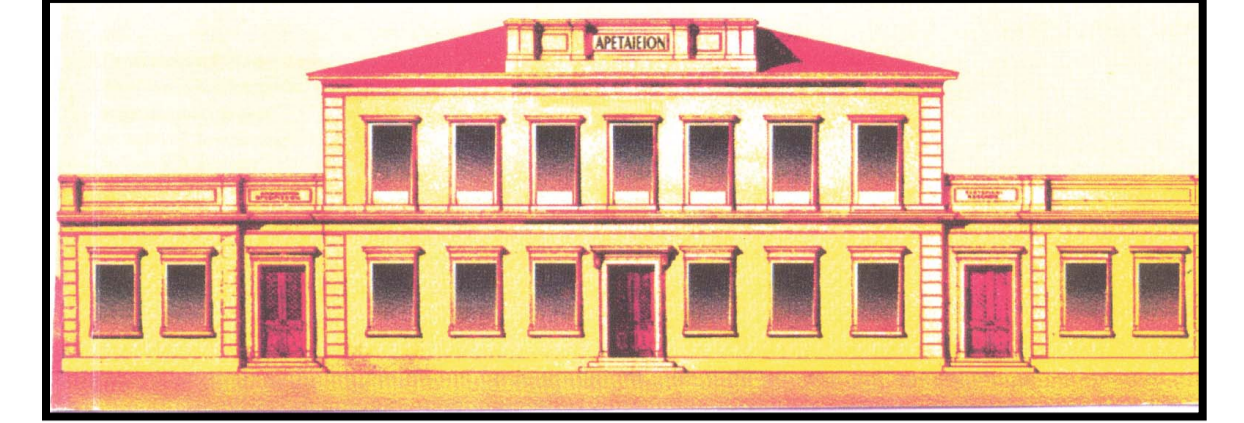




In vitro antimicrobial resistance of Escherichia coli strains isolated from patients with urinary versus intra-abdominal infections



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Objectives: Escherichia coli is one of the most prevalent causative pathogens of a variety of diseases, including urinary tract infections (UTI) and intra-abdominal infections (IAI). Unfortunately, it continues to acquire and express resistance to many antimicrobial agents, including those commonly used for the treatment of these infections. This report aimed to evaluate the in vitro antimicrobial resistance of E. coli strains isolated from patients with UTI and compare them with isolates recovered from IAI.

Methods: We studied E. coli strains isolated from community-acquired (CA)-UTI and from patients with community onset IAI, diagnosed in our hospital, during the period October 2008 to October 2011. Only one isolate per patient was accepted into the study. All clinical samples were cultured under standard conditions. Positive urine cultures were defined by bacterial growth $> \text{or} = 10^5$ colony forming units/ml. Patients with polymicrobial urine cultures were excluded from the study. Identification of E. coli was performed by means of standard methods and susceptibilities to different antimicrobials were tested by agar disk diffusion method according to the CLSI criteria. Intermediate susceptibility to either of the antimicrobials studied was considered as resistant for data analysis.

Results: We obtained 442 E. coli isolates from an equal number of patients with CA-UTI and 263 strains from patients with IAI. The resistance rates for the UTI and the IAI isolates were as follows: ampicillin/sulbactam 38 and 49%, cefepime 6 and 11%, cefotaxime 4 and 11%, ceftazidime 5 and 11%, ceftriaxone 6 and 12%, trimethoprim/sulfamethoxazole 22 and 37%, ciprofloxacin 15 and 32%, levofloxacin 15 and 36%, piperacillin/tazobactam 4 and 9%, respectively. Finally, amikacin, imipenem, meropenem, ertapenem and tigecycline had excellent in vitro activities against the isolates tested in this study.

Antibiotics	UTI (% R)	IAI (% R)
Ampicillin/sulbactam	38	49
Cefepime	6	11
Cefotaxime	4	11
Ceftazidime	5	11
Ceftriaxone	6	12
Trimethoprim/sulfamethoxazole	22	37
Ciprofloxacin	15	32
Levofloxacin	15	36
Piperacillin/tazobactam	4	9
Amikacin	0	2
Imipenem	0	1
Meropenem	0	1
Ertapenem	0	0
Tigecycline	0	0

Conclusion: Periodic monitoring of the in vitro resistance profiles of community-acquired infections is critical for an adequate empirical therapy. Overall, the isolates obtained from IAI exhibited reduced susceptibility levels compared to the urinary strains. Notably, an increased prevalence of fluoroquinolone non-susceptible IAI strains was observed. However, combining all E. coli isolates, the most active agents in vitro were amikacin, imipenem, meropenem, ertapenem, piperacillin/tazobactam and tigecycline. These drugs were the only agents with overall percentage susceptible values $>90\%$.