In vitro antimicrobial susceptibility of ceftriaxone/sulbactam/ethylenediaminetetraacetic acid and comparison to other beta-lactam/beta-lactamase inhibitors, carbapenems and colistin against gram negative bacteria
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Background: Drug resistance against Gram Negative Bacteria (GNB) is increasing. Incidence of ESBL producing bacteria is around 70-80%. Carbapenem resistance has also been reached 40-90% for the GNB. We are also obtaining Colistin resistant isolates. Resistance against Beta-lactam (BL)/beta-lactamase inhibitor (BLI) combinations is already very high. No new antibiotic or antibiotic group is in pipeline at least for the next 5-10 years. With this background the objective of this study is to compare in vitro susceptibility of new BL/BLI combinations Ceftriaxone/Sulbactam/Ethylenediaminetetraacetic Acid (CSE) to Piperacillin/Tazobactam, Cefoperazone/Subbactam, Cefepime/Tazobactam, Meropenem, Imipenem and Colistin.

Methods & Materials: Study was conducted on all clinical samples received from all critical care units between January 2014 and June 2015. Identification and susceptibility was performed by Vitek 2 compact system. Susceptibilities of Ceftriaxone/Subbactam/Ethylenediaminetetraacetic Acid and Cefepime/Tazobactam were done by disc diffusion method on the bases of CLSI guidelines. Escherichia coli, Klebsiella sp., Pseudomonas sp. and Acinetobacter sp. isolates were included in the study.

Results: Escherichia coli (324, 25%) was the most common bacteria isolated followed by Klebsiella sp. (309, 24%), Pseudomonas sp. (217, 17%) and Acinetobacter sp. (214, 17%) from all clinical samples. % Susceptibilities were as given in table below.

Conclusion: Colistin was the most sensitive antimicrobial for all GNB. Carbapenem resistance was around 27% - 89%. CSE susceptibility was better than Piperacillin/Tazobactam and Cefoperazone/Subbactam and comparable to Meropenem and Imipenem. Although the number of isolates included in this study was less in number, a larger study needs to be conducted. This is an in vitro susceptibility data hence study has to be conducted for clinical efficiency of CSE.

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