Radiological Case of the Month

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AN 18-YEAR-OLD BOY had fever, sore throat, generalized myalgia, abdominal pain, and occasional vomiting for 1 week. A presumptive diagnosis of influenza with dehydration was made, and he was treated with rimantadine hydrochloride and intravenous fluids for 5 days and then discharged from the hospital. Within 24 hours he had symptoms of high fever, respiratory distress, generalized myalgia, and extreme fatigue.

On admission to the pediatric intensive care unit, he had a temperature of 102°F; heart rate, 120 bpm; respirations, 32 breaths per minute; blood pressure, 120/62 mm Hg; and oxygen saturation, 93% to 95% on a fraction of inspired oxygen of 1.0. Findings from physical examination revealed a capillary refill time of 2 to 3 seconds, full distal pulses, and warm extremities. His pharynx was congested without exudate, retropharyngeal swelling, or uvular displacement. He had bilateral nontender cervical lymph nodes measuring 2 to 3 cm. His abdomen was mildly distended, the liver enlarged, and the bowel sounds hypoactive. The skin had no petechiae or purpura, but erythema was present over the lateral aspect of his left proximal fibula.

A chest radiograph was obtained (**Figure 1**). The complete white blood cell count was $2.5 \times 10^3/\mu L$; hemoglobin, 13.6 g/dL; platelet count, $24 \times 10^3/L$; and coagulation parameters, normal. The serum electrolyte levels were normal; blood urea nitrogen, 34 mg/dL; and creatinine, 0.9 mg/dL (79.6 µmol/L). Liver enzyme levels were elevated with total bilirubin of 1.3 mg/dL (22.3 µmol/L). Specimens were drawn for blood, urine, respiratory bacterial and viral cultures; mycoplasma cultures; Epstein-Barr and human immunodeficiency virus (HIV) antibody titers; Rocky Mountain spotted fever latex agglutination tests; and polymerase chain reaction for *Ehrlichia* species and HIV before beginning treatment with cefotaxime sodium, vancomycin, and azithromycin. Soon after admission, he required endotracheal and mechanical ventilation for respiratory failure. His blood culture was positive for gram-negative anaerobic bacilli, and computed tomography (CT) scans of the abdomen and chest were obtained (**Figure 2**).

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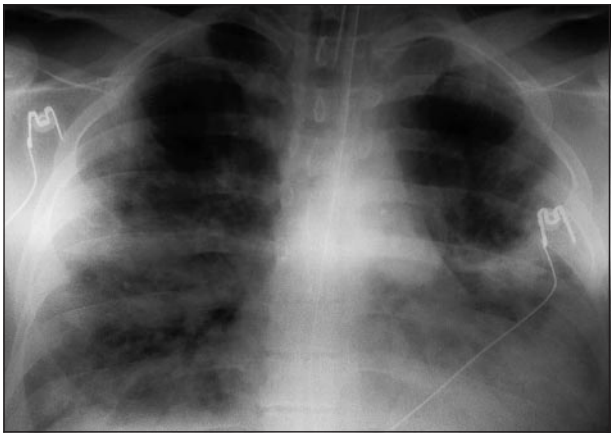

Figure 1.

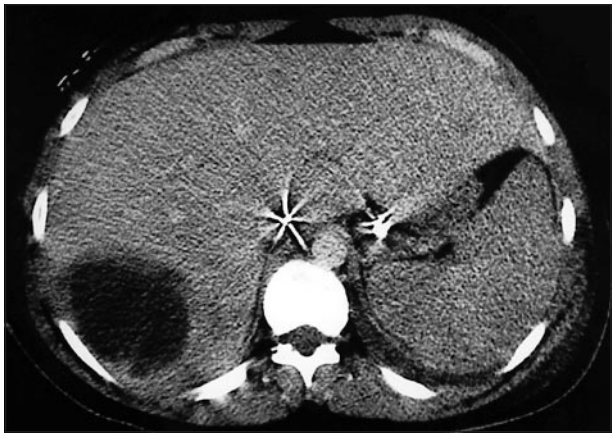

Figure 2.

Denouement and Discussion

Lemierre Syndrome

Figure 1. Frontal chest radiograph shows diffuse patchy alveolar consolidation in the lung bases and bilateral pleural effusions.

Figure 2. Single axial computed tomography at the level of the liver shows a large, low-attenuation rounded lesion in the right lobe of the liver, abutting the capsular surface of the liver and with associated induration of the abdominal wall.

The blood culture grew anaerobic, gram-negative filamentous rods identified as *Fusobacterium necrophorum*, and antibiotic therapy was changed to cefepime and metronidazole. The CT scans revealed a large hepatic abscess involving the posterior segment of the right lobe. He had airspace consolidation in both lungs, with pleural effusions and a pneumatocele in the right lung. The hepatic abscess was drained percutaneously, and the pleural effusions were drained using bilateral chest tubes.

A neck CT scan demonstrated bilateral cervical lymphadenopathy, and Doppler ultrasonography showed internal jugular vein thrombosis or other venous abnormality. Findings from a CT scan of the head, a 2-dimensional echocardiogram, and a technetium-99m bone scan were normal. One week later a follow-up CT scan showed resolution of the liver abscess and improvement in lung aeration. He was discharged after a 3-week hospitalization, and he completed a 6-week course of antibiotic therapy. Findings from aerobic and anaerobic cultures from the hepatic abscess and pleural fluids were negative.

Lemierre syndrome, also known as necrobacillosis or postanginal septicemia, received its name from a comprehensive clinical description by Lemierre in 1936. The syndrome usually follows an acute oropharyngeal infection caused by *F necrophorum* (a constituent of normal flora) and secondary thrombophlebitis of the internal jugular vein and metastatic infection.[1] The illness occurs in previously healthy adolescents or young adults, starting with pharyngeal or tonsillar inflammation[2] and followed by recurrent fevers. The presence of jugular venous thrombophlebitis is considered a hallmark of the illness, though is not always present. Metastatic sequelae include pneumonia, pleural effusions, lung nodules and infarctions, septic arthritis, soft tissue abscesses, cellulitis, osteomyelitis, liver abscess, endocarditis, and meningitis.[3] Thrombocytopenia and leukocytosis are present, and hepatic enzyme abnormalities with hyperbilirubinemia often are present.[4] The organism is isolated from blood or other infected sites in anaerobic cultures. Lemierre syndrome is primarily a clinical diagnosis,[5] although CT and ultrasound findings are sensitive in confirming the diagnosis.[6] Recommendations for treatment include prolonged antibiotic therapy. Susceptibility testing to penicillin is important because of possible β-lactamase production.[7] Invasive interventions are indicated to drain the purulent fluid collections.

Accepted for publication February 28, 2000.

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