Activities of Tigecycline against Clinical Isolates of Acinetobacter baumannii in Taiwan: Broth Microdilution Method vs. Disk Diffusion Method


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Background: The Tigecycline In-Vitro Surveillance in Taiwan (TIST), initiated in 2006, is a nationwide surveillance program designed to monitor longitudinally the in vitro activities of tigecycline against commonly encountered resistant bacteria in Taiwan. This study aims to compare the in vitro activities of tigecycline against clinical isolates of Acinetobacter baumannii by using two susceptibility methods.

Methods: A total of 393 isolates of A. baumannii were collected from various sources of patients treated at 20 teaching hospitals. Minimum inhibitory concentrations (MICs) and diameters of inhibitory zone for tigecycline were determined by the broth microdilution methods and the disk diffusion method, respectively. The results were interpreted by the MIC criteria provided by U.S. FDA tigecycline susceptibility breakpoints listed for Enterobacteriaceae (S, ≤2 μg/mL; I, 4 μg/mL; R, ≥8 μg/mL) and by the disk diffusion method (S, ≤16 mm; I, 13–15 mm; R, ≥12 mm) recommended by Jones et al (J. Clin. Microbiol 2007;45:227–30). A very major error (VME) rate of < 1%, major error (MaE) rate of <5%, and a total error rate of <20% were considered acceptable.

Results: Percentages of susceptible, intermediate, and resistant isolates determined by the broth microdilution method (disk diffusion method) are 81.7% (88.3%), 12.0% (8.9%), and 6.3% (2.8%), respectively. VME, MaE, minor error, and total error rates were 0.5% (2/393), 8.9% (35/393), 37.4% (147/393), and 46.8% (184/393), respectively.

Conclusion: Comparison with the broth microdilution method for tigecycline against A. baumannii, the disk diffusion method tends to have a high false-susceptibility rate and have an unacceptable high VME.

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Nationwide Surveillance of in Vitro Activities of Tigecycline Against Clinical Isolates of Resistant Gram-Negative Bacteria in Taiwan: Broth Microdilution Method vs. the E Test


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Background: The Tigecycline In-Vitro Surveillance in Taiwan (TIST), initiated in 2006, is a nationwide surveillance program designed to monitor longitudinally the in vitro activities of tigecycline against commonly encountered resistant bacteria in Taiwan. This study aims to compare the in vitro activities of tigecycline against clinical isolates of Gram-negative bacteria by using two susceptibility methods.

Methods: A total of 1207 isolates of Gram-negative bacteria were collected from various sources of patients treated at 20 teaching hospitals. Minimum inhibitory concentrations (MICs) for tigecycline were determined by the broth microdilution methods according to the guidelines described by Clinical and Laboratory Standards Institute (CLSI) and the E test as manufacturer’s description. The results for Enterobacteriaceae and A. baumannii were interpreted by the MIC criteria provided by U.S. FDA tigecycline susceptibility breakpoints listed for Enterobacteriaceae (S, ≤2 μg/mL; I, 4 μg/mL; R, ≥8 μg/mL). Agreement (±1 log2 dilution) and error analysis of results generated by two methods were also evaluated.

Results: Susceptibility rate (agreement of two methods) for tigecycline was 99.6% (89.1%) for E. coli, 98.5% (72.4%) for K. pneumoniae, 73.3% (86.6%) for P. mirabilis, 81.7% (75.6%) for A. baumannii, and NA (89.1%) for S. maltophilia.

Very major error (0.5%) was found only for A. baumannii isolates.

Conclusion: About 20% of A. baumannii isolates in Taiwan were resistant to tigecycline. The agreement between the results obtained for tigecycline was limited (<80% agreement) for ESBL-K. pneumoniae and A. baumannii.

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