

Pneumonia Caused by *Pasteurella multocida*

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Pasteurella multocida is a small gram-negative coccobacillus that is part of the normal oral flora of many animals, most notably cats and dogs. Most physicians are aware that it is a potential pathogen in animal bites; however, most are unaware that it may also cause pulmonary disease. The following is a report of a woman with a persistent respiratory tract infection that failed to respond to outpatient treatment with erythromycin and was subsequently diagnosed as pneumonia caused by *Pasteurella multocida*.

CASE REPORT

A 75-year-old woman with hypertension well controlled by hydrochlorothiazide presented in mid-March complaining of a flu-like illness with myalgias, mild productive cough, and mild fever that started 1 week prior to her visit. She had self-medicated with an over-the-counter cold preparation and felt she was getting better. A diagnosis of viral syndrome was made, and no medication was prescribed. She returned in April with complaints of pain under the left breast exacerbated by coughing but denied fever or dyspnea. The pain was reproduced by palpation over the area. The patient was prescribed ibuprofen, 400 mg three times a day for 7 days. At a follow-up visit 1 week later, all symptoms had resolved.

In June the patient returned complaining of "another cough" and worried about weight loss; her cough was mild with light green-yellow sputum, and she expressed anxiety regarding family problems. Findings on a complete physical examination were unremarkable except for a 10-lb weight loss over 6 months. A tuberculin test (PPD) was negative. A chest x-ray examination and mammogram were ordered, and a Papanicolaou smear was class

II, atrophic. The patient was contacted, and a vaginal estrogen cream was prescribed. At that time she stated she felt better and decided not to have the chest x-ray examination or mammogram.

In August, when she returned for follow-up Papanicolaou smear, a further 2-lb weight loss was noted, and the patient stated she had a summer cold with mild sniffles and no cough. Her Papanicolaou smear was class I. A chest x-ray film was obtained and interpreted as "lingular pneumonia" by a radiologist. The patient was contacted by telephone and erythromycin was prescribed (250 mg four times a day for 10 days). She returned about 10 days later complaining of brawny rash under both breasts that had begun prior to the erythromycin therapy, but she stated her cough had resolved. The rash was diagnosed as caused by *Candida* (a potassium hydroxide preparation was positive for hyphae) and was treated with clotrimazole cream.

A follow-up chest film, obtained 2 weeks after the patient completed her antibiotic regimen, revealed a persistent infiltrate. She was referred to a pulmonologist, who performed a bronchoscopy, which revealed chronic and acute inflammation. Biopsy and cultures of washings and brushings grew pure cultures of *P multocida* sensitive to cefazolin, chloramphenicol, penicillin, and tetracycline. Because of the patient's poor response to previous outpatient treatment, she was admitted for intravenous antibiotics. She received 1 week of intravenous cefazolin and 2 more weeks of oral cephalexin. Her chest x-ray films showed marked clearing, her symptoms resolved, and she has regained weight.

DISCUSSION

Pasteurella multocida is a common commensal organism in many domestic and wild animals (eg, cattle, sheep, swine, cats, dogs, rats) and birds. Carriage rates vary among species: cats 50% to 90%, dogs 12% to 66%, and swine 51%.¹ Human *P multocida* infections usually present in one of three ways: skin and soft tissue infection, chronic respiratory tract infections, or bacteremia. *P*

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multocida has been shown to cause other human infections, however, including appendicitis, septic arthritis, osteomyelitis, sinusitis, mastoiditis, otitis media, peritonillar abscess, cervicitis and vaginitis, pyelonephritis, renal abscess, conjunctivitis, pericarditis, chorioamnionitis, spontaneous bacterial peritonitis, and endocarditis.²

A computerized literature review revealed fewer than 30 well-documented cases of *P multocida* pneumonia. The majority of patients have had underlying pulmonary disease including bronchiectasis, chronic bronchitis, carcinoma of the lung, or unspecified chronic pulmonary disease.³ One case involved *P multocida* pneumonia in an IgA-deficient individual.⁴

The organism is a gram-negative coccobacillus and may resemble *Hemophilus influenzae*, *Neisseria intracellularis*, *Mima polymorpha*, and even *Klebsiella pneumoniae* in Gram-stained sputum smears. On blood agar, colonies closely resemble colonies of enterococci.⁵ *P multocida* is usually susceptible to penicillin or ampicillin, parenteral cephalosporins, chloramphenicol, and tetracycline. This organism is not usually susceptible to oral erythromycin.³ Therapy should be continued until the signs of infection have resolved and there is a radiographic clearing. Penicillin is the drug of choice and should be used in high doses because of the tendency of this organism to cause tissue necrosis, abscess formation, and empyema.

In this case an elderly woman presented with a flu-like illness and continued with an intermittent productive cough that was finally diagnosed as *P multocida* pneumonia. The woman admitted having a cat who frequently nuzzled her head and neck areas, depositing secretions in those areas. It is possible that the woman's oropharynx became colonized with *P multocida* from those secretions. Retrospectively it is impossible to determine whether the woman developed the pneumonia at the on-

set of her symptoms or whether she initially had a viral illness that predisposed her to develop a superinfection with *P multocida*.

It is quite possible that *P multocida* respiratory tract infections are more common in humans than generally thought. There are two reasons that the organism may not be recognized as a significant pathogen. The organism is pleomorphic and resembles other more common pathogens, and thus may not be picked up in mixed cultures. Also as *P multocida* is sensitive to the penicillins, tetracycline, and cephalosporins, "blind" antimicrobial therapy would often be effective, thus preventing bacteriologic diagnosis.

This patient illustrates how the use of erythromycin to treat outpatient respiratory tract infections to cover chlamydia and mycoplasma can leave a *P multocida* infection untreated. It may be prudent in patients with respiratory tract infections, especially those with protracted course, chronic lung disease, or relative immune suppression, to send sputum cultures prior to antimicrobial therapy and to keep *P multocida* in mind, particularly if a history of animal exposure is obtained.

References

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