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Answer to Photo Quiz: *Campylobacter jejuni* Pleuritis

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The S-shaped Gram-negative bacilli were catalase positive and exhibited darting motility. Off-label performances of a *Campylobacter jejuni*/*C. coli* PCR assay (Prodesse ProGastro SSSC; Hologic, San Diego, CA) (1) on a suspension of isolated growth and on a 1:3 dilution of primary pleural fluid yielded organism-specific fluorescent output (cycle threshold values of 24.8 and 40.5, respectively). Subsequent manipulations of the isolate demonstrated optimal growth under microaerophilic conditions (85% N₂, 5% O₂, 10% CO₂) at 42°C. Growth was favored on CDC anaerobic blood agar (see Fig. 1B in the photo quiz) versus routine blood agar (see Fig. 1A in the photo quiz) when the isolate was incubated in that environment for 24 h. The isolate was definitively identified as *Campylobacter jejuni* via DNA sequence analysis of the 16S rRNA gene.

Although the isolate was initially recovered via 37°C anaerobic incubation, subsequent subcultures of the isolate failed to grow under anaerobic conditions and did not exhibit luxurious growth in a 37°C microaerophilic environment. Kassem et al. (2) reported that differential expression of genetic respiratory determinants enables *C. jejuni* to survive in a variety of thermal or oxygen concentration niches. The differential expression also affects host-pathogen interaction. Such data may explain both the recovery of the primary isolate on CDC anaerobic blood agar at 37°C and its inability to reproduce on that medium *ex vivo*.

The gastrointestinal tract was thought to be the antecedent source for the pleuritic isolate of *C. jejuni*, as a fecal specimen collected on hospital day 4 was positive for *Campylobacter jejuni*/*C. coli* by the same PCR assay (cycle threshold, 35.0). *Campylobacter* bacteremia is a rare disease, with susceptible hosts being those with liver disease, hypogammaglobulinemia, HIV infection, or other immune deficiency (3). Early literature reported *C. jejuni* bacteremias to be less common than those of *C. fetus* etiology (4). Blaser et al. (5) reported *C. jejuni* to be serum sensitive (complement-dependent antibody-mediated killing), with *Campylobacter fetus* bacteremias being largely serum resistant. A recent Spanish case series (6) reporting incidences of 66% for *C. jejuni* and 19% for *C. fetus* over a 23-year period may convey a paradigm shift, possibly reflective of advances in the capability of treating immunocompromised patients.

Although inoculated blood culture vials failed to yield any indication of growth on Bactec FX following 5 days of incubation, the diffuse B-cell lymphoma hypothetically provided a portal of entry into the bloodstream to facilitate extraintestinal *C. jejuni* disease. A definitive role for *C. jejuni* in respiratory disease is not well characterized, largely because attempts to isolate the organism from those sites are rare. An Australian case series (7) identified nine HIV-positive patients with *C. jejuni* bacteremia. Seven of these nine patients were diagnosed with both pneumonia and diarrhea. *Klebsiella pneumoniae* was isolated from respiratory secretions of one patient; *C. jejuni* was recovered postmortem from one patient with demonstrated consolidation on chest

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See page 3151 in this issue (<https://doi.org/10.1128/JCM.03279-15>) for photo quiz case presentation.

X-ray examination. Pönkä and Kosunen (8) documented two cases of pneumonia from 342 patients yielding a stool culture positive for *C. jejuni*. The organism was not recovered from respiratory secretions. Additional reports discuss isolation of *C. jejuni* solely from blood culture in the context of adult respiratory distress syndrome (9) and pneumonia (10, 11) from patients with underlying thalassemia and/or previous splenectomy. In contrast, reports of pleuritis in a hemodialysis patient (12) and empyema secondary to food aspiration (13) described isolation of *C. jejuni* from pleural fluid.

Disk diffusion antimicrobial susceptibility testing on Mueller-Hinton agar with 5% sheep blood (14) demonstrated resistance to ciprofloxacin and susceptibility to erythromycin. Empirical cefepime and vancomycin treatment continued, with resolution of respiratory symptoms, until discharge on hospital day 6.

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