

CLINICAL VIGNETTE

Pasteurella multocida Pulmonary Infection in a patient with Extensive Rabbit Exposure

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Introduction

In this case report, we describe a case of *Pasteurella multocida* infection related to exposure with sick rabbits in a patient with underlying bronchiectasis.

Case Report

A 59-year-old woman presented to an infectious diseases specialist for evaluation of chronic cough. She states that she had had a productive cough for at least 4 years, mild dyspnea on exertion, though denied fevers, chills and night sweats. Her cough was always present, though it occasionally became more frequent, with darker sputum and increased dyspnea. A CT scan of her chest 6 months before demonstrated mild underlying bronchiectasis, and bronchiolitis and extensive airway tree-in-bud opacities bilaterally. Pulmonary function testing at that same time demonstrated mild obstructive ventilatory defect without reversibility and normal gas diffusion. Expecterated sputum culture just 3 months before had grown *Pasteurella multocida* in addition to 2 species of aspergillus. Cultures for acid fast bacteria were negative. Bronchoscopy 2 weeks prior to visit again grew *Pasteurella multocida*. Culture for acid-fast bacilli were repeatedly negative.

The patient denied any significant past medical history other than well-controlled bipolar disorder and asthma. She had not taken antibiotics in the recent past. The patient has never smoked or used drugs, and drinks alcohol occasionally. She is a homemaker, but spends time working in an animal shelter working with sick rabbits.

She also cares for a number of her own pet rabbits at her home. She does remember that a number of rabbits she had cared for over the last few years had died of *Pasteurella*-related illness. She does not have any other pets and has little contact with cats and dogs.

The patient was treated with amoxicillin-clavullinic acid for a two-week course with significant decrease in her pulmonary symptoms. However, her symptoms returned rapidly after discontinuation of the antibiotics. An additional four-week antibiotic course improved her symptoms for 5 months, though the patient continued to have chronic, non-productive cough. Though the patient has subsequently presented for respiratory infections and one episode of hemoptysis, though subsequent bacterial cultures failed to grow *P. multocida*.

Discussion

Pasteurella species are facultative anaerobic gram negative coccobacilli. *P. multocida* is the primary cause of human disease within the genera of bacteria. *P. multocida* is a common pathogen of rabbits, and other domestic and wild animals and is a common inhabitant of the oral cavity and respiratory tract in these animals. Most, though not all, human infections are related to direct exposure to infected or colonized animals. Human disease can manifest with a range of clinical syndromes including skin and soft tissue, bone and respiratory tract infections and very rarely septicemia, meningitis and intra-abdominal infections. Most skin, soft-tissue and bone infections are due to direct

inoculation from dog and cat bites, scratches or licking of open wounds. Pulmonary acquisition in humans is probably due to inhalation of secretions¹. Though exposure to cats and dogs is most commonly implicated in human clinical infections with *P. multocida*, the organism is a frequent cause of infection among domestic rabbits also².

Identification of *P. multocida* from the human respiratory tract can be evidence of either colonization or active infection. Pneumonia due to *P. multocida* is typically a lobar consolidation indistinguishable clinically from usual community acquired pneumonia. Secondary complications of pulmonary infection such as bacteremia and empyema with *P. multocida* is possible and confers a worse prognosis^{1,3-7}. There is, however, significant evidence that *P. multocida* can cause asymptomatic colonization of the airways, especially in patients with underlying pulmonary abnormalities⁸, either chronic obstructive airway disease or bronchiectasis.

Pasteurella species are often susceptible to many different antibiotics⁹, though penicillins and fluoroquinolones are most often utilized in clinical practice. Occasional strains of *Pasteurella* may be resistant to penicillins due to the production of beta-lactamases.

While cases of pulmonary infection due to *P. multocida* are well described in the literature, especially in patients with underlying chronic lung diseases, there are few reports of human disease after rabbit exposure. Clinicians should be aware that rabbits, in addition to cats and dogs, can be a source of *P. multocida* infection.

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