chest infection. The detection of *Aspergillus* antigenemia may be indicative of a disseminated infection, although the sensitivity and specificity of the *Aspergillus* antigen latex agglutination test for patients undergoing intensive chemotherapy are questionable [6].

With improvements in the management of chemotherapy-related toxicity, intensive chemotherapy has become feasible for infants and even for neonates. However, as impaired immunity might be increased at this age, pediatric oncologists should be aware of specific infectious complications that may occur in infants undergoing chemotherapy.

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**Fatal *Mycobacterium fortuitum* Meningitis in a Patient with AIDS**

*Mycobacterium fortuitum* is a rapidly growing environmental mycobacterium that can cause disseminated infection in immunocompromised patients; however, the organism is recovered infrequently from patients with AIDS [1]. We describe a case of *M. fortuitum* infection in a patient with AIDS, which culminated in fatal purulent meningitis.

A 28-year-old prison inmate with AIDS (CD4 lymphocyte count, 241/μL) and a history of *Pneumocystis carinii* pneumonia was admitted to the hospital with headache, fever, chills, and a nonproductive cough. The results of CSF studies were as follows: WBC count, 251/μL; protein, 0.39 g/μL; glucose, 2.9 mmol/L; stains for acid-fast bacilli (AFB), a gram stain, and cryptococcal antigen assay, negative; and cultures for bacteria, fungi, and AFB, sterile. Biopsy of a nodular rash on the torso and extremities revealed dermal abscesses; stains of the biopsy specimens were negative for AFB and fungi. Gram-positive bacilli were seen in an aspirate from one of the nodules.

Treatment included sulfadiazine and tetracycline for possible disseminated nocardiosis or nontuberculous mycobacterial infection. The patient’s condition improved clinically, and he was discharged. Shortly thereafter, *M. fortuitum* (the organism grew on MacConkey agar without crystal violet, was positive for arylsulfatase after 3 days, grew in 5% NaCl, reduced nitrate, and was positive for iron uptake) was recovered from the skin biopsy specimen and a bone marrow aspirate. The isolate was susceptible to amikacin, doxycycline, imipenem, and ciprofloxacin; it was resistant to cefoxitin, sulfonamides, and tobramycin [2].

The patient was readmitted to the hospital 2 months later with headache, nausea, vomiting, and a stiff neck. The fact that previous cultures had been positive for *M. fortuitum* was not noted. CSF studies revealed the following values: WBCs, 240/μL (88% neutrophils); protein, 0.70 g/μL; and glucose, 1.9 mmol/L. Ten days later, the CSF WBC count was 2,400/μL (97% neutrophils), and the protein level was 1.92 g/μL. All gram stains and stains for AFB, cryptococcal antigen assays, and cultures of the CSF were negative.

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**References**

Therapy with penicillin and ceftriaxone produced no clinical improvement in his condition. Treatment with isoniazid, rifampin, ethambutol, and pyrazinamide was begun for possible tuberculous meningitis; his condition improved, and he was discharged.

Two weeks later, he was readmitted with obtundation and nuchal rigidity. Examination of the CSF showed a WBC count of 1,260/µL (100% neutrophils), a protein level of 4.6 g/L, and a glucose concentration of 1.4 mmol/L; gram stains and stains for AFB and a cryptococcal antigen assay were again negative. It was now recognized that previous cultures had been positive for M. fortuitum, and amikacin and doxycycline were administered. The patient died 3 days later.

At autopsy, the brain weighed 1,200 g, and basilar meningitis was noted (figure 1); histopathologic findings included neutrophils with rare multinucleated giant cells but no granulomas. Gram stains and stains of tissue for AFB showed branching extracellular AFB and gram-positive bacilli. A culture yielded M. fortuitum.

M. fortuitum infection rarely involves the CNS; only four cases of meningitis due to this organism have been reported [3–6]. Three of these cases occurred in immunocompetent patients and resulted from spread of a local infection (i.e., mastoiditis, a posttraumatic saccral abscess, and a cauda equina abscess) [3–5]. The fourth case involved a 28-year-old patient with AIDS who presented with pleuritic pain, fever, a productive cough, headache, and vomiting; however, this patient was lost to follow-up shortly after presentation [6].

Our case is instructive for several reasons. M. fortuitum stains poorly with fluorochrome stains and therefore may not be recognized in smears of CSF that have been stained with fluorochrome; in addition, because M. fortuitum is positive on gram staining, it may be mistaken for pleomorphic gram-positive bacilli such as diphtheroids. Use of a carbol-fuchs in stain is often necessary when donovanosis, but the sensitivity of these histological techniques varies between 60% and 80% [1].

Kharsany et al. recently reported the isolation of C. granulomatis in a monocyte coculture system and suggested the development of molecular-based diagnostic methods for the detection of C. granulomatis [2]. Other researchers have used PCR primers targeting conserved genes to identify noncultivable pathogenic bacteria [3]. C. granulomatis has been linked with the Klebsiella species on the basis of common ultrastructural morphology, antigenic cross-reactivity, and similar pathogenicity (e.g., Klebsiella rhinoscleromatis is an intracellular organism that causes chronic destructive ulceration of the nasopharynx) [1, 4–6]. We therefore designed PCR primers targeting the phoE gene, which encodes a porin protein (i.e., membrane channel) and is conserved among Klebsiellae and other enterobacteria [7].

Biopsy specimens were obtained from six patients whose genital ulcers were clinically suggestive of donovanosis. DNA was extracted from one portion of each biopsy specimen, and the other portion was fixed and examined for Donovan bodies by the slow Giemsa (overnight) technique. DNA was also obtained from cultures of Klebsiella pneumoniae (NCTC [National Collection of Type Cultures] 9633), Klebsiella rhinoscleromatis (NCTC 5046), and Klebsiella ozaenae (NCTC 5051). Approximately 1 µg of DNA was included in a 50-µL PCR mixture that comprised the following solution: 50 mM KCl, 10 mM Tris-HCl (pH, 8.3), 2.5

References