Title: Phenotypic Determination of Extended-Spectrum β-Lactamases Production in Clinical Isolates of Escherichia coli and Klebsiella sp.

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Abstract: Background: Extended-Spectrum β-lactamases (ESBLs) are plasmid-mediated enzymes that hydrolyze the oxyimino beta-lactam substance such as third-generation cephalosporins. These enzymes are produced mainly by members of the Enterobactericeae family.

Objective: Determine the prevalence of ESBLs among Klebsiella sp. and E. coli isolates from patients at two hospitals in Boroujerd.

Methods: During six months, 131 clinical isolates of E. coli and Klebsiella sp. collected from two hospitals. Phenotypic screening and confirmation tests for ESBL detection was according to CLSI advised standard disk diffusion method. Two antimicrobial agents were used including: ceftazidime, ceftriaxone alone and in combination with clavulanic acid. A positive test result was defined as a ≥5-mm increase in zone diameter compared with a disk without clavulanic was confirmed as an ESBL producer.

Results: In this study 131 isolates were collected in which 75 isolates were E. coli and 56 isolates were Klebsiella strains. Primary phenotypic tests revealed that %54.67 and %76.78 of E. coli isolates and Klebsiella strains were produced extended-spectrum β-lactamases, respectively. In confirmatory tests by use of clavulanic acid ESBL production confirmed in %87.8 and 86% of E. coli isolates and Klebsiella strains in positive primary phenotype isolates.

Discussion: In present study rate of ESBL positive isolates between K pneumonia and E. coli was different, and the ESBL positive isolates rate was not different between outpatient and inpatient cases.

Conclusion: This study showed that ESBL production in E. coli and Klebsiella isolates were extremely high and suggested detection of ESBL as routine tests in order to increase the effectiveness of treatment.

Escherichia coli, Klebsiella pneumoniae, Extende-Spectrum Beta-lactamase

Presentation: Poster