127. Retrospective Evaluation of 1-60 Days Evaluated for Meningitis Using the FilmArray Meningitis/Encephalitis (ME) Panel

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Session: 40. Adult Central Nervous System Infection

Background. Bacterial meningitis is a serious infection in infants requiring emergent recognition. Viral encephalitides (excluding HSV) are usually self-limited and self-supportive. Young infants often undergo lumbar puncture to evaluate for infection, but identification of CNS pathogens can take 24-48 hours while they are hospitalized and empirically treated. Our objective was to study the potential effect of a rapid multiplex PCR for meningitis/encephalitis (ME) on the care of young infants.

Methods. A prospective clinical evaluation of the FilmArray ME Panel was conducted from 2/2014 to 9/2014 at 11 sites using residual CSF. FilmArray ME Panel results were compared with clinical reference standards but not shared with providers. In this current study, medical records for infants (1-60 days) enrolled at three sites were reviewed for potential management changes with rapid FilmArray ME Panel results.

Results. A total of 145 infants were reviewed. Median age was 25 days. Most were admitted to the hospital (132/145 (91%)), received antibiotics (123/145 (85%)) and almost half (71/145 (49%)) received acyclovir. Only one infant had a bacterial pathogen identified by PCR, and no infant had CSF positive for HSV. Of the 145 infants (25%) 36 had a viral pathogen detected; 35 (97%) by FilmArray ME Panel and 1 (3%) by conventional tests (2 by blood and 1 by CSF PCR only). Four (11%) had a concomitant bacterial infection (UTI 3; bacterial meningitis 1; diagnosed on a prior LP). Twenty infants (56%) had enterovirus detected and 10 (28%) were positive for human parechovirus. Four infants were positive for HHV-6. 33 infants (92%) with a virus detected from CSF were admitted to the hospital; median duration of hospital stay was 44 hours [IQR: 34–69]. Infants who were virus-positive by conventional testing (results known to the physician) had a median length of hospital stay of 44 hours [IQR: 32–48] while median length of stay was 72 hours [IQR: 41–109] for those that were virus-positive only retrospectively by FilmArray ME Panel.

Conclusion. The FilmArray ME Panel may play a role in the evaluation of young infants undergoing lumbar puncture to evaluate for infection. Results of rapid PCR may be used to guide management, possibly resulting in decreased LOS for infants with viruses other than HSV detected in CSF.

Disclosures. A. Blaschke, BioFire Diagnostics, LLC: Collaborator, Grant Investigator and I have intellectual property and receive royalties from BioFire Diagnostics through the University of Utah, Licensing agreement or royalty and Research support; K. Holmberg, BioFire Diagnostics: Employee, Salary; J. Daly, BioFire: Consultant, Grant recipient; A. Leber, BioFire: Contractor and Scientific Advisor, Research support, Sponsor honorarium and Travel expenses; J. Diener Bard, BioFire: Consultant and Investigator, Research grant and Speaker honorarium; K. Bourzac, BioFire Diagnostics: Employee, Salary; K. Kanack, BioFire Diagnostics, LLC: Employee, Salary.

128. A single-center, quasi-experimental study to evaluate the impact of a Multiplex Polymerase Chain Reaction System Combined with Antimicrobial Stewardship on Time to Targeted Therapy in Patients with Suspected Central Nervous System Infection

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Session: 40. Adult Central Nervous System Infection

Background. Empiric treatment for central nervous system (CNS) infections consists of coverage with multiple antimicrobial agents that may be continued until a pathogen can be identified. Identification may take significant time to result, leading to extended durations of multiple antimicrobial agents, delays in targeted therapy and subsequent adverse effects, such as nephrotoxicity and Clostridium difficile infection. A multiplex polymerase chain reaction (PCR) system that can identify 14 pathogens responsible for community-acquired CNS infections in 1 hour was recently FDA-approved for cerebrospinal fluid (CSF) analysis. The objective of this study was to determine the effect of this PCR paired with antimicrobial stewardship (AMS) team intervention on the time to targeted therapy.

Methods. During the intervention (Int) phase (January 25, 2017–April 30, 2017), all PCR results were called to the AMS team, who reviewed clinical data and provided antimicrobial recommendations per pre-determined protocol. Recommendations consisted of de-escalation or addition of therapy. The pre-intervention (PI) group consisted of patients with CSF culture obtained between January 25, 2016 and April 30, 2016.

Results. A total of 138 patients were evaluated; 46 in the Int group and 92 in the PI. Of the 46 patients in the Int group, 25 had a negative PCR result and were never initiated on antimicrobials. One patient required antimicrobial escalation. Twenty patients were started on empiric therapy and were candidates for de-escalation in the PI group, there were no patients with CSF cultures that required therapy escalation, while 33 patients were initiated on empiric antimicrobials. Results from the subgroup of patients in whom empiric therapy was started as shown in Table 1.

Conclusion. Implementation of a multiplex PCR with AMS intervention resulted in decreased time to targeted therapy.

This project was funded through a competitive stewardship grant provided by Merck & Co.

Table 1.

| Time to targeted therapy, hours | Mean ± SD | P-value |
|-------------------------------|-----------|---------|
| Preintervention (n = 33) | 30.8 ± 38.2 | 15.4 ± 13.9 | 0.06 |
| Intervention (n = 21) | 1.64 ± 1.6 | 0.52 ± 0.0 | < 0.05 |

Disclosures. S. Revolinski, Merck: Grant Investigator, Research grant; J. N. Wainaina, Merck: Grant Investigator, Research grant; A. Huang, Merck: Grant Investigator, Research grant.

129. How Do Advanced Molecular Tests Compare to Routine Clinical Laboratory Evaluation of CSF in Meningoencephalitis? A Study in 10 Urban Emergency Departments Across the USA

Toby L. Merlin, MD1; Scott Chancey, PhD2; Yueli Zheng, PhD3; Brad Bowizard, PhD4; Leah Fischer, PhD5; Todd Parker, PhD2; Satish Pillai, MD, MPH6; David Talan, MD, PIDNA, FACEP7; Gregory Moran, MD, PIDNA, FACEP8; Anshu Krishnasadasan, PhD3; Scott Santibanez, MD1; The EMERGEncy ID Net Study Group; 1Centers for Disease Control and Prevention, Atlanta, Georgia; 2Emergency Medicine, David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, California; 3Emergency Medicine/Infectious Diseases, Olive View UCLA Medical Center, Sylmar, California; 4Emergency Medicine, Olive View UCLA Medical Center, Sylmar, California; 5Division of Preparedness and Emerging Infections, Centers for Disease Control and Prevention, Atlanta, Georgia

Session: 40. Adult Central Nervous System Infection

Background. EMERGEncy ID Net Study Group is investigating whether advanced molecular tests (AMT) increase the detection of causative agents in the CSF of patients presenting with meningoencephalitis (ME). We report findings from a pilot study using AMT on 18 CSF samples from 10 US Urban Emergency Departments.

Methods. We investigated four AMT: (1) BioFire FilmArray ME Panel targetting 14 causative agents; (2) an in-house target-directed next generation sequencing assay targeting 25 agents; (3) a microarray capable of detecting >2,500 agents; and (4) deep metagenomic next generation sequencing. For targeted sequencing, loci from 12 DNA-based and 13 RNA-based pathogens were amplified from the extracts.

Table 1.

| Time to organism identification, hours | Mean ± SD | P-value |
|-------------------------------|-----------|---------|
| Preintervention (n = 33) | 30.8 ± 38.2 | 15.4 ± 13.9 | 0.06 |
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