Volume 2, Issue 3, March - 2024 **ISSN(E):** 2938-3773

Web of Discoveries: Journal of Analysis and Inventions
webofjournals.com/index.php/3

ISOLATION AND DIAGNOSIS OF E. COLI BACTERIA FROM THE URINARY TRACTS OF PREGNANT WOMEN AND THE EFFECT OF SOME ANTIBIOTICS AND EXTRACTS ON THEM

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Abstract

Randomly studied (100) cases of urinary tract infection of pregnant women in the first three months of pregnancy were studied at Salah al-Din General Hospital in the city of Tikrit during the year 2023. (68) bacterial infections were obtained, including E.coli bacteria, and these bacteria were isolated in a percentage of (44) isolates. Studies showed that women in the city had a lower rate of urinary tract infections than pregnant women in rural areas. The study also showed that educated pregnant women are less likely to suffer from urinary tract infections than uneducated pregnant women. The study results showed the trend of the antibiotics used towards Gram-negative bacteria, as the antibiotic Imipenem gave the highest percentage of inhibition, while Nitrofurantoin gave the average percentage, and Erythromycin had the most minor effect on the isolated bacteria. Ginger extract was also used on the bacterial species isolated from the urinary tract and the extent of the effect of the aqueous and alcoholic extract of ginger on it was demonstrated as the alcoholic extract had a higher inhibition on the isolated bacteria.

Keywords: Isolation, Diagnosis, E. coli bacteria, Urinary tracts, Pregnant women.

Introduction

Urinary tract infections are considered one of the health problems that most countries of the world suffer from, and it is an inflammatory response that occurs in the urinary system as a result of microbial pathogens colonizing the urinary tract,where it is occupied first among the pathological etiology, despite the presence of other pathogens fungal, viral, and parasitic [1] All age groups, males and females, are considered susceptible to urinary tract infections where the Women are more vulnerable to infection compared to men, as half of the women get infected at least once at some point in their lives because in females the urethra is much closer to the anus and shorter than it is in males [2]Scientific progress and the continuous search for the best effective medicine in treating urinary tract infections and the broad widespread of antibacterial drugs recently have led to an increase in bacterial resistance to these antibiotics, which may lead to creating side effects causing significant damage and harm to tissues and cells of the body, such as acute renal failure [3]Recently, researchers have tended to use extracts of natural plants and herbs as effective natural sources for the pharmaceutical industry and Medicinal Drugs [4]Because it is natural and their side effects are limited, cheap, and available locally.

Materials and Methods:

(100) urine samples were collected from patients of different ages who are recumbent at Salah El-Din General Hospital in the city of Tikrit during the year 2023 using sterile containers. They took the middle urine sample, and the models were cultured upon arrival at the laboratory on different culture media (MacConkeys agar, Nutrient agar,EMB agar) produced by (Oxoid) company. The dishes are incubated at 37°C for 24 hours. Then, many biochemical tests were conducted on the developing bacterial colonies to diagnose them based on the Berkee Encyclopedia [5]. Observed the appearance of the developing colonies in terms of colour, size and growth shape and tested sensitivity to the following types ofantibiotics (Ciprofloxacin, Erythromycin, Nitrofurantion, Meropenem, imipenem). To determine the effectiveness of these antibiotics in the treatment by using medium (Mueller-Hinton agar), and also tested the inhibitory activity of the plant extract against the bacteria by testing on medium (Mueller-Hinton agar).And the results are read by measuring the diameter of the transparent halos in the dishes.

The Results

In the first three months there was a high percentage of urinary tract infections with (68) isolates out of a total of (100) samples. The percentage of uneducated women infected was higher than that of educated women reaching (41) and (27) isolation respectively Table No(2). In this study Gram-negative bacteria of the type *E.coli* were isolated and the isolation rate of these bacteria reached (44) isolates. The infection rate of women in the countryside was higher than the infection rate of women in the city as it reached (47) and (21) respectively Table NO(1). The results of the study also showed the trend of antibiotics used against isolated bacteria of the *E.coli* type as imipenem gave the highest rate of inhibition while the antibiotic Nitrofurantion gave a moderate rate of inhibition and the antibioti Erythromycin had a low rate of inhibition against the isolated bacteria.

Table(1) number of bacterial for women according to place of living

Percentage%	Number	Sample 4Genuse
31	21	city women
69	47	Rural women
100	68	Total summation

Table (2) Number of bacterial for women at the educational level .

Percentage%	Number	Sample Genuse
40	27	Educated women
60	41	Uneducated women
100	68	Total summation

Table (3) Antibiotic resistance and sensitivity of bacteria

Meropenem (MEM)				Nitrofurantion (NIT)				Imipenem (IMI)				Erythromycin (E)				Ciprofloxacin (CIP)				Antigee ty
%	R	%	S	%	R	%	S	%	R	%	S	%	R	%	S	%	R	%	S	Bacterial types
55	24	45	20	16	7	84	37	0	0	100	44	100	44	0	0	75	33	25	11	(44)

Table (4) Effect of aqueous and alcoholic extracts of ginger on the growth of bacterial *E.coli*

Alcoholic					Watery					Extract Bacterial isolates
Average isolation	100	75	50	25	Average isolation	100	75	50	25	
21.5	24	23	20	19	13.5	17	15	12	10	*E.coli*

Discussion

Urinary tract infection is one of the most common infections in various countries of the world, which affects people of all ages and 95% of infections are caused by many typse of germs [7]. This is consistent with the results of the current study, as the rate of infection with germs reached (68%). We conclude from current studies that region of residence and educational level have a clear effect on the increase in the rate of urinary tract infections among Table No (2).The incidence of urinary tract infections was studied in relation to educational level, where the incidence rate for uneducated women was recorde (60%) while the incidence rate for educated women was (40%).This result is consistent with what was stated by [10] that the incidence rate decreases the higher the educational level. Higher due to increased awareness and knowledge among educated people, as indicated in the table (2). Table No(1) also indicated an increase in the percentage of those infected with urinary tract infections for pregnant women in rural areas by(69%), which is a clear result that indicates a high percentage urinary tract infections in the countryside and is consistent with [8]as it was found that the infection rate is highre in the countryside than in the city due to lack of awareness and weak services the most important of which are health services the most important of which are health services and the low social and economic level associated with malnutrition in addition to the reasons[9]. Antibiotics are of great importance in treating urinary tract infections by conducting sensitivity tests towards antibiotics for the purpose of identifying the extent of resistance of germs to these antibiotics as shown in the numbered table (3). The highest rate of resistance rates was shown by *E.coli* bacteria to the antibiotic Erythromycin ,while the lowest rate of resistance rates was to the antibiotic Impenem. It is clear from these results that the antibiotic Impenem is the best and can be recommended for use in treating these bacteria. perhaps the reason for this is due to the decrease in bacterial resistance. They are less exposed to this type of antibiotic, unlike other widely used antibiotics. Table No. (4) shows the effect of the plant extract of ginger on the bacterial isolates. The alcholic extract had a greater effect than the aqueous extract on the bacterial isolates. The aqueous extract had the highest rate of inhibition of *E.coli* bacteria (17), while the alcoholic extract had the highest rate of inhibition (24). Recently researchers have

turned to using natural plant and herbal extracts as effective natural sources used in the manufacture of medicines and medicinal drugs [5] because they are natural their side effects are limited they are cheap and they are available locally everywhere [6].

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