

# Community-Acquired Pneumonia Due to *Pasteurella multocida*

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**Most cases of community-acquired pneumonia result from infection with predictable common pathogens. However, rare patients develop pneumonia from unusual bacterial species such as *Pasteurella multocida*, a Gram-negative oral commensal of most dogs and cats. The majority of *P. multocida* infections involve skin and soft tissue and complicate a bite or scratch. I report the case of an elderly man who owned 16 cats and developed bacteremic pneumonia with *P. multocida*. Key words: *Pasteurella multocida*, cats, bacteremia, pneumonia, respiratory infection. [Respir Care 2004; 49(12):1528–1529. © 2004 Daedalus Enterprises]**

## Introduction

Community-acquired pneumonia is a frequent reason for admission among elderly patients. Clinicians need to maintain a high index of suspicion for pneumonia in acutely ill elderly patients, even those without classic symptoms, since cough may not be a prominent symptom. I report a case of community-acquired pneumonia in an elderly man that was due to an unusual organism, *Pasteurella multocida*, which highlights the importance of obtaining a thorough history as well as culture and susceptibility data.

## Case Summary

A previously healthy 85-year-old man presented to the emergency department with acute weakness and confusion. The patient had been well until the previous day, when his family noted that he was confused and too weak to rise out of bed. The patient noted chills, anorexia, and a nonproductive cough, but denied hemoptysis, vomiting, or other symptoms. He denied prior pneumonia, recent viral infection, use of medications or ethanol, and he had smoked cigarettes until several years before admission. The patient admitted to owning 16 cats and the emergency squad noted cat feces throughout the dwelling. Vital signs were: temperature 38.5°C, heart rate 88 beats/min, respi-

ratory rate 22 breaths/min, and blood pressure 138/55 mm/Hg. The patient appeared toxic and delirious. Chest auscultation revealed diminished breath sounds over the left mid-hemithorax. There was no evidence of cat bites, scratches, or soft-tissue inflammation. His leukocyte count was 14,200/ $\mu$ L, with 15% band forms. His electrolytes, creatinine, and liver function tests were normal. A chest radiograph (Fig. 1) revealed a dense opacity in the left mid-lung zone. A computed tomogram confirmed a dense infiltrate but could not exclude early abscess formation. The patient was admitted to the medical ward and treated with levofloxacin (500 mg intravenously, daily) for community-acquired pneumonia, and he had clinical improvement. The following day, 2 sets of blood cultures yielded Gram-negative bacillary organisms that were identified as *P. multocida*. The organism was susceptible to penicillin, ampicillin, and levofloxacin. The patient was subsequently treated with ampicillin-sulbactam (3.0 g intravenously, every 6 h), with rapid clinical improvement, and he was discharged to a nursing facility for convalescence and 4 weeks of continued intravenous therapy, because an abscess could not be excluded. Repeat imaging approximately 1 month later revealed improvement.

## Discussion

Community-acquired pneumonia is a frequent reason for hospital admission, especially among the elderly. Most cases result from *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Mycoplasma pneumoniae*, *Legionella pneumophila*, *Moraxella catarrhalis*, *Chlamydia pneumoniae*, and viruses such as influenza. *P. multocida* is a small pleomorphic Gram-negative bacillary organism that is com-

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Fig. 1. Chest radiograph revealing a dense left lung infiltrate.

monly isolated from oropharyngeal secretions of dogs and cats. Up to 90% of felines carry *P. multocida* in the oral cavity, explaining why this organism is the most common pathogen of cat bite and scratch infections.<sup>1</sup> Indeed, soft-tissue infections are the most common infection due to *P. multocida* and typically present with rapid onset of pain, erythema, swelling, and fever following injury from a feline.<sup>2</sup> Though a soft-tissue infection may have been the source of bacteremia in this patient, this is unlikely in the absence of obvious scratches, bites, or soft-tissue inflammation. However, it remains possible that some time in the past the patient may have had an infection secondary to a bite or scratch. If that were the case, however, there was no immunity or long-term protection from subsequent *P. multocida* infection.

Respiratory tract infection is an unusual site of involvement of *P. multocida*, but cases of rhinosinusitis, tracheo-bronchitis, epiglottitis, empyema, and pneumonia have been reported.<sup>1,3,4</sup> The majority of *P. multocida* pneumonia cases occur in the elderly, who often have smoking-associated lung disease, which may have been the case with this patient. Sputum was not a feature of this patient's illness, but, when available, Gram-staining reveals small pleomorphic Gram-negative bacilli that may be confused with *Haemophilus influenzae*, *Francisella tularensis*, or *Yersinia pestis*. Bacteremia has been noted in up to 55% of patients with *P. multocida* pneumonia.<sup>1</sup> In addition, mortality rates of up to 31% have been quoted in some reports.<sup>4</sup> The treatment of choice for *P. multocida* infection is penicillin or ampicillin-sulbactam when intravenous therapy is nec-

essary, or oral amoxicillin-clavulanate.<sup>2</sup> Quinolones may be useful in penicillin-allergic patients and display adequate in vitro activity.<sup>2,5</sup> This patient had an excellent initial clinical response to levofloxacin, which strengthens the premise that this agent is useful in bacteremic *P. multocida* infections, especially when pulmonary infiltrates are present. Newer fluoroquinolone such as levofloxacin may also be useful because of their excellent oral bioavailability and broad spectrum against organisms implicated in community-acquired pneumonia. However, semi-synthetic penicillins, first generation cephalosporins, and erythromycin are not reliably active against *P. multocida* and should not be used without laboratory documentation of organism susceptibility.<sup>5</sup>

The mode of acquisition of *P. multocida* into the lower respiratory tract may involve inhalation of contaminated aerosols or direct inoculation of the oral cavity with cat or dog secretions.<sup>1,6</sup> This patient had 16 cats and very poor sanitation practices within the household, suggesting that inadvertent oral ingestion of *P. multocida* resulted in oropharyngeal colonization and eventual aspiration into the lung, leading to pneumonia and systemic illness.

It remains unclear how often *P. multocida* pneumonia occurs, especially if blood or sputum cultures are not obtained from at-risk patients (eg, elderly patients with lung disease who reside with cats or dogs). With patients who have acute febrile illnesses, the clinician should inquire whether the patient has had contact with cats or dogs, and obtain appropriate cultures. Empirical fluoroquinolone may be useful in this situation.

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