Diagnosing Catheter-Related Bloodstream Infection without Catheter Removal? Not so Fast!

To the Editor—I want to congratulate Bouza et al. [1] for their effort to solve part of the puzzle regarding the diagnosis of catheter-related bloodstream infection without catheter removal in critically ill patients [1]. I would like to make 2 comments to place the results in a broader perspective.

The authors excluded arterial and Swan-Ganz catheters from the analysis, notwithstanding the fact that probably >50% of critically ill patients have more than just the central venous catheter in place. What happened with these other catheters? Were they removed in all cases, to exclude or identify the arterial line as a source of non-central venous catheter–related bloodstream infection? If these other catheters were removed per protocol, then the conclusion of the authors should be that the evaluated techniques for the diagnosis of catheter-related bloodstream infection are useful when all other intravascular catheters are removed. If they were not removed, then the authors cannot exclude the possibility that other catheters were the source of the so-called non–catheter-related bloodstream infection.

Furthermore, even if these diagnostic techniques are truly accurate in differentiating catheter-related bloodstream infection from other bloodstream infections, the problem remains that, in the large majority of cases in this study, the indication for catheter removal was fever or some other symptom in a patient with negative blood culture results. A total of 159 of the 204 patients included in the study reported by Bouza et al. [1] did not have bloodstream infection. None of the evaluated diagnostic techniques will overcome this problem of clinical over-diagnosis of catheter-related infection, because the techniques can only be used to differentiate between sources of bloodstream infection.

I think that the only correct conclusion that can be drawn from this study is that, in the small subset of patients with suspected catheter-related infection who turn out to have bacteremia (45 of the 204 patients included in the study [1]), techniques exist to differentiate catheter-related bloodstream infection from other bloodstream infections. Future studies should evaluate the safety of protocols that try to avoid catheter removal in patients in whom bloodstream infection is suspected but unconfirmed [2]. If this policy is proven to be safe, we will be able to avoid unnecessary catheter removal in patients with unexplained fever.

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References


Reply to Rijnders

To the Editor—We thank Dr. Rijnders for his comments [1] regarding our recent article in Clinical Infectious Diseases [2]. The objective of the study was to compare the yield of 3 microbiological procedures (semiquantitative cultures from hub and skin samples, differential quantitative blood cultures, and differential time to positivity between cultures of blood samples obtained from catheter hubs and peripheral blood samples) to assess the presence or absence of catheter-related bloodstream infection without catheter removal. This was, to our knowledge, the first study to compare the 3 methods in nonneutropenic patients with critical conditions who had short-term central venous catheters and clinical suspicion of bacteremia. We identified 55 patients with bloodstream infection among the 204 episodes of clinical suspicion of sepsis included in the study. According to standard definitions, 28 cases were classified as catheter-related bloodstream infection, and 27 cases were classified as non–catheter-related bloodstream infection. Dr. Rijnders’ concerns [1] have to do with the 27 patients whose cases were classified as non–catheter-related bloodstream infection; Dr. Rijnders raises the possibility that these cases could actually be attributed to bacteremia related to catheters other than the studied central venous catheter that might potentially be present. In addition to the studied central venous catheter, these 27 patients carried the following intravenous lines: Swan-Ganz catheters (0 patients), subcutaneous reservoirs (0 patients), arterial lines (19 patients), and other catheters (e.g., hemodialysis catheter, 13 patients).

First, we would like to clarify that we did not perform a complete catheter study involving all of these lines, because it would have been clinically and ethically impossible to do so. According to our protocol, the study of a 3-lumen catheter required the withdrawal of 80–100 mL of blood per study; therefore, an excessive quantity of blood would have been re-