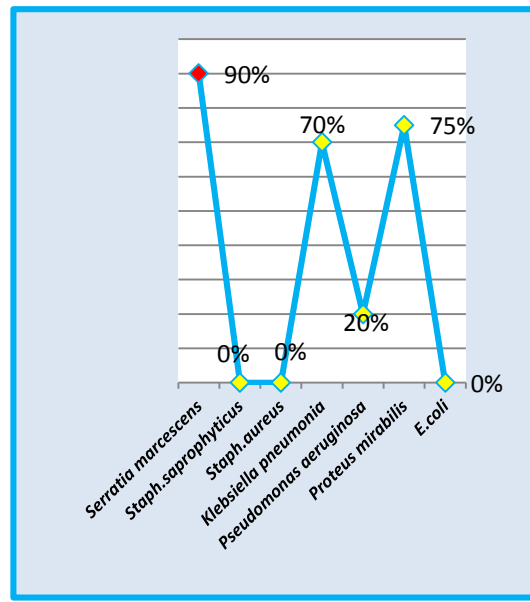


Figure 6 . Sensitivity of isolated strains to ciprofloxacin

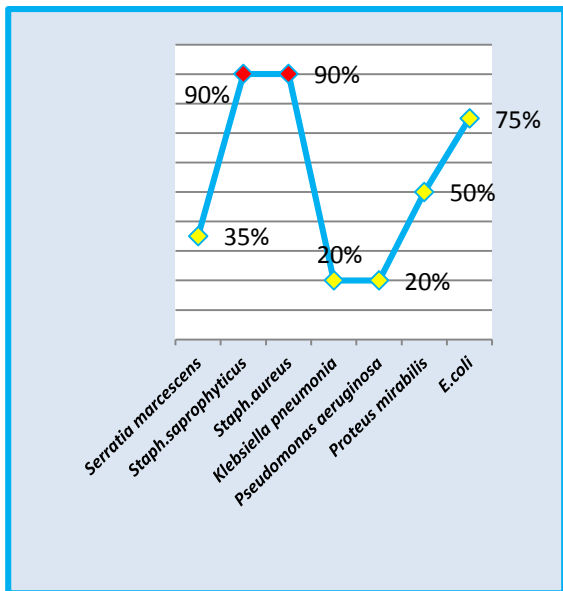


Figure 9 . Sensitivity of isolated strains to topramycin

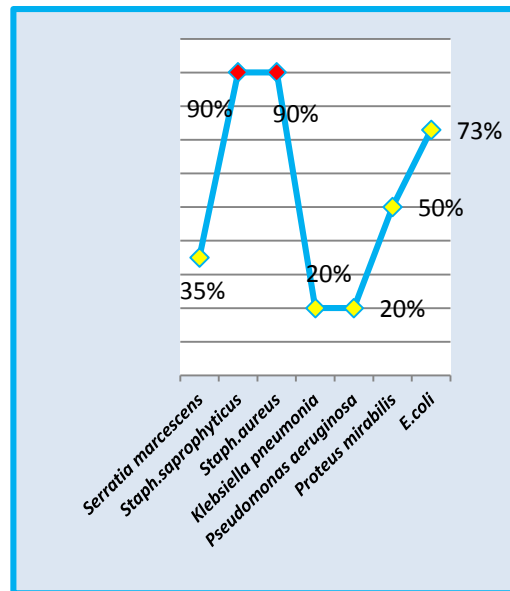


Figure 8 . Sensitivity of isolated strains to Cefotaxime

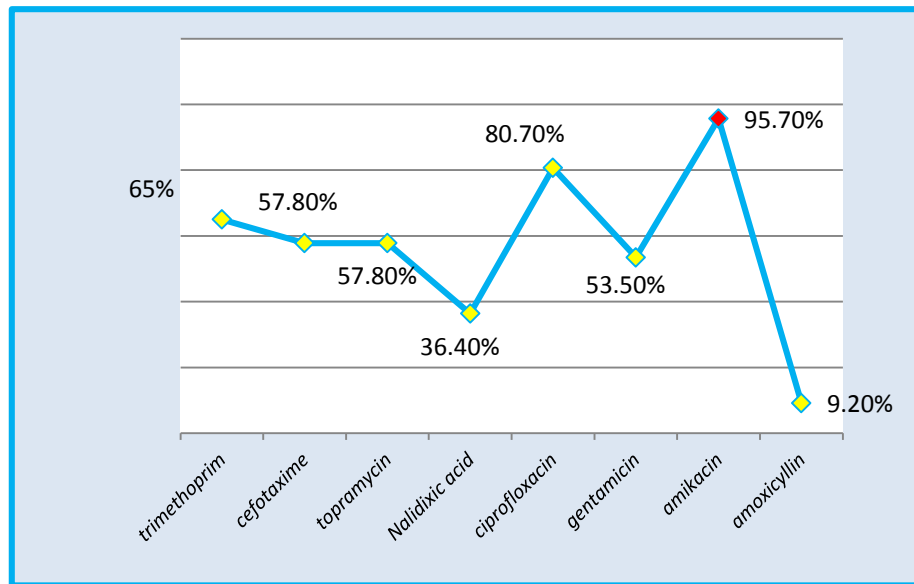


Figure 10 . Total sensitivity testing for overall antibiotics used in this study

DISCUSSION

Urinary tract infection (UTI) are considered as one of the most common groups of infection in humans and effecting either the upper (Kidney – Pyelonephritis) or the lower (bladder – Cystitis) part of the urinary tract [7] . This study appeared higher percentage of patients were infected with bacterial pathogens . *E.coli* was the most prevalent organisms causing UTI , *E.coli* as a commonest cause of UTI may be due to because this bacteria are considered as a normal flora in intestinal tract and present in high Numbers thus may be this bacterial were contaminated the Urinary tract because the near of region of the body . *Serratia marcescens* was rarely isolated from the UTI . The most organisms caused UTI in this study were belonging to gram negative bacteria which were isolated from patients . These results were almost similar to those of Al – Jebouri [8] , Al-Raw [9] and Navaneeth *et al* [10] . The prevalence of UTI was higher among females than male patients (in a ratio of 2:1) . Woman are more prone to have UTI than men this may be because in female , the urethra is much shorter and closer to the anus than in males, and they lack the bacteriostatic properties of prostatic secretions [11] . The present study showed that almost types of pathogens causing UTI were resistant to amoxicillin . The other studies on UTI showed a high elevation in antibiotic resistance of pathogens isolated from the Iraqi patients compared to previous years [12] .this might be due to misuse of antibiotic , usage of antibiotic from unknow origin . Furthermore , *E.coli* , *Proteus mirabilis* , *Ps.aeruginosa* , *Staph. aureus* , *Kleb.pneumonia* and *Ser.marcescens* were still highly sensitive to amikacin , ciprofloxacin. The most common UTI pathogens were highly resistant to antibiotics emphasize the need for Judicious use of antibiotics.

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