tained during echography-driven liver biopsy. The patient was given different combinations of intravenous antibiotics at high doses (vancomycin, rifampin, netilmicin, ciprofloxacin, teicoplanin, trimethoprim, doxycycline), IFN-γ 3 days a week, and a 5-day cycle of infusions of $6.7 \times 10^5$ to $11 \times 10^5$ polymorphonuclear leukocytes obtained by leukapheresis of blood from normal donors. Nevertheless, over the following 2 months, fever persisted, hepatic abscesses slightly increased, and the patient’s general condition worsened with significant weight loss.

Because several studies have shown that purified human granulocyte-macrophage colony-stimulating factor (GM-CSF) not only stimulates proliferation of immature progenitors but also enhances functions of mature effector cells [5], IFN-γ therapy was stopped, and subcutaneous GM-CSF (0.005 mg/kg/d) was administered, whereas the ongoing therapy with teicoplanin, ciprofloxacin, and itraconazole remained unmodified. Within 8 days, the patient became apyrexic, and the C-reactive protein level decreased from 150 to 50 mg/L. In the following 4 months, GM-CSF administration was continued 3 times a week, and antibiotic treatment was reduced. During this period, the patient’s condition improved substantially, although fever occasionally occurred. GM-CSF gave rise to no side effects, but the number of peripheral polymorphonuclear leukocytes increased (peak neutrophil count, 18,600/mm³; peak eosinophil count, 2300/mm³). At the end of GM-CSF administration, MRI showed quiescent hepatic lesions, which gradually disappeared during the following year.

Therefore, for this patient, conventional therapy, including IFN-γ, was only transiently effective in controlling the severe hepatic infection, whereas the addition of GM-CSF to anti-biotic treatment resulted in a persistent recovery. This case suggests that GM-CSF may be a valid alternative to IFN-γ to stimulate bacterial killing by phagocytes in patients with functional impairments such as CGD. An additional therapeutic advantage of GM-CSF may derive from the increased production of mature granulocytes and monocytes, which may be recruited into the site of infection.

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Rhodococcus equi Nosocomial Meningitis Cured by Levofloxacin and Shunt Removal

Rhodococcus equi is increasingly being recognized as a pathogen in immunocompromised patients, especially those infected with HIV. The overwhelming majority of reported R. equi infections in humans involve the lung; CNS infections are rare, occurring as brain abscesses, and meningitis in a healthy host has never been reported [1].

Infections caused by non-equi Rhodococcus have largely been associated with procedures involving medical devices, but R. equi has not been reported as a nosocomial pathogen [2]. We report a case of meningitis due to R. equi in a patient with an external ventricular shunt, which we successfully treated with levofloxacin.

A 51-year-old woman was admitted to the neurosurgical department at our facility with a head trauma due to an accidental fall. She had a history of occasional alcohol consumption. Physical examination findings were remarkable for left hemiparesis. A CT of the head revealed a linear left-occipital fracture and a left-cerebellum hematoma that slightly compressed the brain stem. Chest radiographic findings were normal.

The next day, because of worsening coma, an external ventricular shunt was placed and ventilation assistance was started. A right traumatic pneumothorax was due to a central venous catheter and was treated by pleural drainage. After 2 weeks of improvement, a septic fever occurred with worsening of the neurological condition. A CT of the head revealed triventricular hydrocephalus. The external ventricular shunt was replaced, and laboratory studies of CSF showed the following values: glucose, 65 mg/dL (serum glucose, 226 mg/dL); protein, 90 ml/dL; and WBCs, 82/mm³ (all lymphocytes).

Routine cultures of the CSF and of the external ventricular shunt tip yielded R. equi. Susceptibility to antimicrobial agents was determined by the Kirby-Bauer disk-diffusion technique; and the organism was susceptible to ampicillin, ciprofloxacin,
clindamycin, chloramphenicol, erythromycin, imipenem, penicillin G, and vancomycin. The MICs checked by Etest (AB Biodisk, Solna, Sweden) were 0.125 μg/mL for meropenem and imipenem, 2 μg/mL for vancomycin, and 0.064 μg/mL for levofloxacin. Serology for HIV was negative.

The patient was treated initially with vancomycin and rifampicin, but because of persistent fever and no clinical improvement, monotherapy with levofloxacin (500 mg iv twice a day) was started. After a 14-day course of levofloxacin therapy, the fever resolved, and there was progressive neurological improvement; after 50 days she was discharged without any neurological deficit.

CNS infections due to Rhodococcus species are unusual, and nosocomial Rhodococcus infections have never been reported; we describe the first case of nosocomial meningitis due R. equi. The meningitis was a nosocomial infection, because it presented 2 weeks after hospital admission and was not present or in incubation at admission; it was associated with an external ventricular shunt. Four years ago we observed but did not report 2 sternal-wound infections caused by R. equi in immunocompetent patients that occurred after coronary artery bypass surgery and a postneurosurgical R. equi brain abscess. Because identification of rhodococci is difficult, we think nosocomial R. equi infections are more widespread than reports indicate.

The best treatment for Rhodococcus infections is not known; standardized susceptibility tests are not yet available, although modifications of methods recommended by the National Committee for Clinical Laboratory Standards for rapidly growing bacteria may provide insight into susceptibility patterns. Our case of R. equi meningitis was successfully treated with levofloxacin. We chose this fluoroquinolone, after initial failure with vancomycin and rifampin treatment, because of its low MIC, as shown by Etest.

If the CSF concentrations of levofloxacin are only 16%–20% of simultaneous plasma concentrations, this fluoroquinolone may have a role in the treatment of CNS infections due to very susceptible bacteria.

At the 6-month follow-up, our patient’s R. equi infection had not recurred; perhaps short courses of therapy are enough for nosocomial R. equi infections in immunocompetent patients.

Propionibacterium acnes as the Cause of Endocarditis in a Liver Transplant Recipient

Isolation of Propionibacterium acnes in body fluids is generally interpreted as having no clinical significance since the organism is part of the flora of the skin. Here we present a case of endocarditis caused by P. acnes in an immunosuppressed patient following solid organ transplantation. This finding highlights the importance of a careful clinical-pathological interpretation, when diphtheroid bacteria are isolated from human tissue.

A 64-year-old man with a history of hypertension, non–insulin-dependent diabetes mellitus, alcoholism, and chronic hepatitis C virus infection underwent liver transplan-

References