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Comparison of Five Chromogenic Media for the Recovery of Vancomycin Resistant Enterococci (VRE) from Fecal Samples

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INTRODUCTION

VRE are major causes of nosocomial infections in healthcare facilities. Sensitivities and identification of antibiotic resistant organisms is critical for patient management and infection control. Patients who are both infected and colonized individuals. The CDC recommends that institutions with moderate to high level of patient care should perform active surveillance on stool or rectal swabs. At the Johns Hopkins Hospital all intensive care units (ICU) and surgical patients are screened for VRE upon admission and weekly while in the unit. Bullock et al. (2013) compared BEAV agar with vancomycin (BEAV) and the BBL VRE diagnostic procedure and found that all of the chromogenic media are superior in sensitivity to our current BEAV culture for the detection of VRE.

METHODS

500 stool samples were plated onto 5 VRE chromogenic media (Biorad, BioMerieux, ChromID™ VRE (bioMerieux), VRESelect™ (Bio-Rad), HardyCHROM™ VRE (Hardy Diagnostics), and Spectra™ VRE (Remel)).

- Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were calculated for each media.

RESULTS

- All chromogenic media were positive with black color development, including all required supplemental testing.

DISCREPANT ANALYSIS

- A result from the chromogenic medium was considered discrepant if the species identification did not match the results of the other chromosars and/or if vancomycin AST results were susceptible.

- All isolates from discrepant positive isolates were sent to Phoenix for ID and susceptibility testing.

- Cultures in which BEAV broth was negative at 24h and at least one of the chromogenic agars was positive were also re-evaluated.

- Prevalence of VRE-positive patients was 26%.

- There are differences among the chromogenic agars with respect to time to detection, supplemental testing, ease of color distinction among colonies, and non-VRE breakthrough that may factor into a laboratory’s decision to use a particular agar.

CONCLUSIONS

- To our knowledge, this is the first comprehensive study of currently available chromogenic media for the detection of VRE. The Virulence media were found to be superior to our current BEAV culture for the detection of VRE.

- All of the chromogenic media were less sensitive than BEA enrichment broth for the detection of VRE.

- The study recommends 24-h or 48-h screening rather than BEAV culture.

- Although none of the chromogenic media have a claim for identification of vancomycin resistant Enterococcus raffinosus, many are able to detect this organism; however, it would be mis-identified.

- There are differences among the chromogenic media with respect to supplemental testing, however, some are minimal and would have little impact on turn around time.

REFERENCES


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