Reproducibility of mycobacterial QC strains in the Sensititre® rapid growing and slowly growing nontuberculosis mycobacteria broth microdilution susceptibility procedure

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ABSTRACT

OBJECTIVE

Presently there are no NCCLS QC ranges for M.aurum and only 2 sets for the rapid growing mycobacteria. The purpose of this study was to measure reproducibility with M. avium Complex and M. peregrinum A TCC 19420 at 72 and 120 hours incubation in Sensititre broth. Reproducibility was assessed by determining the Modal MIC for each antimicrobial agent and drug concentration; whether the Modal MICs fell within one doubling dilution of the Mode with exception of Ofloxacin with MHB-OADC broth when incubated for 120 hours. Extending incubation to from 72 hours to 120 hours increased the modal MIC for all drugs tested with exception of Ethambutol and Rifampicin. Onscale MICs fell within one doubling dilution of the Mode with exception of Ofloxacin with MHB-OADC broth when incubated for 120 hours.

RESULTS

All results were reproducible within the doubling dilution of the mode. The maximum shift in MIC was 4 doubling dilutions. The presence of beads resulted in a one doubling dilution shift in MIC of M. avium Complex and M. peregrinum ATCC 19420 and Clofazimine with ATCC 79666. The interlaboratory reproducibility for all antibiotics is excellent with exception of Ofloxacin with MHB-OADC broth when incubated for 120 hours. Extending incubation to from 72 hours to 120 hours increased the modal MIC for all drugs tested with exception of Ethambutol and Rifampicin. Onscale MICs fell within one doubling dilution of the Mode with exception of Ofloxacin with MHB-OADC broth when incubated for 120 hours.

INTRODUCTION

Mycobacterium avium Complex (MAC) causes a wide range of infections including disseminated disease in patients with AIDS and inflammatory pulmonary disease. The rapidly growing pathogenic mycobacteria cause serious forms of disease varying from locally limited disease to disseminated infection. Antimicrobial susceptibility testing of clinically significant isolates is recommended for MAC. It has remained a challenge to produce reproducible results because there is currently only a limited number of drug QC ranges for testing rapidly growing pathogenic mycobacteria and MAC. Other antimicrobials have to be evaluated on This study used a quality controlled with non-bacterial organisms listed in Table 3 of NCCLS M119-Performance Standards for Antimicrobial Susceptibility Testing (1). The interlaboratory reproducibility of Sensititre broth for susceptibility testing of rapidly growing mycobacteria (2) and M. avium Complex (4) has been evaluated and are acceptable. The purpose of this study was to measure reproducibility with rapidly growing QC strains, M. avium ATCC 19420 and M. peregrinum A TCC 19420 at 72 and 120 hours. Monitoring the Modal MIC for each antimicrobial agent and drug concentration; whether the Modal MICs fell within one doubling dilution of the Mode with exception of Ofloxacin with MHB-OADC broth when incubated for 120 hours.

METHODS

Rapid-growing Mycobacteria

M. avium Complex strains were prepared from colonies on a 48hr old TSA / blood plate. Suspensions were vortexed for 1 minute allowing large clumps to settle. 50 μL transferred to 15 mL Sensititre Mueller-Hinton broth. Plates sealed and incubated at 35 °C for 72 hours. Plates inoculated with MHB-OADC broth were sealed and incubated at 35 °C and read at 10 to 14 days depending upon extent of growth. A total of 50 replicates of each MICs were collected.

Results

Table 4 shows tentative QC ranges based upon combining data from Tables 1 and 2 with other published information. Slow growers

Table 4 shows tentative QC ranges based upon combining MHB-OADC data from Tables 3 with other published information.

REFERENCES