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BATTERIOLOGIA

EVALUATION OF MICRONAUT-S ANAEROBES MIC BROTH MICRODILUTION PANELS FOR ANTIBIOTIC SUSCEPTIBILITY TESTING OF ANAEROBES

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INTRODUZIONE

Susceptibility of anaerobes to antibiotics has become unpredictable during the last decades, and empirical treatment of anaerobic infections is no longer satisfactory. Accurate and routine-friendly methods for MIC determination of anaerobes are demanded. Many test systems have been described, with agar dilution as reference method, but they are laborious, time-consuming and burdened by several technical, interpretation and reproducibility. Here, we evaluate the performance of a commercially available microdilution panel in comparison to a gradient MIC test with a large collection of clinical isolates.

METODI

A total of n=177 non duplicate anaerobes clinical isolates (61 species, 23 genera) were tested with the MICRONAUT-S Anaerobes MIC panel (MERLIN Diagnostika, Germany), which includes penicillin, ampicillin, amoxicillin/clavulanate, piperacillin/tazobactam, meropenem, imipenem, ertapenem, metronidazole, clindamycin, vancomycin, doxycycline, moxifloxacin and tigecycline. The same bacterial suspension was used for the standardized panel inoculum, and for testing by MIC Strips (Liofilchem, Italy). The panels were incubated at 37 °C in anaerobic conditions for 24 h, and visually inspected. In case of no bacterial growth for the growth control, incubation was prolonged to 48-72 h. Results were interpreted according to EUCAST guidelines. Comparison was performed in terms of MIC and S/I/R agreement and discrepancies, considering MIC Strips as reference method.

RISULTATI

Category agreement with MIC strips resulted overall > 96% (from 96.1% to 100%) with the exception of piperacillin/tazobactam (93.8%). Essential agreement resulted overall >90% for all molecules with the exception of piperacillin/tazobactam (80.7%). For doxycycline, tigecycline and moxifloxacin (for which no breakpoints are currently available), MICRONAUT-S results diverged for ≤1 dilution fold from MIC Strips results in > 96% of isolates.
For most strains (132/177) the panels were readable after overnight incubation, in 41 cases after 48 h, in 4 cases after 72 h.

CONCLUSIONI

The MICRONAUT-S Anaerobes MIC panels proved to be a reliable microdilution method for antibiotic susceptibility testing of anaerobes, providing results consistent with MIC gradient methodology, with both fast and slow growing species, in most cases in 18-24 hours. Overall, n=26 minor errors, n=3 major errors and n=7 very major errors were observed. Discrepancies of only 1 dilution step for piperacillin/tazobactam counted for a significant part of minor errors. Discrepancies of 1 dilution step counted also for most of the very major errors (3/5 of them restricted to ertapenem). Further investigations by agar dilution will settle the discrepancies, since MIC gradient test is not the reference method. The ease-of-handling and ease-of-result interpretation makes this method suitable for implementation into routine workflows.