Diagnostic stewardship implementation and impact of Filmarray Meningitis/Encephalitis (FA-ME) panel in a tertiary care setting in Karachi, Pakistan

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Introduction:
Filmarray Meningitis-Encephalitis® (FA-ME) provides rapid, reliable Community-Acquired Meningitis/Encephalitis (CA-ME) diagnosis, maximizing early, pathogen-directed clinical decision support and stewardship goals. We implemented FA-ME diagnostic stewardship (DS) in a tertiary care hospital in Karachi, Pakistan and report on process activities and antimicrobial de-escalation impact.

Methods:
FA-ME was implemented in May 2017 for CA-ME patients admitted to Aga Khan University Hospital. Strategies were implemented in pre-analytic (exclusion of nosocomial and shunt meningitis), analytic (backup culture, wet mounts and Xpert MTB/RIF®), and post-analytic (clinical correlation to reduce false positives, antimicrobial advice) phases to improve reliability and stewardship outcomes. Antimicrobial de-escalation at 24 hours was determined for FA-ME negative, and enterovirus positive patients.

Results:
From May 2017 to July 2018, FA-ME was requested on 600 patients. Pre-analytic assessment led to deferral of 6 (1%) tests. Mean laboratory turnaround time was 3.6±3.6 hours (95% CI 3.379-3.908). Backup microbiological cultures, wet mounts, and Xpert yielded additional diagnoses in 1.2% (n=7), 0.7% (n=4) and 1.3% (n=8) patients respectively. Two HSV-2 false-positives and 1 Cryptococcus false-negative test were identified, re-tested, and corrected on post-analytic assessment. Antimicrobials were de-escalated in 63.2% (12/19) patients with enterovirus meningitis, and in 51% (n=218) adults and 53.8% (n=40) children ≤18 years (infants excluded) with negative FA-ME results.

Conclusions:
Diagnostic utility of FA-ME was improved through application of DS strategies. Although we did not perform a before-after study to evaluate percent reduction in antimicrobial use, antimicrobials were discontinued in 50-60% of patients with results warranting de-escalation. Physician education can further increase compliance with de-escalation.

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