H150 Quality Assurance of Autopsy Cultures

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After attending this presentation, attendees will be able to implement a quality-assurance system for autopsy culture results and list factors that influence interpretability of cultures.

This presentation will impact the forensic science community by providing information on a quality-assurance program for microbiology specimens taken at autopsy.

Results of bacterial cultures from autopsies are frequently difficult to interpret because of polymicrobial contamination. The forensic literature emphasizes the importance of proper collection technique, as well as interpreting culture results in the clinical context of the case. The most productive areas for culture are blood, lung, and cerebrospinal fluid.

Cultures from autopsies at the Los Angeles County Coroner' Office were retrospectively reviewed for a five-month period to look for factors that are associated with polymicrobial culture results. During the study period, there were 65 bacterial cultures from 47 cases. Fifteen pathologists obtained cultures, with a range of 1-12 cultures per doctor.

The bodies were refrigerated after arriving at the coroner's office, but the time before refrigeration and the time between death and autopsy varied. The preferred technique for obtaining cultures was to heat a scalpel blade and apply it to the surface to be cultured in order to sterilize it. For cultures of skin lesions, the area was sterilized by swabbing with isopropyl alcohol. Blood cultures were taken from the inferior vena cava and other cultures were taken from areas suspicious for infectious lesions. Cultures were taken using either swabs put into transport media or by using a sterile needle and syringe to inoculate blood culture bottles. Cultures were transported within a few hours to a microbiology laboratory.

Highly specific cultures, including cultures for enteric pathogens, acid-fast bacilli, fungi, and results obtained by molecular probes were excluded because of insufficient numbers of specimens and the rarity of false positive results. Also excluded from the study were organisms that are usually contaminants, including coagulase-negative Staphylococci, Diphtheroids, Streptococcus viridans, and Enterococcus. Cultures were considered interpretable if they either showed no growth or showed a single pathogenic organism.

The most important factor in predicting whether a culture result would be interpretable was the pathologist taking the culture. Results sorted by pathologist showed a range from 0/8 to 8/8 interpretable cultures. The most common postmortem cultures were of blood (6/8 interpretable), bronchus or lung (11/25 interpretable), and meninges or brain (5/7 interpretable). Conditions that were most associated with interpretable cultures included intravenous drug use (5/6 interpretable), meningitis (3/3 interpretable), and abscess (3/5 interpretable). The data did not show an effect of time between death and autopsy, perhaps because of the small number of cases.

The conclusion is that careful culture technique is very important in obtaining interpretable results. Highly selective culture media or molecular probes are helpful in avoiding confusing culture results.

Microbiology, Autopsy, Quality Assurance