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Microbiology Novel Technologies Recent Breakthroughs in Microbiology Techniques

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Introduction

Rapid microorganism identification in the clinical microbiology laboratory can be immensely helpful in selecting successful patient management techniques for infections caused by bacteria, viruses, fungi, mycobacteria, and parasites. Rapid detection of microorganisms in clinical samples provides for a smooth transition from broad spectrum to specialised antibiotic therapy. The use of tailored therapy decreases the risks associated with antibiotics, such as disruption of normal flora, unpleasant side effects, and selective pressure [1]. There is a pressing need for novel technologies in clinical microbiology, particularly for bloodstream infections, which have one of the highest associated fatality rates of any infection. To develop the clinical laboratory community, it is also critical that the clinical laboratory community accept evidence-based interventional laboratory medicine methods and participate in translational research projects. Many fields of diagnostic microbiology have benefited from the development of molecular techniques [2]. These tests have been shown to be more sensitive and specific than traditional testing, and they are especially beneficial for specimens containing finicky, slow-growing, or unculturable bacteria, or when patient treatment has already begun. Furthermore, identification based on genetic factors is more objective than traditional phenotypic characteristics. A survey of the available literature is the first step in developing a commercial or molecular assay. Contains information on the target genes utilised in past research, potential specificity or sensitivity issues, and extra clinically relevant information If possible, all known pathogen subtypes or other known sequence variants mutations, insertions, deletions should be included in the specificity testing. Once a suitable target has been identified, primers and probes can be constructed [3].

Description

The new technologies topic presented here was part of a clinical microbiology group session at the Camp Micro convention in Houston, TX. The presentation focused on new and emerging laboratory technologies, particularly those related to detecting bloodstream infections, which are among the most dangerous illnesses detected in clinical microbiology. Because of the related morbidity and mortality, it is crucial to recognise BSIs and the associated condition known as sepsis syndrome as soon as possible [4 5]. Sepsis, a primary complication of BSIs, is one of the top 10 causes of death in the United States, accounting for about 600 deaths every day. Furthermore, the incidence of BSI is expected to climb by up to 10% each year in the next years, causing a tremendous societal and economic burden

Conclusion

A number of other studies back up the necessity of rapid pathogen identification and the effects it has on survival and costs, as well as the appropriate targeting of antimicrobial therapy. This disparity has been linked to increased mortality and the spread of drug-resistant bacteria. The difference is even greater for organisms that are fastidious, slow growing, noncultivable, or present as part of polymicrobial illnesses. The Surviving Sepsis Campaign recommendations, which were developed to reduce sepsis and BSI mortality, emphasise rapid de-escalation to narrow spectrum antibiotic therapy. Laboratory interventions that shorten reporting time have been demonstrated to be effective. Attempts to demonstrate the importance of reporting Gram stain results on time indicated that when Gram stain reports from positive blood culture bottles.

Conflict of Interest

None.

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