ANSWER TO THE PHOTO QUIZ

Philip A. Mackowiak, Section Editor

A 40-Year-Old Man with Cough and Fever
(See pages 1460–1 for the Photo Quiz)

Figure 1. Noncontrast CT of the patient’s chest showing a mass with a cavity in the left upper lobe.

Figure 2. Gram stain of the aspirated pus, revealing gram-positive coccobacilli.

Diagnosis: Rhodococcus equi infection.

Gram staining of the aspirate obtained from the patient’s chest mass (figure 1) demonstrated gram-positive coccobacilli (figure 2). Four days later, cultures grew colonies with salmon-pink pigmentation (figure 3) that were further identified as R. equi.

R. equi is a pathogen that should be considered in the differential diagnosis of lung lesions in immunocompromised individuals. R. equi is a facultative aerobic, non–spore-forming intracellular gram-positive coccobacillus that may have positive acid-fast bacilli stain results [1–3]. This bacterium grows on regular culture media, such as blood agar or chocolate agar. Salmon-pink pigmentation of the colonies grown on culture gives the species the name Rhodococcus [2]. Infection due to R. equi is usually a zoonotic infection; infections in humans usually occur in individuals with cellular immune system deficiencies [2]. The organism is inhaled and then spreads hematogenously from the lungs. It can also be acquired through direct contact of skin wounds with soil containing the organism. R. equi has a predilection for lungs and the CNS, but it can affect any organ.

If there is a clinical suspicion for R. equi, the microbiology laboratory should be alerted, because the infection may be initially misdiagnosed as due to a diphtheroid or Mycobacterium tuberculosis [3]. The usual clinical presentation associated with R. equi infection is that of subacute or chronic relapsing pneumonia. Nodular infiltrates or pneumonic consolidation are seen on chest radiographs. Complications include lung abscess, empyema, pleural effusion, and direct chest wall involvement [1, 2]. Extrapulmonary manifestations include brain abscess, wound infection, osteomyelitis, and retroperitoneal abscess, among others [2].

Rhodococcus species infection is associated with a high degree of mortality, and it is very difficult to eradicate. R. equi is frequently resistant to a variety of antibiotics, and drug resistance can emerge rapidly. Antibiotics with reported activity against R. equi include carbapenems, vancomycin, aminoglycosides, fluoroquinolones, macrolides, and rifamycins [1, 4]. For immunocompromised patients, it is prudent to start treatment with a combination of intravenous and oral agents for several weeks and then continue therapy with oral agents for a prolonged period of time [1]. Our patient initiated treatment with vancomycin, rifampin, and levofloxacin, and treatment is still in progress. All clinical decisions regarding the duration and route of treatment of R. equi infection should be made on the basis of clinical and radiological responses to treatment [4].
Figure 3. Salmon-pink colonies characteristic of *Rhodococcus equi*, visible after 4 days of incubation at 37°C on chocolate agar.

Acknowledgments

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