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Classical microbiological diagnostics of bacteremia - Are the negative results really negative? What is laboratory result telling us about "Gold Standard"?

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Abstract

Introduction: Standard blood cultures require at least 24-120 hours to be reported as preliminary positive.

Objectives: The objective of this study was to compare the reliability of Gram staining and fluorescent in-situ hybridization (FISH), for detecting bacteremia in otherwise negative blood culture bottles.

Patients and methods: We performed Gram stain and FISH to 82 sets of negative blood cultures and 82 blood samples taken from post-operative septic patients and 57 blood samples taken from healthy volunteers.

Results: Using Gram stain in 62.2% of blood samples, 35.4% of the negative aerobic bottles, and in 31.7% of the negative anaerobic bottle's bacteria were visualized. Utilizing FISH, we detected bacteria respectively in 75.6%, 56.1% and 64.6% of samples. Among the blood samples from healthy volunteers, FISH detected bacteremia in 64.9% of the blood while Gram stain detected bacteria in only 38.6%. The time needed to obtain the study results using Gram stain was 1 hour, for FISH 4 hours and for the culture method, considering the duration of growth, 5 days.

Conclusions: Gram stain and FISH allow quick detection of bacteria in the blood taken directly from a patient. Finding phagocytosed bacteria, which was also detected among healthy individuals, confirm the hypothesis that blood microbiome exists.



Biography:

Tomasz Zrodlowski graduated from



Pomeranian Medical University in Poland, has completed his training in Anesthesiology and Intensive Care in Poland and France, and currently is doing his Internal Medicine Residency in the United States. He is also a PhD student at the Jagiellonian Medical University in Poland.

Speaker Publications:

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