football players avoid sharing towels or other personal items.

Acknowledgments

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Figure 1. Persistent abscess in the left basal ganglia after 76 days of therapy with ampicillin and rifampin.

A 63-year-old man with multiple myeloma was admitted to the hospital (The George Washington University Medical Center, Washington, DC) for fever and changes in his mental status. Neck stiffness, without focal neurological findings, was the notable finding of a physical examination. Analysis of CSF samples showed a leukocyte count of 158 cells/mm³ (71% neutrophils), a glucose level of 46 mg/dL, and a protein level of 151 mg/dL. Cultures of blood and CSF samples yielded L. monocytogenes that was susceptible to ampicillin and TMP-SMZ, and treatment with intravenous ampicillin was started.

On day 13 of hospitalization, the patient developed motor aphasia. CT of the brain suggested the presence of an abscess in the left basal ganglia; the presence of the abscess was confirmed by biopsy, and TMP-SMZ was added to the treatment regimen. Within 24 h, a rash developed that quickly resolved after treatment with TMP-SMZ was discontinued; monotherapy with ampicillin was maintained.

Thirty-seven days after admission, the patient was discharged to his home to continue receiving intravenous treatment with ampicillin. A rash consistent with drug allergy again developed 39 days later. Follow-up CT showed a residual abscess that was reduced in size (figure 1). Treatment with ampicillin was stopped, and treatment with oral linezolid, 600 mg twice daily, and oral rifampin, 300 mg twice daily, was initiated. This combination was continued for an additional 107 days. The patient experienced a full recovery, with complete resolution of the abscess (figure 2).

The combination of ampicillin and gentamicin is considered to be optimal therapy for listerial brain abscess [1]. There is limited experience in the treatment of CNS listeriosis in patients with allergy to penicillin. Other antimicrobials with in vitro activity against L. monocytogenes include TMP-SMZ, vancomycin, chloramphenicol, fluoroquinolones, rifampin, and linezolid.

In the patient described here, an allergic reaction to both ampicillin and TMP-SMZ developed. Gentamicin was contraindicated because of abnormal renal function. Previous reports on the use of vancomycin or chloramphenicol for the treatment of CNS listeriosis have shown...
unacceptably high rates of treatment failure [2, 3]. In vitro data indicate that the newer fluoroquinolones are active against *Listeria* species but have relatively poor penetration into the CNS, and ciprofloxacin used in a murine model of listeriosis was ineffective [4].

Linezolid is active against *L. monocytogenes* in vitro [5], and CSF concentrations of linezolid that are adequate for treatment have been attained in a rabbit model [6]. Additional data derived from the use of linezolid in neurosurgical settings, as well as the efficacy demonstrated in the treatment of CNS listeriosis in a murine model [7, 8], prompted us to use linezolid in the patient we describe.

Rifampin crosses the blood-brain barrier, penetrates cell membranes, and is also active against *L. monocytogenes*. In a study of isolates recovered from patients with *Listeria* meningitis, rifampin and TMP-SMZ were the most potent monotherapeutic drugs tested [9]. Combination treatment involving rifampin and another active antimicrobial may reduce the emergence of resistance to rifampin. Our success with the combination of linezolid and rifampin may offer a valid alternative therapy for brain abscess caused by *L. monocytogenes*.

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**Nosocomial Outbreak of Hepatitis E Infection in Pakistan with Possible Parenteral Transmission**

Sir—Hepatitis E virus (HEV) is an enterically transmitted agent that is responsible for large urban outbreaks of acute viral hepatitis throughout the Indian subcontinent [1]. Epidemic spread is predominantly via contaminated water or by a direct fecal-oral route. As is the case for hepatitis A virus infection, rare reports of blood transfusion–associated HEV infection exist, but other forms of parenteral spread have not been well-documented.

From December 2000 through March 2001, a hospital-acquired outbreak of HEV infection occurred in a neurosurgery ward in Karachi, Pakistan. We conducted a case-control investigation (with a 1:4 ratio of case patients to control subjects) and found 7 serologically confirmed cases and 11 presumptive cases of HEV infection. We linked the outbreak to the improper practice of sharing intravenous administration sets among patients, suggesting the possibility of blood-borne nosocomial transmission. Patients with an outbreak...