A Man with Fever and Cough

Qinfang Qian,* Grigoriy Urman, Terra Cederroth, Robert Najarian, James E. Kirby
Department of Pathology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, Massachusetts, USA

A 40-year-old man with no significant past medical history developed fever, dry cough, night sweats, chills, and malaise 1 week after hiking in the mountains in Michigan. He visited his primary care physician (PCP) and was treated with oral azithromycin for 5 days with no improvement. The patient then traveled to Europe for 2 weeks. During this trip, he had daily fevers, chills, cough, and sweats. After returning to Massachusetts, he went to the emergency department, where a chest X-ray examination showed diffuse bilateral airspace consolidation. He was admitted to our hospital and initially treated with levofloxacin, vancomycin, and cefepime for presumptive community-acquired pneumonia. His white blood cell count was $20.8 \times 10^3$ cells/mm$^3$ (normal range, $4 \times 10^3$ to $11 \times 10^3$ cells/mm$^3$), with 86.6% neutrophils (normal range, 50 to 70% neutrophils), 7.4% lymphocytes (normal range, 18 to 42% lymphocytes), 5.2% monocytes, 0.3% eosinophils, and 0.5% basophils. Organisms of 8 to 10 μm in diameter were seen on Gram (Fig. 1A) and KOH-calcofluor white (Fig. 1B) stain preparations of bronchoalveolar lavage and sputum samples. The patient was subsequently treated with antimicrobial agents appropriate for these findings. Despite intensive medical therapy, the patient developed acute respiratory distress syndrome (ARDS) and expired. Histological preparations of autopsy lung tissue samples stained with hematoxylin and eosin (H&E) (Fig. 1C) or Gomori methenamine silver (GMS) (Fig. 1D) showed the same organism morphology. What is your diagnosis?

FIG 1 Individual organisms (arrows) seen on Gram stain (A) and KOH-calcofluor white stain (B) of a bronchoalveolar lavage sample and H&E (C)- and GMS (D)-stained sections of autopsy lung tissue.