

Isolation and Diagnosis of Bacteria Causing Urinary Tract Infection in Humans and Studying Their Sensitivity to Antibiotics

Nesreen Agha Nada Mahfoud Bassam Kassibi
Department of Biology, Faculty of Science, of Al-Baath University Homs, Syria

Abstract

The bacterial pathogens associated with urinary tract infection were studied. The study examined 185 urine samples taken from patients who were visiting and residing in hospitals and outpatient clinics in Homs, Syria between 1/7/2016 and 1/10/2016 suffering from symptoms of urinary tract infection. It was found that 120 samples showed positive results by 65%. While 65 samples (65%) gave negative results. The results of the study showed that the number of female urinary tract infection was more than males, and the rate of infection in males for females was 3: 1. The results also showed that the number of women with diabetes among the total number of women with urinary tract infection was 26, Males with diabetes were infected with 10 samples. In the case of female infections, 35 of the 89 samples of pregnant women were found to be 39%. Biochemistry and biochemical assays showed E. coli control with the highest rate of 56% followed by Enterobacter by 17%, Klebsiella by 12%, Pseudomonas by 8% and Staphylococcus by 7%. The results showed a clear variation in the responsiveness of studied isolates to the antibodies used. E.coli showed a high resistance of 69% to CTX while 73% high sensitivity to AMK. Enterobacter showed 50% resistance to CTX And a 95% high sensitivity to F (300). Klebsiella showed resistance to CTX, 50%, high sensitivity to 80% F, Staphylococcus showed 50% resistance to AMK, and 75% sensitivity to F, CIP, CTX, CRP and Pseudomonas showed a 100% high resistance to CRP and showed a 50% sensitivity towards. Increased resistance to cephalosporin compounds was observed.

Keywords: urinary tract infection, antibiotics, E.coli

1. Introduction

Urinary tract infection is one of the most important diseases affecting the urinary system, where urinary tract infections are one of the most serious health problems that can face millions of people every year where urinary tract infection among all individuals and ages and thus shows how dangerous it is. Recent studies have shown the seriousness of the development of these injuries for more severe injuries, in addition to the high cost spent by hospitals or patients

Microorganisms, especially germs, are the main cause of urinary tract infection and rarely cause viral or fungal infections[1]. Inflammation occurs in the urinary tract when the gastrointestinal tract bacteria in the anus reach the urinary tract where it begins to grow and multiply

The use of catheter tubes that reach the bladder is one of the sources of the disease, which helps in the introduction of germs into the bladder [2] and increase urinary catheter the risk of infection of the urinary system..

Urinary tract infections are more common in women than in men[3] Pregnant women are also more likely to have urinary tract infection as well as premature birth and low birth weight. If the treatment is neglected, 30-30% Diabetics are the most susceptible to urinary tract infection and may not be symptomatic [4].

Studies suggest that there is more than one bacterial type that may cause urinary tract infection and antibiotics are the typical treatment for urinary tract infection. The choice of antibiotic depends on the type of germs that cause infection, the severity of the symptoms, the possibility of complications and the efficiency of microbial antibiotics due to the development of antibacterial resistance of antibiotics, and the multiplicity of resistance due to continuous exposure to antibiotics and misuse, This is due to the fact that the continued use of these antibiotics and for long periods of time, which led to the emergence of cases of resistance in microorganisms and the emergence of strains with high tolerance to antibiotics [5].

2. The method of work:

A total of 185 serotonin samples were collected from patients with UTI symptoms from resident patients and patients from some hospitals and laboratories in Homs, Syria, between 2016/7/1 and 08/10/2008. Mid-stream urine samples were collected by Sterilized glass containers. Where the method of taking the sample is clarified, with the emphasis on the need not to contact with any part of the body to prevent contamination of natural growth in the external area of the urinary channel. Taking into account the work of a form for each patient, including the following data Date of sampling Age, , The number of births, the incidence of diabetes and the use of urine analysis strips to detect the presence of white blood cells and red and nitrate and the amount of sugar and protein, the colonies were initially identified based on phenotypic characteristics and included the shape of

colonies and color and strength. The isolates were then subjected to microscopic examination using a gram dye to identify the shape, arrangement and interaction of the bacteria with a gram dye. Biochemical tests were also performed: catalysis, coagulase, indole, red methyl, focus procure, blood decomposition, Simon citrate, glycerol, oxidase, nitrate

Antibiotic sensitivity was examined using the Bauer & Kerby standard method for testing antibiotic susceptibility to antibiotics. Antibiotics were transferred to the medial surface using sterile forceps at a rate of [7] tablets. These results were compared with the sensitive bacteria (R) or I (R) or (I) resistance according to the international specifications in [6]. Standard isolates were used to compare the results.

3. Result and discussion:

- The results were shown after sampling and planting on the appropriate planting media and their diagnosis as follows and as shown in the following tables(1-6).

Table 1.

Result of bacterial transplantation	number	Percentage(%)
Positive	120	65
Negative	65	35

The results of the study showed that the number of female infected with urinary tract infection was more than males. The number of infected females reached 89 out of 120 infected samples, 74% 120), which accounted for 26%.

Table 2. showing percentage of urinary tract infection by sex

Sex	Number	Percentage(%)
Male	31	26
female	89	74
Total	120	100

The results showed that the number of women with hyperglycemia was among the total number of women with urinary tract infection was 26 (sample) while the number of males with diabetes and suffering from inflammation was (10) samples and therefore the total of people with diabetes of both sexes (36)) Out of (120) samples.

Table 3. showing percentages of urinary tract infection associated with blood sugar

Sex \ Diabetes	female	Male	Total	Percentage(%)
Injured	26	10	36	30
Uninfected	68	21	89	70

In the study of the case of female infected with the infection, it was found that (35) samples belonging to female pregnant women by 39%.

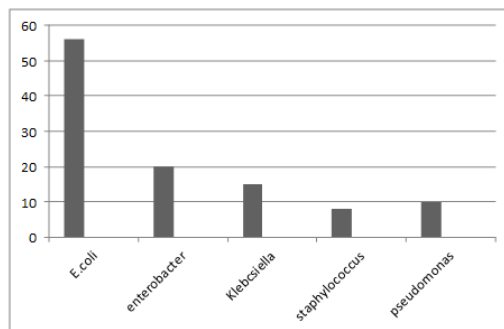
Table 4. showing percentages of urinary tract infection in pregnant women

Case	Number	Percentage(%)
Pregnant females	35	39
Non-pregnant females	54	61
the total number	89	100

The isolates were divided as follows: E.coli with 56% and Enterobacter by 17% Klebsiella by 12%, Staphylococcus by 7% and Pseudomonas by 8% .

Table 5. showing percentages of isolated bacteria from UTI patients

The bacterium name	Number	Percentage (%)
E.coli	56	56
Enterobacter	20	17
Klebsiella	15	12
Staphylococcus	8	7
Pseudomonas	10	8

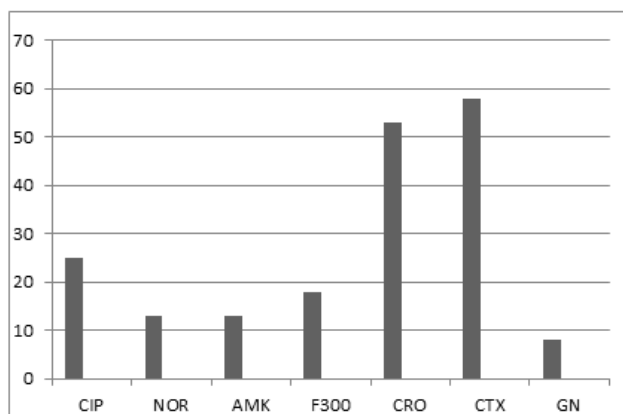


Scheme 1. Showing Percentage of isolated bacteria from UTI patients

The sensitivity of bacterial isolates was tested for seven Antibiotics with CTX showed the highest resistance rate of 58% while GN showed the least resistance

Table 6. showing percentages of antibiotic resistance by all isolates studied

Name of the counter	Counter code	Resistance (%)
Ciprofloxacin	CIP	25
Norfloxacin	NOR	13
Amikacin	AMK	13
Nitrofurantoin	F/M	18
Ceftriaxone	CRO	53
Cefotaxime	CTX	58
Gentamycin	GN	8



Scheme 1. Percentages of resistance to bacterial isolates of various antibiotics

The results of the study showed that the rate of infection varied according to gender difference, as it doubled in females compared to male injuries. All the available research agreed that the pattern of female urinary tract infections is the most frequent of males [7]. Some research has explained why females are the most frequent in males, to the anatomical structure of the male and female genital tract, the nature of the male urethra leading to fecal contaminants and prostate secretions The results showed that a proportion of patients with urinary tract infection suffer from high blood sugar and as a result of the presence of sugar glucose in the urine makes it a suitable medium for the growth and multiplication of bacteria [9], and the results were consistent with the findings of [10], which explained that there are many Among the risk factors that increase women's susceptibility to urinary tract infection are women's sexual activity, and the incidence of urinary tract infection is increased in pregnant women as a result of hormonal changes occurring during pregnancy[11]. Women who have many children The frequency of pregnancies increases the risk of urinary tract infection. The current study showed the dominance of the Gram-negative group compared with the Gram-positive group and agreed with the study [12]. We have observed that the highest level of E. coli is consistent with most studies conducted in patients with urinary tract infection [13] that E. coli bacteria constitute the largest proportion of infections of urinary tract infections and a lesser proportion of other species belonging to the intestinal family Enterobacter Klebsiella, Pseudomona[14]. This is confirmed by [15], that 90-80% of urinary tract infections are due to E. coli bacteria and that the rest of the germs belonging to the intestinal family and Gram positive bacteria occupy the remainder of this ratio and this indicates that the infection of this bacterial type is linked By the factors of this Bacteria and their ability to form the infection because of the ease of adhesion to the cells lining the urinary tract

and its destruction of enzymes destructive of epithelial cells, such as the enzyme for blood. In the study of antibacterial susceptibility to antibiotics, the study dealt with Cefotaxime antagonists, where the bacteria showed a high resistance ratio. The results did not agree with the mentioned [16], that the resistance of the bacteria to the antigen 13.3 Cefotaxime, as these antagonists inhibit the process of manufacturing the cell wall of the bacteria through the overlap with the process [17].

The results of the study also revealed the sensitivity of our isolates to Ciprofloxacin [18]. Our results were consistent with [19] that most isolates were sensitive to these antigens, and b) The study showed that bacterial isolates gave a relatively low resistance to nitrofurantoin, but the results did not agree with [20] that 90% of the isolates were Anti-resistance. The results of the study showed that high resistance to the third-generation CRO antibody of cephalosporins and attributed the cause of resistance to the susceptibility of isolates to the production of enzymes of the house. It has been noted that most of the isolates under study had the resistance to the antibodies of betalactam group and the cephalosporins and may be due to the resistance to the fact that these antibodies are sensitive to the enzymes of the House of the differentiation of these bacterial species, which encodes either through plasmids or through the chromosome of bacteria, Antidepressants used in the current study Norfloxacin (NOR) Our study was close to [21], which found that most of the bacteria causing urinary tract infection are sensitive to fluoroquinolones and is considered the most effective option for many patients Cree with urinary tract infections [22].

4. Conclusion

-We noticed through this research that the most isolated germs and urinary tract infection was E.coli by 56% .
- Our study has shown an increase in resistance to cephalosporin compounds and this makes us reconsider the current measures as being used by the treating physicians.

The high rates of isolation of bacteria from the urinary system in patients, especially females, indicates a delay in the diagnosis of infection or lack of visit to the doctor in a timely manner, and this has consequences and consequences subsequent to the health of the patient and the indulgence in the treatment of urinary tract infection leads to consequences The pathogenesis of the pathogenesis of the microbial pathogens, as well as the development of the disease from acute to chronic, is followed by renal sclerosis, renal atrophy, and then kidney failure in the case of advanced infections.

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