Evaluation of Three Rapid Molecular Assays for the Detection of Group A Streptococcus

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INTRODUCTION:

Group A Streptococcus (GAS), the primary causative agent of bacterial pharyngitis, is most frequently diagnosed with a rapid antigen test performed at the point of care with negative specimens being confirmed by bacterial culture. Final culture results may not be available for 24–72 hours, which can delay the time to therapy and cause patients to miss additional work or school days. Recently, rapid molecular tests for the detection of GAS have come on the market designed to increase sensitivity while decreasing the time to final diagnosis of Group A pharyngitis. The Roche cobas® Strep A Test (cobas), the Alere™ i Strep A Test (Alerei) (Abbott, Abbott Park, IL) and the Cepheid Xpert® Xpress Strep A Test (RUO version) (Cepheid, Northbrook, IL) are CLIA Waived rapid molecular tests that can be run as a point of care testing. All these rapid molecular tests can be completed in approximately 20 minutes, or less for the point of care, utilize a similar swab collection, and are extremely easy to use in a clinical laboratory setup and interpretation. These tests have specific claims indicating that confirmation of results is not necessary on negative specimens.1-3

Rapid GAS Waived molecular tests have the ability to fundamentally change the way GAS pharyngitis is diagnosed. By bringing high-quality, highly sensitive results closer to patients, providers can, in turn, confirm diagnoses more rapidly, have a positive effect on antibiotic stewardship practices, and help minimize lost work or school days while awaiting treatment or diagnosis.

METHODS:

MATERIALS:

Traditional culture was performed on sheep blood agar and strep selective II agar plates (Remel, Lenexa, KS). Cultures were incubated at 35°C with 5% CO2 for 24 hours. GAS were confirmed using the PathoDx Strep Grouping Universal Kit (Remel, Lenexa, KS). The identification was confirmed using the Vitek MS MALDI-TOF instrument (Biomerieux, Durham, NC).

EXPERIMENTAL DESIGN:

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RESULTS:

The positive, negative, and total % agreement of each assay was as follows: Rapid antigen (86.67%, 98.51%, 94.85%), traditional culture (93.33%, 100%, 97.94%), Alere™ i (98.33%, 100%, 99.48%), Roche cobas® (100%, 100%, 100%). See Table 1 for complete results.

All three molecular tests were more sensitive for detection of GAS A Streptococcus from oropharyngeal swabs than either a strep A rapid antigen detection test and traditional microbiology culture. None of the molecular tests proved significantly more sensitive than the other.

REFERENCES:


ACKNOWLEDGEMENTS:

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TABLE 1: Comparison of Three Rapid Molecular/Diagnostics Assay for Group A Streptococcus Compared to Rapid Antigen Detection and Traditional Microbiology Culture

<table>
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<th>Test Type</th>
<th>Rapid Antigen</th>
<th>Traditional Culture</th>
<th>Alerei</th>
<th>Cobas®</th>
<th>Cobas®</th>
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<td>ESwab Medium</td>
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