Colistin Susceptibility Testing Using the MicroScan® Colistin Well

Joseph Lutgring, Emory University
Eileen Burd, Emory University

Journal Title: Open Forum Infectious Diseases
Volume: Volume 4, Number suppl_1
Publisher: Oxford University Press (OUP) | 2017-10-04, Pages S590-S590
Type of Work: Article | Final Publisher PDF
Publisher DOI: 10.1093/ofid/ofx163.1547
Permanent URL: https://pid.emory.edu/ark:/25593/s6fw4

Final published version: http://dx.doi.org/10.1093/ofid/ofx163.1547

Copyright information:
© The Author 2017. Published by Oxford University Press on behalf of Infectious Diseases Society of America.
This is an Open Access work distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Accessed December 27, 2019 10:22 AM EST
2017. Colistin Susceptibility Testing Using the MicroScan® Colistin Well Joseph Lutgring, MD1 and Eileen Burd, PhD, D(ABMM)2; 1Department of Medicine, Division of Infectious Diseases, Emory University School of Medicine, Atlanta, Georgia, 2Department of Pathology and Laboratory Medicine, Emory University School of Medicine, Atlanta, Georgia

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

Background. Antimicrobial resistance is a threat to public health. As carbapenem-resistant Enterobacteriaceae, multidrug-resistant Pseudomonas aeruginosa, and Nontuberculous Mycobacteria increase in prevalence, there is an increased need for accurate and rapid testing for colistin resistance. However, testing colistin resistance is problematic for clinical microbiology laboratories. There is an urgent need to reliably test for colistin resistance in routine patient care.

Methods. All Enterobacter cloacae, Klebsiella pneumoniae, K. oxytoca, Enterobacter aerogenes, P. aeruginosa, or A. baumannii identified at Emory University clinical microbiology laboratory between January 1, 2016 and December 31, 2016 were included in the study. Routine bacterial identification and antimicrobial susceptibility testing were performed using the MicroScan WalkAway 96 plus® and the Negative Identification (NID) option. AST was performed by the Vanderbilt University Medical Center clinical laboratory.

Results. TEM-PCR detected a pathogen in 20/25 subjects (80%), compared with 17/25 (68%) by culture. TEM-PCR was performed on 40 of the 288 isolates (13.9%). The NID option was used on 25%, 20% and 27% of the isolates in the TEM-PCR, culture, and NID groups, respectively. TEM-PCR detected a pathogen in 18/25 (72%) of the isolates with NID, compared to 20/25 (80%) of the isolates without NID. TEM-PCR detected a pathogen in 16/25 (64%) of the isolates with culture, compared to 20/25 (80%) of the isolates without culture.

Conclusion. Rapid diagnostic assays, such as TEM-PCR, may be useful adjuncts to conventional, culture-based testing for children with MSI. Advantages include rapid identification of pathogen and early detection of antibiotic resistance genes. In a single multiplex assay, TEM-PCR provided reliable identification of MSI pathogens, with the potential for informing antibiotic selection early in the disease course.

Disclosures. All authors: No reported disclosures.

2019. Molecular characterization and antimicrobial susceptibility of extended-spectrum beta-lactamases (ESBL) producing enterobacteriaceae (ESBLE) causing urinary tract infections (UTI): Results from the Study for Monitoring Antimicrobial Resistance Trends (SMART), 2010–2015, South Africa Beki Temba Magazi, MBChB1; Shameema Khan, MBChB2; Sipho Dlamini, MBChB3; James Wood Jr., MD, MSCI1; Cheryl Sesler, MS2; Donald Stalons, PhD, D(ABMM), 2Department of Medicine, Vanderbilt University School of Medicine, Nashville, Tennessee, 3Diatherix Laboratories, LLC, Huntsville, Alabama

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

Background. Musculoskeletal infections (MSIs) in children require prompt diagnosis and treatment due to risk of local tissue damage and metastatic bacterial spread. Staphylococcus aureus is the leading cause of MSIs and readily grows in culture; however, receipt of antibiotics prior to culture and the frequency of fastidious organisms in young children (e.g., Enterococcus spp.) often leads to negative cultures and broad treatment regimens. Thus, there is a need for improved rapid diagnostics in children with MSI. In this study, we compared the detection of MSI pathogens by culture and by target- and/or pathogen-specific multiplex PCR (TS-PCR®) in children with MSI.

Methods. Synovial fluid and bone samples were collected from patients with MSI (n = 25, 0.15–18 years). Bacterial cultures and antibiotic susceptibility testing (AST) was performed by the Vanderbilt University Medical Center clinical laboratory. Additionally, samples were evaluated by TEM-PCR for detection of S. aureus including methicillin and clindamycin resistance genes and the Panton–Valentine leukocidin (PVL) locus, E. kingae, Haemophilus influenzae, Streptococcus pneumoniae, and Streptococcus pyogenes.

Results. TEM-PCR detected a pathogen in 20/25 subjects (80%), compared with 17/25 (68%) by culture. TEM-PCR identified 18 subjects, one of which was identified by TEM-PCR and not by culture. TEM-PCR also identified 2 subjects with K. kingae infection; neither was identified by culture. TEM-PCR detection of methicillin resistance and clindamycin resistance was 100% concordant with AST in the clinical laboratory. Genes encoding PVL were identified in 8/19 (42%) S. aureus samples. No bacterial co-detections were identified, and no other pathogens were identified by TEM-PCR or culture. Finally, there were no subjects with positive bacterial cultures and negative TEM-PCR results.

Conclusion. Rapid diagnostic assays, such as TEM-PCR, may be useful adjuncts to conventional, culture-based testing for children with MSI. Advantages include rapid identification of pathogen and early detection of antibiotic resistance genes. In a single multiplex assay, TEM-PCR provided reliable identification of MSI pathogens, with the potential for informing antibiotic selection early in the disease course.

Disclosures. All authors: No reported disclosures.