Accuracy of Sensititre YeastOne Echinocandins Epidemiological Cut-off Values for Identification of FKS mutant Candida albicans and Candida glabrata: A Ten Year National Survey of the Fungal Infection Network of Switzerland (FUNGINOS)

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OBJECTIVES
Echinocandins represent the first-line treatment of candidemia. Acquired echinocandin resistance is mainly observed among Candida albicans and glabrata and is associated with FKS hotspot mutations. The commercial Sensititre YeastOne (SYO) kit is widely used for antifungal susceptibility testing, but interpretive clinical breakpoints are not well defined. We determined echinocandins epidemiological cut-off values (ECV) for C. albicans/glabrata tested by SYO and assessed their ability to identify FKS mutants in a national survey of candidemia.

METHODS
Bloodstream isolates of C. albicans and C. glabrata were collected in 25 Swiss hospitals from 2004 to 2013 and tested by SYO. FKS hotspot sequencing was performed for isolates with a minimal inhibitory concentration (MIC) ≥ECV for any echinocandin.

RESULTS
1277 C. albicans and 347 C. glabrata were included. ECV 97.5% [µg/ml] of caspofungin, anidulafungin and micafungin were 0.12, 0.06, 0.03 for C. albicans, and 0.25, 0.12, 0.03 for C. glabrata. FKS hotspot sequencing was performed for 70 isolates. No mutation was found in the 52 "limit wild-type" isolates (MIC=ECV for ≥1 echinocandin). Among the 18 "non wild-type" isolates (MIC>ECV for ≥1 echinocandin), FKS mutations were recovered in the only two isolates with MIC>ECV for all 3 echinocandins, but not in those exhibiting a "non wild-type" phenotype for only one or two echinocandins.

CONCLUSION

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This 10-year nationwide survey showed that the rate of echinocandin resistance among C. albicans and C. glabrata remains low in Switzerland despite increased echinocandin use. SYO-ECV could discriminate FKS mutants from wild-type isolates tested by SYO in this population.

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