TIPS procedures performed at our institution, our case definition was modeled after that for infective endocarditis. We evaluated patients with TIPS devices in place who developed sustained bacteremia; the criteria for sustained bacteremia were the same as those used for sustained bacteremia associated with infective endocarditis [4, 5]. Certainly, other potential sources of sustained bacteremia, such as infective endocarditis, must be definitively excluded before TIPS infection is suspected.

The 3 patients with presumptive TIPS infection described by Armstrong and MacLeod [1] developed sustained and prolonged bacteremia due to Escherichia coli, methicillin-resistant Staphylococcus aureus (MRSA), and Pseudomonas aeruginosa. In an attempt to create a more specific standardized definition of TIPS infection, and on the basis of the very prolonged bacteremia that these 3 patients experienced, the authors proposed an alternative definition of sustained bacteremia. They proposed that sustained bacteremia should be defined as ≥2 blood cultures positive for the same organism, the first and last being separated by ≥7 days.

I disagree with this proposed definition. The definition of sustained bacteremia due to endovascular infection should not differ according to the site of infection. Infection of the endovascular system is defined by continuous bacteremia over time. Once continuous bacteremia is documented, there is no reason to apply an arbitrary duration of bacteremia, such as 7 days. It may be noteworthy that the 3 patients described in this report were bacteremic for several days, but this could be explained by the virulence of these 3 organisms or the antimicrobial therapy used. MRSA, P. aeruginosa, and E. coli may be more difficult to eradicate than some of the other organisms that have been implicated in TIPS infection. For example, resolution of TIPS-associated bacteremia due to Streptococcus sanguis or Lactobacillus acidophilus may occur more quickly than that due to MRSA. Furthermore, it has been suggested that resolution of bacteremia due to MRSA may be slower with vancomycin therapy than with β-lactam antibiotic therapy [6].

Another factor that may contribute to the duration of bacteremia associated with TIPS infection is the underlying immune status of the patient. Bacteremia is a known complication of cirrhosis, and underlying cirrhosis may affect response to antimicrobial therapy [7]. In our analysis, we classified each patient by underlying etiology of cirrhosis and by Child-Pugh class to identify whether these factors affected the duration of TIPS infection. Armstrong and MacLeod [1] do not provide the Child-Pugh classification for the patients described in their article. Although the effect of these factors on TIPS infection is unknown, the level of underlying immunodeficiency associated with cirrhosis may explain why these 3 patients remained bacteremic for a prolonged period.

In summary, I think this recent review of TIPS infection is clinically important and well written. However, I think that it is premature to state that a minimum of 7 days of continuous bacteremia is necessary before identifying a TIPS infection. As stated above, documentation of sustained bacteremia without evidence of infection elsewhere in the endovascular system should be enough to identify TIPS infection.

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References

Resumption of Linezolid Therapy after Myelotoxicity

Str—Linezolid is associated with hematologic toxicity, including anemia, thrombocytopenia, and pancytopenia [1, 2]. This toxicity is rapidly reversible with withdrawal of the drug from the therapeutic regimen, but no information exists about the risk of resuming linezolid therapy. I recently had the occasion to re-administer linezolid therapy at a reduced dose in the treatment of relapsing methicillin-resistant Staphylococcus aureus (MRSA) bacteremia, and no recurrence of hematologic toxicity was seen.

In January 2002, a 69-year-old man presented with MRSA bacteremia related to an infected axillofemoral-femoral bypass graft. Despite removal of the vascular prostheses and administration of antibiotic therapy with various regimens involving vancomycin, rifampin, and trimethoprim-sulfamethaxazole, bacteremia persisted. Linezolid therapy (600 mg bid) was started on 2 April 2002, with clearance of the bacteremia. The hemoglobin level was 11.3 g/dL, and the platelet count was 315,000 platelets/μL when linezolid was initiated.

On 4 June 2002, the patient was re-admitted to the hospital with weakness. His hemoglobin level was 6.7 g/dL, and
his platelet count was 123,000 platelets/μL. There was no evidence of bleeding, and the results of hemocult tests of stool samples were negative. Reticulocytes were absent on a blood smear. Thyroid-stimulating hormone, vitamin B12, and folate levels were normal. Six blood cultures were sterile. The iron level was 218 μg/dL, and the total iron-binding capacity value was 269 μL/dL. The serum creatinine level was 1.6 mg/dL. Other medications received included simvastatin, carvedilol, oxybutynin chloride, aspirin, and iron sulfate.

Linezolid was discontinued, and, although the nadir platelet count was 82,000 platelets/μL, the patient's hematologic presentation gradually improved. He was discharged with no antibiotic therapy. On 20 June 2002, the patient was readmitted to the hospital with fever. Multiple blood cultures grew MRSA. The hemoglobin level was 9.8 g/dL, and the platelet count was 523,000 platelets/μL. Linezolid therapy was resumed at a dosage of 600 mg/day. His fever quickly resolved, and his platelet counts became stable. The patient has subsequently received 9 months of linezolid therapy and remained clinically well. Multiple blood cultures were sterile. His hemoglobin level gradually improved; in March 2003, it was 13.7 g/dL, and the platelet count was 242,000 platelets/μL.

This case demonstrates that the hematologic toxicity of linezolid appears to be dose related and may be managed with dose reduction. Prolonged therapy at a lower dose was well tolerated in this case. Also important is the excellent efficacy of low-dose linezolid therapy demonstrated in this case. The relapse of MRSA bacteremia occurred 2 weeks after the initial discontinuation of linezolid therapy indicates the severity of the infection in this patient, although reduced-dose linezolid therapy effectively controlled his infection. Evidence of the clinical effectiveness of low-dose linezolid is conflicting. Linezolid at 200 mg twice per day has been shown to be clinically efficacious for vancomycin-resistant enterococcal infections, although the rate of microbiologic success was lower at the lower dose [3]. However, clinical failure to treat MRSA bacteremia was recently reported [4]; it was attributed to low linezolid levels, despite use of typical doses. My case demonstrates the prolonged clinical efficacy of low-dose linezolid therapy. However, whether this approach is acceptable requires additional study.

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Concurrent Antibiotic Review Programs—A Role for Infectious Diseases Specialists at Small Community Hospitals

Sir—The recent article by Petrk et al. [1] cites examples of antibiotic-utilization programs developed by infectious diseases (ID) specialists at either academic [2] or large urban medical centers [3]. We developed a concurrent antibiotic review program, similar to that reported by Fraser et al. [4], which resulted in significant cost savings and improved antibiotic utilization at our 120-bed community hospital.

Our antibiotic support team (AST), which consisted of an ID specialist, a clinical pharmacist, and representatives from the infection-control department and microbiology laboratory at Glenwood Regional Medical Center (West Monroe, LA), performed concurrent chart reviews 3 days per week that targeted patients receiving multiple, prolonged, or high-cost antibiotic therapy. Data collected included diagnosis and indications for antibiotics currently received; age; weight; allergies; renal, hepatic, and gastrointestinal function; and microbiology reports. Recommendations were communicated to managing physicians via a confidential form that was temporarily placed in the chart but did not become part of the official medical record. Telephone calls were made if urgent communication was warranted. Physicians were not obligated to follow the AST’s advice but were encouraged to request formal ID consultation if a conflict arose.

The medical staff was initially apprehensive about this program, which was due somewhat to a perceived loss of prescriptive autonomy but more so to concerns of legal liability, especially if physicians chose to reject AST recommendations. However, as a subcommittee of the hospital’s pharmacy and therapeutics committee, and because its work involved quality assurance and utilization review activities, the AST’s records were kept separate from patient medical records and, therefore, were not subject to legal discovery. We also realized the limitations of clinical decisions based solely on chart-review data, and we were careful to make recommendations only in well-defined clinical scenarios. No suggestions were made if data were insufficient to allow a comfortable decision. In essence, we aimed at harvesting the “low-hanging fruit,” rather than delving into complicated management issues. After several months, the program had met with wide approval, and some physicians regularly requested review of their patients’ charts.

From January through December 2000, we made 488 recommendations. Three hundred and thirty-six (69%) were accepted and implemented; 126 (26%) were rejected; and 26 (5%) were cancelled be-