Detection of Acinetobacter baumannii in Surveillance Cultures.

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Abstract

Background: Multi-drug resistant (MDR) Acinetobacter baumannii has emerged as a significant pathogen in healthcare facilities globally contributing to increased mortality and morbidity. As a result, institutions have instituted active surveillance to identify carriers and control its spread. The detection of A. baumannii from cultures can be difficult due to the abundance of other bacteria found in these specimens. The objective of this study was to determine the best medium to use for active surveillance of MDR A. baumannii.

Methods: We utilized a cohort of patient peri-rectal and sputum surveillance specimens sent to the University of Maryland Medical Center Microbiology Laboratory. Each specimen was plated onto CHROMagar ™ Acinetobacter (Chromagar; Paris, France), 5% sheep blood agar (BD, Sparks, MD), MacConkey, and MacConkey with 6 μg/ml of imipenem. Each plate was incubated at 37°C and read at 24 and 48 hours. All oxidase negative colonies were identified using the Vitek II (bioMerieux; Durham, NC). Susceptibilities were performed by disk diffusion and E-tests (bioMerieux; Durham, NC). MDR A. baumannii was defined as susceptible to two or fewer antibiotics not including polymyxin B and tigecycline.

Results: There were 165 specimens (153 peri-rectal swabs and 12 sputums) during a 2 week period. We isolated 17 Acinetobacter species (13 MDR A. baumannii and one A. iwoffii) using the CHROMagar ™ Acinetobacter and sheep blood agar plates. MacConkey alone missed 1 MDR and 3 sensitive A. baumannii. MacConkey with imipenem missed 3 MDR A. baumannii with imipenem MICs above 12μg/ml. Other organisms that grew on the CHROMagar ™ Acinetobacter included Pseudomonas aeruginosa, Acinetobacter sydneyae, and Stenotrophomonas maltophilia.

Conclusions: CHROMagar ™ Acinetobacter is a reliable media for the detection of Acinetobacter baumannii in surveillance specimens. This has implications in infection control for tracking patients colonized with A. baumannii as well as therapeutic implications.

Background

- MDR-A. baumannii has emerged as a significant pathogen in healthcare facilities globally contributing to increased mortality and morbidity.
- A. baumannii causes a wide range of infections including hospital-acquired pneumonia, urinary tract infections, wound or surgical site infections, and bloodstream infections.
- Although the value of active surveillance for A. baumannii is unacknowledged, many institutions have begun active surveillance in order to control the spread of MDR-A. baumannii.
- The detection of A. baumannii can be laborious due to the undistinguishable colony morphology and the lack of a rapid diagnostic test.

Objective

Determine the best medium to use for active surveillance of multidrug resistant A. baumannii.

Methods

- Specimens included all patient peri-rectal and sputum surveillance specimens sent to the University of Maryland Medical Center microbiology laboratory for the detection of A. baumannii between December 7, 2009 and December 21, 2009.
- Specimens were randomly plated onto CHROMagar ™ Acinetobacter (Chromagar; Paris, France), 5% sheep blood agar (BD, Sparks, MD), MacConkey, and MacConkey with 6μg/ml of imipenem. Each plate was incubated at 37°C and read at 24 and 48 hours.
- All oxidase negative colonies were identified using the Vitek II (bioMerieux; Durham, NC).
- Susceptibilities were performed by disk diffusion and E-tests (bioMerieux; Durham, NC). MDR-A. baumannii was defined as susceptible to two or fewer antibiotics not including polymyxin B and tigecycline.

Results

- There were 165 specimens, 153 peri-rectal swabs and 12 sputums, that were plated to all four agar plates.
- CHROMagar ™ Acinetobacter recovered all 17 Acinetobacter species identified in this study.
- There were 13 MDR-A. baumannii recovered during the study. 10 of them grew on all 4 agar plates.
- Two sensitive A. baumannii grew on all four plates even though the imipenem MICs were 0.26 and 0.25μg/ml.

Conclusions

- CHROMagar ™ Acinetobacter is a reliable media for the detection of Acinetobacter baumannii in surveillance specimens. Bacteria other than Acinetobacter can be distinguished by the pink colony size, pink color, or oxidase reaction.
- The use of a reliable selective media for A. baumannii has implications in an infection control program that includes active surveillance, isolation, and treatment of colonized patients.

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