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Poster Session I

EUCAST antimicrobial susceptibility testing

MIC AND ZONE DIAMETER CORRELATIONS FOR CORYNEBACTERIUM SPP. USING EUCAST METHODS AND BREAKPOINTS

E. Matuschek¹, J. Ahman¹, G. Kahlmeter¹

¹EUCAST Laboratory for Antimicrobial Susceptibility Testing, Växjö, Sweden

Objectives

The European Committee on Antimicrobial Susceptibility Testing (EUCAST) has recently developed a disk diffusion method for *Corynebacterium* spp. using the EUCAST fastidious media (MH-F). EUCAST has now determined clinical MIC breakpoints for *Corynebacterium* spp. available in the EUCAST Breakpoint Table v. 4.0. The objective of this study was to produce MIC and zone diameter correlation data using EUCAST methods and to establish zone diameter breakpoints for *Corynebacterium* spp.

Methods

Antimicrobial Susceptibility Testing (AST) was performed on a collection of 258 clinical isolates of *Corynebacterium* spp. representing 20 species of different geographical origin: Kronoberg county, Sweden; Santander, Spain (kindly provided by L. Martinez-Martinez) and isolates from the worldwide SENTRY Antimicrobial Surveillance Program (kindly provided by JMI Laboratories). Species identification was performed with MALDI-TOF MS. Disk diffusion was performed according to EUCAST methodology for fastidious organisms on Mueller-Hinton (MH) agar with 5% defibrinated horse blood and 20 mg/L beta-NAD (MH-F) using agar from two manufacturers (BD and Oxoid/Thermo Fischer Scientific). MIC determination was performed with broth microdilution (BMD) according to ISO standard 20776-1 using EUCAST media for fastidious organisms (cation-adjusted MH broth with 5% lysed horse blood and 20 mg/L beta-NAD). Sealed BMD plates were incubated in ambient air. If incubation for the standard interval of 16-20 h did not result in sufficient growth, incubation was prolonged to a total time of 40-44 h for both disk diffusion and BMD. Antimicrobial agents tested are listed in Table 1. Very major, major and minor errors (VME, ME and mE) for proposed zone diameter breakpoints were calculated according to ISO standard 20776-2.

Results

The correlation between MIC and zone diameters for *Corynebacterium* spp. was excellent despite the high number of different species represented. It was apparent that MICs varied between species, but it did not affect the MIC-zone diameter correlation per se. Zone diameter breakpoints were established to minimize the occurrence of VME, resulting in error rates as follows: VME 0.13, ME 0.99, and mE 0.04%, see Table 1. The corresponding values after excluding vancomycin and linezolid because of the lack of resistant isolates are: VME 0.17, ME 1.27 and mE 0.06%.

Conclusions

The results from this study show that AST of *Corynebacterium* spp. can be reliably performed using EUCAST methodology. Based on these data, EUCAST has established zone diameter breakpoints for *Corynebacterium* spp. calibrated to the MIC breakpoints. These are available in the EUCAST Breakpoint Table v. 4.0, valid from January 2014.

Table 1
 EUCAST breakpoints for *Corynebacterium* spp. with corresponding error rates for zone diameter breakpoints.

Antimicrobial agent	MIC breakpoints (mg/L)		Zone diameter breakpoints (mm)			Categorical errors					
	S≤	R>	Disk content (µg)	S≥	R<	VME	VME (%)	ME	ME (%)	mE	mE (%)
Benzylpenicillin	0.12	0.12	1 unit	29	29	0	0	8	3.1	-	-
Ciprofloxacin	1	1	5	25	25	0	0	2	0.8	-	-
Moxifloxacin	0.5	0.5	5	25	25	0	0	5	1.9	-	-
Gentamicin	1	1	10	23	23	0	0	6	2.3	-	-
Vancomycin	2	2	5	17	17	0*	0*	0*	0*	-	-
Clindamycin	0.5	0.5	2	20	20	0	0	2	0.8	-	-
Tetracycline	2	2	30	24	24	3	1.2	0	0	-	-
Linezolid	2	2	10	25	25	0*	0*	0*	0*	-	-
Rifampicin	0.06	0.5	5	30	25	0	0	0	0	1	0.4

* No resistant isolates included.