Evaluation of the Sensititre YeastOne colorimetric antifungal panel for susceptibility testing of Candida species to anidulafungin, caspofungin, and micafungin, adopting the new CLSI clinical breakpoints and epidemiological cutoff values

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Background: The purpose of this study was to evaluate the performance of the Sensititre YeastOne (SYO) panel to determine the in vitro activity of echinocandins against Candida species isolated from clinical specimens using the recently revised CLSI clinical breakpoints (CBPs) and epidemiological cutoff values (ECVs) criteria, as appropriate.

Material/methods: A total of 205 clinical Candida isolates were included. The Clinical and Laboratory Standards Institute (CLSI) reference broth microdilution method (BMD) was performed the isolates against anidulafungin and caspofungin at the Mycology Reference Laboratory, Public Health Institution of Turkey. Reference CLSI BMD MIC end points and the SYO (Thermo Fisher Scientific, Waltham, MA, USA) end points were read after 24 h of incubation and interpreted according to CLSI M27-S4, as susceptible (S), intermediate (I), resistant (R) and ECVs criteria, as appropriate.

Results: The invasive Candida isolates (n=205) revealed 176 isolates from 5 common (Candida albicans, n=81; Candida parapsilosis, n=35; Candida glabrata, n=25; Candida tropicalis, n=23, Candida krusei, n=12;) and 29 isolates from five rare (Candida kefyr, n=16; Candida lusitaniae, n=7, Candida lipolytica, n=3; Candida guilliermondii, n=2; Candida zeylanoides, n=1). Among the common species anidulafungin resistance was observed only two isolates (C. albicans, n=1 and C. krusei, n=1) with both tests. However using CLSI BMD, 32% C. glabrata isolates were anidulafungin S/caspofungin I-R, similar discrepancies were observed for 11% and 22% C. parapsilosis and C. tropicalis isolates, respectively. If only SYO data were considered for caspofungin, these discrepancies weren't observed. Due to the lack of species specific CBPs for the less common species (n=29), evaluation for this group was done according to the ECVs; the nine C. keyfr (9/16) were found caspofungin non-WT / anidulafungin WT with CLSI BMD, however using SYO all C. keyfr isolates were WT.

Conclusions: YeastOne assay employed in laboratory may reduce the MIC variability in caspofungin against Candida species that are observed using CLSI BMD methods. The new CLSI CBPs can be safely adopted for 5 common Candida species. The isolates were classified as echinocandin resistant using the SYO panel and the new CLSI CBPs. These fks mutant strains of Candida must be further characterised.