

T. Demir¹, T. Buyukguclu², F. Milletli Sezgin¹, R. Keskiner³, A. Ayayadin³, B. Uysal³, A. Alagoz¹, B. Ozdemir¹

¹Clinical Microbiology, Ahi Evran University Research and Teaching Hospital, Kirsehir, Turkey ; ²Public Healthcare Center, Ministry of Health, Karabuk, Turkey ;

³Infectious Diseases, Ahi Evran University Research and Teaching Hospital, Kirsehir, Turkey

Objectives: In this study we aimed to compare the resistance rates to various antimicrobials of *Escherichia coli* clinical isolates recovered from various sites for a period of four years in a tertiary hospital.

Methods: 1781 *E.coli* isolates [1562 (87.7% urine, 69 (3.9%) pus, 64 (3.6%) sputum, 41 (2.3%) blood, 27 (1.5%) vagen and 14 (0.8%) pleural fluid] were collected from ICUs (189 isolates) and non-ICU wards (1592 isolates) of a training hospital, Kirsehir, Turkey between 2009 to 2012. Identification and susceptibility testing were performed by Vitek 2 system (bioMérieux, Marcy l’Etoile, France) and disk diffusion method, ampicillin (AMP), amikacin (AN), amoxicillin-clavulanic acid (AMC), cefuroxime (CXM), ceftriaxone (CRO), cefotaxime (CTX), ciprofloxacin (CIP), gentamicin (GEN), imipenem (IMP), piperacillin-tazobactam (TZP), fosfomycin (FOS) according to CLSI guidelines. Results were compared by chi-square, fisher exact test using SPSS 15.0 software, p <0.05 was considered significant

Results: A total of 498 strain (434 nonICU, 64 ICU) was ESBL producer. Higher resistance levels were observed for isolates recovered from ICU patients compared to nonICU, reaching up to 72.5 % v 70.7% for AMP, 34.9 % v 30.9% for CXM, 33.9% v 27.3% for 3rd generation cephalosporins, 41.8% v 30.3% for CIP, 39.7% v 42.5% for SXT. Resistance rates to aminoglycosides varied from 21.5% to 20.1% GEN and 3.6% to 1.1% to AK for nonICU and ICU strains. IMP, fosfomycin and TPZ were the most active antimicrobials with resistance rates below 5% for all isolates. Strains recovered from urine displayed higher susceptibility rates for all drugs tested. The most active antimicrobials for isolates recovered from urine were IMP, AK and followed by FOF with the susceptibility rates; %, 1.1% and 2.3%, respectively. A total of 498 strains (434 nonICU, 64 ICU) were ESBL producer. IMP, FOS and TPZ were the most active antimicrobials with resistance rates below 5% for all isolates tested. Higher resistance levels were observed for isolates recovered from ICU patients compared to nonICU, reaching up to 72.5% v 70.7% for AMP, 34.9% v 30.9% for CXM, 33.9% v 27.3% for 3rd gen. cephalosporins, 39.7% v 42.5% for SXT (p>0.05), 41.8% v 30.3% for CIP (p<0.05). Aminoglycoside resistance rate varied from 21.5% to 20.1% GEN and 3.6% to 1.1% to AK, for nonICU and ICU strains, respectively (p>0.05). Higher susceptibility rates were detected for urinary strains, with the most effective antimicrobials IMP, FOF and followed by AK with resistance rates; %0.3, 2.2%,3.1% respectively (Table, Figure).

Conclusion: Higher levels of resistance was observed for *E.coli* isolates recovered from ICU patients in contrast to those from non-ICU. Excessive use of SXT and CIP should be monitored cautiously due to the increasing levels of resistance. Effective infection control measures are necessary to limit the development,spread of resistance.

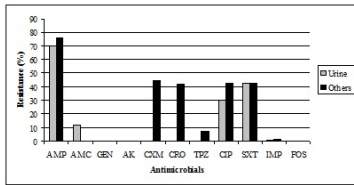


Figure. Comparison of antimicrobial resistance rates of *E.coli* strains by isolation site

Table. Comparison of antimicrobial resistance rates of *E.coli* strains by isolation ward

Antimicrobials	R(%)		P
	NonICU	ICU	
AMP	70.7	72.5	0.615
AMC	13	11.1	0.462
GEN	21.5	20.1	0.648
AK	1.1	3.6	0.084*
CXM	30.9	34.9	0.260
CTX/CRO	27.3	33.9	0.056
TPZ	3.2	5.8	0.130
CIP	30.3	41.8	0.001
SXT	42.5	39.7	0.464
IMP	0.3	1.1	0.165*
FOS	2.3	2.1	1.000*