EVALUATION OF THE VIDAS® C. DIFFICILE GDH COMPARED WITH C. DIFF QUIK CHEK COMPLETE® TECHLAB® AND PCR FOR THE DETECTION OF CLOSTRIDIUM DIFFICILE IN STOOLS

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Introduction

C. difficile (CD) colitis is a common cause of antibiotic-associated diarrhea. It requires isolation of patients. A rapid and reliable diagnosis is essential for effective management. The diagnosis can be made by rapid tests that detect CD. These tests have a very good Negative Predictive Value and can be used for screening. The Positive tests require confirmation by another method for the toxin detection.

Objective

The aim of this study is to compare two methods for rapid detection of CD in stools and evaluate their use in a diagnostic strategy for colitis. VIDAS CD GDH was performed on Vidas instrument according to the manufacturer’s instructions. CDCHECK is a rapid membrane enzyme immunoassay for the simultaneous detection antigen and toxins A and B in a single reaction well. The results are available at the same time.

Material and methods

98 stools were tested by both methods

<table>
<thead>
<tr>
<th>Material</th>
<th>Methods</th>
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<tr>
<td>98 stools tested by both methods</td>
<td>Vidas® C. difficile GDH (ELFA)</td>
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<td>32 positives</td>
<td>C. DIFF QUIK CHEK COMPLETE® (EIA)</td>
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<td>17 PCR on GeneXpert®</td>
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<td>15 tox. positives with CDCHECK</td>
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<td>12 positives, 5 negatives</td>
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98 stools were tested by both methods

The CDCHECK was integrated in the initial processing of the stool immediately after the check-in. Positive or negative results for both Ag and toxin were reported immediately. For discrepant results (positive Ag and negative toxin) the rapid test was followed by a PCR performed on Cepheid GeneXpert®. The VIDASCDO tests were performed in series once a day with the required controls. All negative results were reported the same day. Positive results were checked by PCR.

Based on the results of the study and the volume of activity of our laboratory (2500 test/year with 8% positive) a cost analysis was performed.

Results

32/98 stools were positive by both methods for the presence of CD (GDH on the VIDAS and Ag with CDCHECK) and 66/98 were negative. No discrepancy was detected between the 2 tests.

15/32 stools were also positive for the toxin with CDCHECK and did not require PCR.

12/17 stools negative for toxin with CDCHECK were toxin positive by PCR. And 5/17 were negative.

Conclusion

VIDAS C. difficile GDH®

Is less expensive: estimated saving costs for our lab (2500 tests/year with 8% of positive) CHF 4800.- without taking into account the cost of the equipment and the maintenance. Require technical equipment. More workload for lab technician. Not easy to integrate in the process of the routine workup of the stools. TAT 24 hours.

C. DIFF QUIK CHEK COMPLETE®

Simple to perform. Easy to integrate in the workflow of stools. Very rapid : Results in less than 30 minutes in 95% i.e. negative cases (92%) and half of positive cases (4%). With PCR, using GeneXpert the remaining results are available in less than 1 h. Slightly more expensive by test.

CONCLUSION

Both methods are equivalent as screening test to rule out C. diff. infection. The marginal higher cost of the C. diff Quick cheek complete is largely compensated by the simplicity of the test that can be done routinely on real time. The rapid results. The low workload. Moreover there is no cost for technical equipment and maintenance.

References

FEKERT Catherine and BARJUT Frédéric, Diagnostic des infections à Clostridium difficile, Laboratoire Clostridium difficile associé au CNR des bactéries anaérobies et du botulisme, Hôpital Saint Antoine, Université Pierre et Marie Curie, Paris, 2012

DAVIES K.A., Bosomworth, C.E., Carricajo, A., Adam, T. and Wilcox, M.H., Comparison of VIDAS® GDH automated immunos assay with Cepheid GeneXpert® C. difficile PCR assay and in-house PCR assay for GiiD, for the detection of C.difficile in faecal samples, Leeds Teaching Hospitals Trust Microbiology Department, UK., St Etienne CHU Bacteriology, Virology and Hygiene Laboratory, France., Charité Berlin Institute of Microbiology and Hygiene, Germany, 2011.