Minimum Inhibitory Concentration of 5 Antimicrobial Agents Against Different Clostridium difficile Clinical Isolates

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Background & Objectives: *Clostridium difficile* is gram-positive rod, spore forming, strict anaerobic bacillus and the major cause of nosocomial diarrhea. *C.difficile* is responsible for a spectrum of *C.difficile* infection (CDI) that can be ranged from mild, self-limiting diarrhea to a severe colitis, perforation of colon, pseudomembranous colitis or toxic megacolon and death.The aim of this study was to investigate the antimicrobial susceptibility patterns of *C.difficile* clinical isolates against antibiotics commonly used for treatment of CDIin hospitalized patients.

Methods: During a 12 month study, 75 *C.difficile* isolates were collected from 390 patients with CDI. All samples were treated with alcohol and yeast extract broth. The treated suspensions were cultured on a selective cycloserine cefoxitin fructose agar (CCFA) supplemented with 5% sheep blood and incubated in anaerobic conditions, at 37 °C for 5 days. In vitro susceptibility of the clinical isolates to 5 antimicrobial agents, including metronidazole, vancomycin, clindamycin, erythromycin and cefotaxime were investigated by agar dilution Methods, according to the CLSI guideline.

Results: Metronidazole and vancomycin had good activity against *C.difficile* isolates with MIC90 of 2 and 1 µg/ml, respectively. Seventy one (94.6%) of the isolates were inhibited by concentrations that did not exceed 2 µg/ml for metronidazole. Resistant to metronidazole observed in 5.3% of the isolates. Out of 43 resistant isolates to erythromycin, 9 (12%) isolates had high-level MIC of more than 64 µg/ml. All strains were resistant to cefotaxime (100%). Sixty seven (89.3%) isolates were resistant to clindamycin (MIC90s>256 µg/ml) and only 6.7% were sensitive to clindamycin.

Conclusion: According to our findings, cefotaxim, clindamycin, erythromycin are not effective drugs for treatment of CDI. Although resistant to metronidazole has seen among our isolates but it seems that metronidazole and vancomycin can be effective drugs for treatment of CDI.

Keywords: *Clostridium difficile;* CDI; MIC