Prevalence of CTX Beta-Lactamase Resistance Gene Among Escherichia coli, Isolated From Urinary Tract in Tehran

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Bachground & Objectives: Today, antibiotic resistance is one of the challenges in the treatment of patients with bacterial infections and the more research has been conducted on beta Lactam antibiotic resistance. Expressions of broad-spectrum beta-lactamase enzymes (ESBLs) including CTX-M enzymein bacteria are cause resistant to various antibiotics. The purpose of this study is detection of bla CTX-M gene in Escherichia coli strains isolated from urine samples.

Methods: 246 samplesEscherichia coli isolated from urinary tract infections were collected through different hospitals located in the city of Tehran by biochemical tests. The antibiotic susceptibility of E. coli isolates were determined by disc-diffusion Methods. Antimicrobial agents tested included cefoxatime, ceftazidime, imipenem, nalidixic acid, and ciprofloxacin. The combined disc test was used to confirm the results. The results were compared with Clinical and Laboratory Standards Institute (CLSI).). All samples were positive ESBL investigated for the presence of CTX-M gene by PCR.

Results: of 246 E. coli isolates, the highest antibiotic resistance was observed against nalidixic acid (123 samples) (50%) and lowest antibiotic resistance was observed against imipenem(20 samples) (8.1%). Also, 116 isolates were resistant to Cefotaxime and Ceftazidime. 109 (44.3%) isolates were ESBL positive using the phenotypic confirmation tests. blaCTX- M gene was found among 75 (30.5%) of total isolates.

Conclusion: Regarding the high frequency of resistance to the third generation cephalosporin antibiotics are an inevitable necessity the doing accurate Antibiogram tests before any antibiotic prescription in case of infections with ESBL producing microorganisms. Also according to the results, applying molecular Methods is essential in addition to phenotypic Methods for complete detection of this type resistance.

Keywords: ESBLs; *Escherichia coli;* Urinary Tract Infections; BlaCTX-M