Medical News

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Reliability of Rectal Swab Culture Method for Detection of VRE

The diagnostic accuracy of the rectal swab culture method in identifying gastrointestinal colonization with vancomycin-resistant enterococci (VRE) is not known. D'Agata and colleagues from Vanderbilt University School of Medicine, Nashville, Tennessee, performed a study in which serial quantitative stool cultures, skin cultures, and rectal swab cultures were collected from patients with VRE infections to assess the false-negative rate of the rectal swab and the prevalence of skin colonization, a prerequisite for cross-transmission, at varying VRE stool densities. A total of 35 stool samples were obtained from 13 patients. The sensitivity of the rectal swab culture was 58%, ranging from 100% (at VRE densities of ≥ 7.5 $\log_{10}$ colony-forming units [CFUs]/g of stool) to 0% (at VRE densities of ≤ 4.5 $\log_{10}$ CFUs/g of stool).

Skin colonization was detected at low VRE stool densities, but it was more common at higher VRE densities ($P < .001$). Antibiotic exposure was significantly associated with higher VRE stool densities ($P < .001$).

The high false-negative rate of the rectal swab may be contributing to the continued increase in the prevalence of VRE.

FROM: D'Agata EM, Gautam S, Green WK, Tang YW. High rate of false-negative results of the rectal swab culture method in detection of gastrointestinal colonization with vancomycin-resistant enterococci. *Clin Infect Dis* 2002;34: 167-172.

Detection of Organisms in the Sputum of Cystic Fibrosis Patients

Van Dalfsen and colleagues from Chiron Corporation, Seattle, Washington, evaluated a culture method using quantitative plating on media containing antibiotic as a technique for detecting tobramycin-resistant organisms that has been proposed to be more sensitive than standard methods. Typical sputum culture methods quantitate the relative amounts of each distinct morphotype, followed by antibiotic susceptibility testing of a single colony of each morphotype. Sputum specimens from 240 patients with cystic fibrosis were homogenized, serially diluted, and processed in parallel by the standard method (MacConkey agar and OF basal medium with agar, polymyxin, bacitracin, and lactose) and by plating on antibiotic-containing media (MacConkey agar with tobramycin added at 25 µg/mL [MAC-25] and 100 µg/ml [MAC-100]). Minimal inhibitory concentrations (MICs) of tobramycin were determined for all *Pseudomonas aeruginosa* isolates by broth microdilution.

Growth of *P. aeruginosa* on MAC-25 was considered to be equivalent to a tobramycin MIC of 16 µg/mL or more, and growth on MAC-100 was considered to be equivalent to a tobramycin MIC of 128 µg/mL or more. An analysis of method-specific detection rates showed that medium containing tobramycin was more sensitive than the standard method for detecting tobramycin-resistant *P. aeruginosa, Stenotrophomonas maltophilia,* and *Achromobacter xylosoxidans,* but was less sensitive than the standard method for detecting *Burkholderia cepacia.* When MICs for *P. aeruginosa* that grew on medium containing tobramycin were tested by broth microdilution, the MICs for 28 (23%) of 121 strains growing on MAC-25 and 22 (39%) of 56 strains growing on MAC-100 were less than 16 and less than 128 µg/mL, respectively.

The addition of a MacConkey plate containing tobramycin to the routine media for sputum culture may provide additional, clinically relevant microbiologic data.

FROM: Van Dalfsen JM, Stapp JR, Phelps C, Stewart P, Burns JL. Comparison of two culture methods for detection of tobramycin-resistant gram-negative organisms in the sputum of patients with cystic fibrosis. *J Clin Microbiol* 2002;40:26-30.

Staphylococcus aureus Conjugate Vaccine in Hemodialysis Patients

In patients with decreased resistance to infection, *Staphylococcus aureus* is a major cause of bacteremia and its complications. The capsular polysaccharides are essential for the pathogenesis of and immunity to *S. aureus* infection and are targets for vaccines.

Shinefield and colleagues from the Kaiser Permanente Vaccine Study Center in Oakland, California, conducted a double-blind trial involving patients with end-stage renal disease who were receiving hemodialysis to evaluate the safety, immunogenicity, and efficacy of a vaccine with *S. aureus* type 5 and 8 capsular polysaccharides conjugated to nontoxic recombinant *Pseudomonas aeruginosa* exotoxin A. Between April 1998 and August 1999, 1,804 adult patients at 73 hemodialysis centers were randomly assigned to receive a single intramuscular injection of either vaccine or saline. IgG antibodies to *S. aureus* type 5 and 8 capsular polysaccharides were measured for up to 2 years, and episodes of *S. aureus* bacteremia were record-