Lung Abscess and Osteomyelitis of Rib due to Yersinia Enterocolitica*

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The first reported case of infection of the lung and bone with Yersinia enterocolitica is described. This organism has only recently been known to infect man. Although a wide spectrum of diseases has been described, all have appeared to be relatively benign; however, in our case a rapid necrotizing process occurred. Therefore, the aggressive nature of this organism outside its usual surroundings, eg, the gastrointestinal tract, is worth noting.

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Yersinia enterocolitica is a gram-negative organism that only recently has become known to infect man. Although the number of infections with Yersinia enterocolitica has increased during the last few years, most reports came from Europe, Africa, Australia, and Japan.1-3 During the past year, Yersinia infections have been discovered in Canada4-5 and in the United States.6 Most diseases caused by Yersinia enterocolitica are relatively benign; however, we have recently observed one case that presented as a severe abscess of the lung. This case is unique in that it is not only the first report of pulmonary disease with this organism, but also demonstrates the potential aggressiveness of this organism in areas outside the gastrointestinal tract. Our purpose is to report this unusual occurrence and to acquaint the physician with this organism and some of its manifestations.

CASE REPORT

A 65-year-old man with a past history of alcoholism was seen with a complaint of left axillary pain. X-ray films of the shoulder were obtained, and the patient was sent home with analgesic therapy. Three days later, the patient again came to the hospital, this time complaining of productive cough and fever. Chest x-ray films revealed a left upper lobe infiltrate and demineralization of the left third rib, with an adjacent pleural mass. On physical examination, the patient appeared cachectic, and decreased breath sounds and dullness to percussion were noted over the left upper lobe. His temperature was 39.2°C (102.6°F), his pulse 96 beats per minute, and his blood pressure was 120/60 mm Hg. Laboratory findings included a hemoglobin level of 10.1 gm/100 ml and a white blood cell count of 11,400/μl. Five blood cultures and one sputum culture were positive for Yersinia enterocolitica. No other organisms were isolated. A chest film taken a few hours after admission now revealed a pathologic

**Figure 1. Chest x-ray film taken three hours after admission reveals pneumatic infiltration involving left upper lobe of lung and associated with extrapleural mass and pathologic fracture in left third rib (arrow). Soft tissue mass can also be seen extending into axillary area.**
Chest x-ray film taken eight days after previous film demonstrates extensive cavitary process (arrows) involving lung field as well as axilla. Fracture of the left third rib in the area of previous demineralization (Fig 1). Because of continual rapid clinical deterioration, medical therapy was changed from intravenous administration of penicillin to gentamicin and cephalothin (Keflin) sodium three days after admission. Thereafter, clinical improvement was noted. Radiographically, cavitation occurred by the third hospital day and in a short time extended into the soft tissue of the axilla (Fig 2). Needle aspiration of the abscess yielded purulent material from which Yersinia enterocolitica was again cultured. After two weeks of hospitalization, the patient became afebrile; but because of a complicating eye infection, antibiotic therapy was continued for two months. By this time, there was complete resolution of the soft tissue abscess and improvement of the pulmonary lesion. Interval study performed approximately five months after the initial admission demonstrated only minimal fibrotic changes (Fig 3).

Discussion

The most frequent infection caused by Yersinia enterocolitica is acute gastroenteritis, ileitis, or enterocolitis that may mimic appendicitis or mesenteric lymphadenitis. A spectrum of other entities have also been reported. This includes erythema nodosum, Reiter's syndrome, migratory polyarthritis, myocarditis, hepatosplenic abscess, cutaneous infection, and generalized septicemia.\(^7\)\(^\text{12}\) In most cases, the clinical courses are short and self-limiting; however, when septicemia occurs, the overall mortality can be as high as 50 percent.\(^\text{13}\) While the gastrointestinal tract is most commonly affected in children, adults may also be similarly affected. Arthritis and erythema nodosum involve mostly the middle-aged group. The elderly, nevertheless, are prone to have a toxic clinical course and frequently develop generalized septicemia. The latter particularly occurs in debilitated subjects, patients receiving therapy with immunosuppressive drugs, and individuals with a history of alcohol abuse. The diagnosis is established on bacteriologic grounds by culture of the organism from the feces or blood and by determination of the antibody titer. The antibody test is very specific, and the highest titer is usually found eight or nine days after onset of clinical symptoms. A positive titer may persist for several months.

Yersinia enterocolitica has been described in the past under various names, such as “Pasteurella pseudotuberculosis” type “b,” or “Pasteurella X,” or “Bacterium enterocoliticum.” The clinical illness caused by Yersinia enterocolitica resembles that caused by Yersinia pseudotuberculosis, which is a closely related organism; however, differentiation is easily established by microbiologic procedures.

Until just a few years ago, Yersinia organisms were not considered human pathogens. In Canada, the organism recently has been isolated from feces of patients with a history of fever and diarrhea. More recently, the bacillus has been found in a number of other sources (eg, water, soil) and various animal species (eg, pigs, hares, dogs, and horses).\(^\text{14}\) It is interesting that our patient is a farmer who raises pigs. Yersinia enterocolitica is sensitive to tetracycline, streptomycin, and chloramphenicol (Chloromycetin) but is resistant to penicillin and ampicillin.

Our case demonstrated the first known pulmonary involvement with development of lung abscess and subsequent extension through the pleura producing an osteomyelitis, a pathologic rib fracture, and soft tissue abscess of the axilla. No pulmonary manifestations have been reported in the literature, except for a child with thalassemia and arthritis who exhibited fine nodular opacities in both lungs with transient interstitial pneumonia.\(^^2\)
While this organism is usually considered opportunistic and causes benign infection usually confined to the intestinal tract, it can lead to a life-threatening situation when it extends outside this structure. Since the organism is becoming more prevalent, it is important to recognize its role in a variety of diseases where the exact cause often remains obscure.

REFERENCES

A patient with anomalous aortic origin of the left anterior descending coronary artery was studied. The clinical picture and the preliminary angiographic findings simulated obstruction of the left anterior descending coronary artery near its origin. Careful catheter exploration of the right coronary sinus led to the correct diagnosis, emphasizing the importance of complete visualization of all branches of the coronary tree, including distal radicles of a supposedly occluded vessel.

Ectopic Origin of the Left Anterior Descending Coronary Artery from the Right Coronary Sinus*

Report of a Case Simulating Anterior Descending Obstruction

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