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CASE REPORT

A case of empyema caused by *Edwardsiella tarda*

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KEYWORDS
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Summary In December 2003, a 57-year-old-man was diagnosed as having a hepatic tumor for which he had a hepatectomy. On pathology, the hepatic tumor biopsy specimen was diagnosed as malignant lymphoma. In February 2005, the patient was referred to our hospital because of fever and chest pain. A right pleural effusion was seen on chest X-ray. Microscopic examination of the stained pleural fluid revealed many neutrophils and Gram-negative rods, and *Edwardsiella tarda* was cultured from the pleural effusion fluid. These findings were consistent with an empyema caused by *E. tarda*. Therefore, we treated the patient with panipenem/betamipron and thoracic drainage. In this paper, we describe this rare case of empyema caused by *E. tarda* infection.

Edwardsiella tarda, a member of the Enterobacteriaceae, is a Gram-negative bacterium associated with fresh water and marine environments.[1] It is known that *E. tarda* colonizes some amphibians, reptiles, and fish, and also causes disease in these animals.[2] Human infections caused by *E. tarda* are rare; the majority of reported *E. tarda* infections have been gastroenteritis, wound infection, or bacteremia.[3] We report the first case of empyema caused by *E. tarda* infection.

Case report

A 57-year-old-man was diagnosed as having a hepatic tumor, and a hepatectomy was performed in

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December 2003. The hepatic tumor biopsy specimen revealed that he had a malignant lymphoma, clinical stage I according to the Ann Arbor classification. After the hepatectomy, the patient developed jaundice, ascites, high total bilirubin and direct bilirubin levels, low cholinesterase and albumin levels, and a prolonged prothrombin time. The patient was treated for hepatic failure secondary to the hepatectomy; a right pleural effusion of unknown origin that was exudative in nature was also noted. At that time, pleural effusion culture and cytology were negative; neither bacteria nor malignant cells were detected. After surgery, the patient was not able to receive chemotherapy because of his hepatic failure, and he had occasional episodes of bacteremia caused by enteric bacteria, including *Klebsiella pneumoniae*. He was discharged with a pleural effusion of unknown origin in November 2004. In February 2005, he was admitted to our hospital because of fever, right chest pain, and exertional dyspnea. Although he had no history of exposure to fresh water or salt water environment, and had not handled any wild animals or reptiles, he often ate slices of raw fish. His body temperature was 37.6 °C, his pulse was 84 beats per minute and regular, his respiratory rate was 16 breaths per minute, and his blood pressure was 110/78 mmHg. The patient appeared slightly anemic but was not jaundiced. Dullness and diminished breath sounds were noted on the right side of the chest. The patient had ascites, and there was peripheral edema of both legs. Heart sounds were normal. There were no abnormal findings on neurological examination. Superficial lymph nodes were not palpable.

The patient's hemoglobin concentration was low (28.7%), and his white blood cell count was elevated (19550/mm^3). There were elevations of C-reactive protein (10.88 mg/dl; normal range, <0.3 mg/dl), total bilirubin (1.4 mg/dl; normal range, 0.3—1.2 mg/dl), direct bilirubin (1.0 mg/dl; normal range, 0.0—0.6 mg/dl), r-GTP (106 IU/l; normal range, 10—47 IU/l), and serum creatinine (1.49 mg/dl; normal range, 0.6—1.1 mg/dl). The albumin level was low (1.9 g/dl). On urinalysis, a specific gravity of 1.015 and a pH of 7.0 were noted; there was no hematuria and no proteinuria.

On chest X-ray, a right pleural effusion was seen (Fig. 1). A right-sided thoracentesis showed that the pleural effusion was purulent. On microscopic examination of the stained pleural fluid, there were many neutrophils and Gram-negative rods. *E. tarda* was cultured from the pleural fluid; it was identified using the semiautomatic system, Microscan walk away 40 (Dade Behring, West Sacramento, CA 95961, USA). Both the left pleural effusion and the ascites were transudates caused by the patient's hepatic failure.

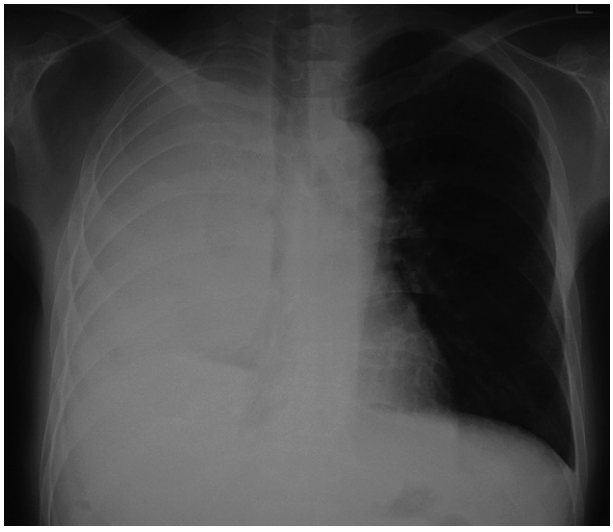

Figure 1 Posteroanterior chest X-ray showing a right pleural effusion.

After thoracic drainage, the chest CT showed both pleural effusion and right pleural thickening (Fig. 2). Therefore, the patient was diagnosed as having empyema caused by *E. tarda*. He was treated with panipenem/betamipron (1 g/day) and thoracic drainage, and was cured.

Discussion

Edwardsiella species are oxidase-negative, catalase-positive, motile, Gram-negative rods that show encapsulated forms when stained with India ink.[1] Three species of the genus *Edwardsiella* are recognized as follows: *Edwardsiella hoshinae*, *Edwardsiella ictaluri*, and *E. tarda*. *E. tarda* is the

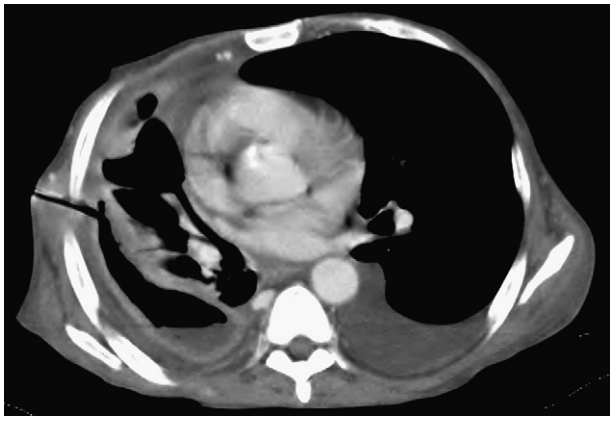

Figure 2 Chest computed tomography (CT) showing pleural effusion and right pleural thickening.