2034. Colistin Susceptibility Testing of Enterobacteraeaceae by Agar Dilution (AD), Broth Microdilution (BMD) and Polymyxin NP

Poornima Ramanan, MD; Nirochnel Cole, MT(ASCP); Nadya Andini, PHD; Chawat Tongma, MD;1,2,3 Samuel Yang, MD;3
1Division of Clinical Microbiology, Mayo Clinic, Rochester, Minnesota
2Division of Clinical Microbiology and Infectious Diseases, Mayo Clinic, Rochester, Minnesota
3Mayo Clinic Rochester, Minnesota

Session: 234. Diagnostics - Bacterial Identification and Resistance Saturday, October 7, 2017: 12:30 PM

Background. Colistin Susceptibility Testing of Enterobacteraeaceae is increasingly reported worldwide, with plasmid-mediated colistin resistance, conferred by mcr-1, recently reported. In 2017, CLSI set colistin Epidemiological CutOff Values (ECVs) for Enterobacteraeaceae. There are limited accurate methods for colistin susceptibility testing. The rapid screening in NP (PNP) test detects bacterial growth in the presence of colistin. We evaluated AD and BMD in comparison to PBNP using clinical isolates of Enterobacteraeaceae, which we also tested for mcr-1. We additionally gathered colistin MIC data among Enterobacteraeaceae isolates over a period of 6 years.

Methods. Colistin MICs were determined by BMD and AD for 100 clinical isolates of Enterobacteraeaceae submitted to our laboratory from August 2016 to February 2017. mcr-1 testing was performed via a laboratory developed real-time PCR assay on a LightCycler 480 platform. PBNP was also performed. Colistin MIC distributions, determined using AD, were reviewed for all isolates of Enterobacteraeaceae submitted to our laboratory from 2011 to 2017 after excluding species with intrinsic resistance to colistin.

Results. With BMD as the reference method, the essential and categorical agreement of AD was 86.8% and 97.9%, respectively. The very major and major error rates for AD were 2.5% (1/40) and 2.9% (1/34), respectively. Sensitivity and specificity of PBNP were 90.7 and 94.1%, respectively. One isolate tested positive for mcr-1 (Escherichia coli, MIC 4 µg/mL by AD and BMD and positive PBNP). Excluding species with intrinsic resistance to colistin, 1153/48,441 isolates (2.4%) had colistin MICs ≥ 4 µg/mL by AD. Enterobacter cloacae complex, Klebsiella pneumoniae and E. coli were the most common species with concomitant colistin MICs ≥ 4 µg/mL by AD and carbapenem resistance.

Conclusion. A low percentage of isolates surveyed over the past 6 years demonstrated elevated MICs to colistin by AD. AD did not meet essential agreement criteria for colistin susceptibility testing. PBNP was found to have good sensitivity and specificity when compared with BMD.

Disclosures. R. Patel, ASM; Board Member, None CD Diagnostics, BioFire, Curetis, Merck, Hutchison Biofilm Medical Solutions, Accelerate Diagnostics, Alere, and The Medicines Company; Grant Investigator, Grant recipient Curetis; Consultant, Monies paid to my employer A patent on Bordetella pertussis/parapertussis PCR issued, a patent on a device/method for sonication with Teknion, Moon jang and co. Colistin failed on an anti-biostatic substance issued: Patents, Patents, any money is paid to my employer Actelion: DSBM, Money paid to my employer ASM and IDSA: Editor's stipends, Editor's stipends NBME, Up-to-Date and the Infectious Diseases Board Review Course: NBME, Up-to-Date and the Infectious Diseases Board Review Course, Honoraria

2035. Significant Reduction of Blood Culture Contamination in the Emergency Department (ED) Using the SertiPath® Blood Diversion Device

Chawat Tongma, MD;1 Edward Ward, MD;2 Marites Gonzaga-Beard, RN;2
1Pamela Hagen, MT;2 and Kamaljit Singh, MD;1
3Rush University Medical Center, Chicago, Illinois, 3Emergency Department, Rush University Medical Center, Chicago, Illinois, 1Department of Pathology, Evanston Hospital, Evanston, Illinois

Session: 234. Diagnostics - Bacterial Identification and Resistance Saturday, October 7, 2017: 12:30 PM

Background. Contaminated blood cultures are a particular problem in EDs and often lead to unnecessary antibiotic treatment. A potential approach to reduce contamination is to discard the initial aliquot of blood which is often contaminated with skin plugs and bacteria. To test this approach, we performed a study using the SertiPath® (SP) device (Magnaolia Medical Technologies, WA) a pre-assembled, sterile blood culture system designed to divert the initial 1.2–2.0 mLs of blood prior to bottle inoculation.

Methods. This was a pre-post intervention study conducted in the ED at Rush University Medical Center, Chicago. During the pre-intervention phase (1 September to 31 December 2015), 2 sets of peripheral blood cultures were collected using a standard aseptic technique by nurses in the ED. Skin antisepsis was performed with Chloraprep® and 5–10 mLs of blood was inoculated into BacT Alert SA and SN bottles (BioMerieux). During the intervention phase (1 February to 1 May 2016), blood cultures were collected using the SP device. All bottles were incubated for 5 days and rates of blood culture contamination were compared between control and intervention periods.

Results. Classification of blood culture contamination was based on standard CLSI guidelines. During the control phase, 929 sets of blood cultures were collected in the ED. A total of 40/929 sets (4.3%) from 36 patients were identified as contaminations and 81 sets (8.7%) from 51 patients were identified as true bacteremia. The contaminates included: 29 sets (72.5%) coagulase negative Staphylococcus spp. (CoNS), 4 sets (10%) Micrococcus spp., 3 sets (7.5%) Corynebacterium spp., 2 sets (5%) alpha-hemolytic Streptococcus spp., 1 set (2.5%) each Bacillus spp. and E. faecium. During the pre-intervention phase, 539 (0.6%) sets of blood cultures from 3 patients were contaminated (P < 0.001). The 3 contaminates were 1 CoNS, 1 alpha-hemolytic Streptococcus spp. and 1 Corynebacterium spp. 49 sets (9.1%) from 35 patients were identified as true bacteremia.

Conclusion. The use of the SP device in the ED over a 3-month period significantly reduced the rate of blood culture contamination from 4.3% to 0.6% while the rates of true bacteremia remain unchanged. The SP device represents a simple and effective method for reducing blood culture contamination.

Disclosures. All authors: No reported disclosures.