

# Prevalence of *Citrobacter* species. in positive Urine sample received at Princess Iman Center and Antibiotics Susceptibility pattern

Yazan.f.jarrah<sup>1</sup>, Dema M Al-Saqarat<sup>2</sup>

Microbiology Department, Princes Iman Center, Royal Medical Services Amman-Jordan

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## I. INTRODUCTION

Urinary tract infection (UTI) is the third most common infection experienced by humans after respiratory and gastrointestinal infections<sup>1</sup>. Urinary tract infections detected in both outpatients as well as hospitalized patients despite of their gender and age.

The genus *Citrobacter* is a distinct group of aerobic, Gram-negative bacilli of the *Enterobacteriaceae* family, widely distributed in water, soil, food, and intestinal tract of human and animals. Bacteria to genera *Citrobacter* are emerging pathogens causing gastroenteritis, neonatal meningitis, septicemia, brain abscess and UTP.

## II. OBJECTIVE:

The aim of this study is to detect the prevalence of *Citrobacter* spp as a causative agent of UTI and compare it to other organism causing UTI like *E.coli* and *Klebsiella* spp.And to find the best antibiotics which more susceptible to treat.

## III. MATERIALS AND METHODS:

A total number of 8404 positive urine culture results were observed during the period of 1/1/2017 till 31/12/2018 from King Hussien Medical City wards and clinics despite of gender and age (the study is not age or sex related). All urine samples were cultured on Blood agar and Mackoncky agar; the positive cultures were biochemically tested on Tripler Sugar Iron (TSI) media, Citrate and Indole media, confirmation for *Citrobacter* isolates confirmed by Vitek-2 compact system where GN cards for identification of Gram Negative bacteria selected. After identification, the isolate inoculated on Muller Hinton agar for sensitivity test using Disk diffusion method and conformation for susceptibility done by Automated Vitek-2 system using AST\_233 card for MIC interpretation susceptibility.

## IV. RESULTS:

The percentage of the isolates were as follow: *E.coli* 62%, *Klebsiella* spp. 21%, *Pseudomonas* spp. 6.2%, *Proteus* spp. 2.6%, *Acinetobacter* 2.2%, *Enterococcus* spp. 1.4%, *Enterobacter* spp.

1.1%, *Morganella* spp. 0.8%, *Citrobacter* spp. 0.7%, *Staphylococcus* 0.5%, *Streptococcus* spp. 0.4%. And a total number of 127 isolates were Unidentified.

Bacteria name	Isolates number	Percentage
<i>E.coli</i>	5140	62%
<i>Klebsiella</i> spp.	1752	21%
<i>Pseudomonas</i> spp.	546	6.2%
<i>Proteus</i> spp.	217	2.6%
<i>Acinetobacter</i> spp.	182	2.2%
<i>Enterococcus</i> spp.	134	1.4%
<i>Enterobacter</i> spp.	92	1.1%
<i>Morganella</i> spp.	75	0.8%
<i>Citrobacter</i> spp.	59	0.7%
<i>Staphylococcus</i> spp.	49	0.5%
<i>Streptococcus</i> spp.	33	0.4%
Unidentified organisms	127	1.4%

For sensitivity result, from 59 isolate identified as *Citrobacter* 50 isolates sensitive for Amikacin with a percent of 89.2%, 48 sensitive for Ertapenim 85.7%, 45 sensitive for Imipenim 80.3%, 44 sensitive for Gentamicin 78.5%, 39 sensitive for Piperacillin/Tazobactam 69.9%.

## V. CONCLUSION:

In this study *Citrobacter* spp. showed a 0.7% of UTI's causative pathogens which is lower than expected or reported on other researchers.

The most effective antibiotic for *Citrobacter* spp. was Amikacin, followed by Ertapenim, followed by Imipenim, and Piperacillin/Tazobactam.

## REFERENCES

- [1] Rashedmarandi F, Rahnamayefarzami M, Sabouri R. A survey on urinary pathogens and their antimicrobial susceptibility among patients with significant bacteriuria. Iran J pathol 2008;4:191-6
- [2] Barton LL, Walentik C. *Citrobacter diversus* urinary tract infection. Am J Dis Child 1982;136:467-8

AUTHORS

**First Author** – Yazan.f.jarrah, Microbiology Department,  
Princes Iman Center, Royal Medical Services Amman-Jordan

**Second Author** – Dema M Al-Saqarat, Microbiology  
Department, Princes Iman Center, Royal Medical Services  
Amman-Jordan