Sir,
In the recent article by Raad, the diagnostic dilemma faced by many clinicians when presented with a febrile patient with a central venous catheter (CVC) in situ and positive blood culture was discussed. If CVC-related sepsis is suspected, clinicians have to decide whether or not a positive blood culture is a result of skin contamination, microbial colonization of the CVC or a septicemia related to the device. In the latter case, a decision has then to be made on the most appropriate antimicrobial therapy to be administered and whether or not the catheter should be removed.

Coagulase-negative staphylococci (CNS) are the microorganisms most frequently isolated from blood cultures obtained from patients with intravascular device-related infections. Unfortunately, many of the methods currently available in routine microbiology laboratories do not facilitate the interpretation of a positive blood culture when catheter-related sepsis is suspected. Multiple positive blood cultures with the same microorganism, as suggested by Raad may indeed be indicative of bacteraemia, but traditional routine typing methods to determine the relatedness of microorganisms isolated from several blood cultures, such as biotyping and antibiogram typing have low discrimination for CNS, and may give misleading results. Multiple positive blood cultures taken via the peripheral line and the CVC may still only reflect contamination rather than sepsis. Raad also highlighted the use of quantitative analysis of paired blood cultures; however, the results of this investigation may reflect colonization of the catheter rather than sepsis.

More recent approaches in the diagnosis of catheter-related sepsis not mentioned by Raad include the use of Gram’s stain and acridine orange cytospin, whereby blood is aspirated through the catheter and examined for the presence of microorganisms. The application of an endoluminal brush to sample the internal lumen of the catheter in situ has also been shown to be of potential value. However, further assessment of these techniques is required to determine their value in clinical laboratories.

We have recently developed an indirect enzyme-linked immunosorbent assay (ELISA) for the detection of antibodies against a novel glycerophospholipid antigen (lipid S) produced by most Gram-positive microorganisms. The ELISA showed a significant difference in the serum IgG levels to lipid S in patients with a CVC-related infection associated with CNS and the assay had a sensitivity of 75% and a specificity of 90% which compares favourably with methods currently used to assist in the diagnosis of the infection. The ELISA enabled the diagnosis of CVC-related sepsis to be made without having to remove the catheter or wait for blood cultures to become positive, and also gave an indication of those patients who may be colonized or at the early stage of infection. This novel serological approach for the diagnosis of CVC-related sepsis therefore offers an addition to the many culture-based methods currently available, and may assist clinicians in tackling the problems associated with blood culture contamination, catheter removal and avoidance of unnecessary antimicrobial therapy.

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References

Correspondence
