Life-Threatening Respiratory Pasteurellosis Associated With Palliative Pet Care

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**Pasteurella multocida** is a zoonotic Gram-negative coccobacillus often associated with soft tissue infections due to dog and cat bites. Here we report 3 patients who developed life-threatening *P. multocida* respiratory tract infections after providing palliative care to their dying pets.

The majority of patients with *Pasteurella multocida* infections are bitten or scratched by the offending animal [1]. The mortality of *P. multocida* infections, especially severe and invasive infections like pneumonia, could be more pronounced than that seen with bite infections [2, 3]. We report 3 patients with life-threatening *P. multocida* respiratory tract infections associated with palliative pet care. A PubMed search revealed no report of zoonotic illness associated with palliative pet care. Because more than 50% of pet owners consider pets as family members [4] and because of the likely expansion of palliative pet care services [5], providers of palliative pet care will likely have more frequent close contact with dying animals and may be at risk for invasive *P. multocida* infections. Pet owners, veterinarians, animal caretakers, and physicians should therefore be aware of the potential risk of life-threatening respiratory *P. multocida* infections in the setting of palliative pet care. In patients with possible zoonotic infection, the physician’s history about patient-animal contact should routinely include questions regarding end-of-life animal care.

**METHODS**

**Patient 1**

A healthy 55-year-old woman presented to the emergency department (ED) with an 8-hour history of sore throat, fever, dysphagia, and odynophagia. Examination revealed stridor, fever to 39.6°C, bilateral tonsillar erythema/edema, palpable and tender but non-fluctuant anterior cervical lymphadenopathy, a patient sitting upright with saliva dripping from her mouth. A lateral x-ray of the neck showed epiglottic thickening, and a computed tomography (CT) scan of the neck showed epiglottic edema and subglottic airway narrowing. Acute epiglottitis was diagnosed, and treatment was begun with intravenous dexamethasone and intravenous ampicillin/sulbactam at 3 g every 6 hours for 24 hours. Rapid improvement occurred over the first 5 hours. On the second hospital day, both blood cultures from admission revealed Gram-negative bacilli. Treatment was changed to piperacillin/tazobactam at 4.5 g intravenously every 6 hours for 48 hours. When the Gram-negative bacillus was identified as *P. multocida* and sensitivity data were available (sensitive to ampicillin, ampicillin/sulbactam, ceftazolin, cefepime, cefoxitin, ceftriaxone, ciprofloxacin, ertapenem, piperacillin/tazobactam, and trimethoprim/sulfamethoxazole; intermediate sensitive to gentamicin), the patient was changed to oral ciprofloxacin at 500 mg twice daily; this was continued for 14 days. A further detailed history revealed that the patient’s pet dog died several days previously, that the patient had provided palliative care to the terminally ill dog by dropper-feeding honey to the dog, and that the patient had co-consumed honey with the dog by licking the same dropper used to comfort-feed the dog. The patient had no other known animals contact and did not live on a farm. The patient remains well 10 months later.

**Patient 2**

A healthy 63-year-old woman presented to the ED with a 12-hour history of sore throat, difficulty swallowing solid food, and marginal ability to swallow liquids. Two hours before coming to the ED she noted onset of hoarseness, swollen anterior cervical lymph nodes, chills, and a sensation of fever. Examination in the ED revealed an afebrile woman speaking in a hoarse, raspy voice. Oral exam showed uvular erythema, edema, and petechiae and tonsillar erythema and edema. Neck exam revealed tender anterior cervical lymphadenopathy without fluctuance. A CT scan of the neck showed lymphadenopathy, a swollen edematous uvula, and no evidence of epiglottitis, including the absence of subglottic or supraglottic airway narrowing. The
patient was diagnosed with acute uvulitis and treated with intravenous ceftriaxone at 1 g daily for 2 doses. The patient improved rapidly over the first 6 hours. On the second hospital day, 1 of 2 blood cultures drawn on the day of admission revealed Gram-negative bacilli. Treatment was changed to intravenous piperacillin/tazobactam at 3.375 g every 8 hours for 48 hours. After the Gram-negative bacillus was identified as Pasteurella multocida and sensitivity data were available (sensitive to ampicillin, ampicillin/sulbactam, cefazolin, cefepime, ceftriaxone, ciprofloxacin, etampenem, gentamicin, imipenem, levofloxacin, piperacillin/tazobactam, trimethoprim/sulfamethoxazole, tetracycline, and tobramycin), the patient was changed to levofloxacin at 500 mg orally once daily for 10 additional days. Further history revealed that the patient’s pet cat had died 6 weeks previously and that the patient had continuously held, caressed, hugged, and kissed her cat during its last 7 days of life. The patient had no other animal contact and did not live on a farm. The patient remains well 15 months later.

Patient 3
A 66-year-old woman presented to her physician’s office with a 4-day history of fever, chills, productive cough, and worsening dyspnea on exertion. She had a remote history of adenocarcinoma of the lung 6 years previously for which she had received both radiation and chemotherapy with no interim evidence of recurrence. Examination revealed an afibrile but tachypneic woman with right upper lung inspiratory crackles and evident dyspnea at rest. A CT scan of the thorax revealed right upper lobe (RUL) consolidation and pleural thickening. Semi-emergent flexible bronchoscopy was performed and revealed grossly purulent secretions from the RUL bronchus but no visual or cytologic evidence of recurrent adenocarcinoma. Cultures of RUL washings and brushings showed growth of moderate numbers of P. multocida sensitive to ampicillin, ampicillin/sulbactam, cefazolin, cefepime, cefoxitin, ceftriaxone, ciprofloxacin, etampenem, gentamicin, imipenem, piperacillin/tazobactam, trimethoprim/sulfamethoxazole, and tobramycin. P. multocida pneumonia was diagnosed and was successfully treated with oral levofloxacin at 500 mg once daily for 14 days. Further history revealed that 2 weeks prior to her illness, the patient had provided palliative care to her dying cat by holding, hugging, and kissing the head of the cat and allowing the cat to lick her hands and arms. The patient had no other pets and no other animal contact and did not live on a farm. She remains well 12 months later.

DISCUSSION

P. multocida is a non-motile, Gram-negative coccobacillus commonly acquired from dog and cat bites [1–6]. The organism is carried in the oral cavity of 70%–90% of cats and 50%–66% of dogs, and it is implicated in over 75% of infected cat bites. P. multocida may also be carried by numerous farm and other non-companion animals and may be the source of human infection [7]. None of our patients had contact with non-companion animals. A Japanese study found no Pasteurella species in the oral cavity of 19 pet owners who had not kissed their pets, but they isolated Pasteurella from 3 of 5 owners who had kissed their pets [8]. Patient 1 is the tenth reported case of P. multocida epiglottitis [9, 10]. Patient 2 is the first reported case of P. multocida uvulitis. In a recent review of 156 patients with P. multocida bacteremia, the 3 most common presentations were septic shock (57 patients; 36.5%), skin and soft tissue infection (42 patients; 26.9%), and respiratory tract infections (34 patients; 21.8%) [11]. Only 7 (4.5%) of the bacteremic individuals reviewed in this study presented with epiglottitis [11]. No cultures could be obtained from the animals in any of the cases due to cremation. Our 3 patients’ histories of having recently provided palliative pet care to their dying animals were obtained only after P. multocida was identified in cultures and only after subsequent detail-oriented, animal contact histories were obtained. Simply asking whether or not the patient had a pet would not have uncovered the defined association of these respiratory illnesses with palliative pet care. The patient with P. multocida uvulitis even denied having a pet (it had died 6 weeks previously) and only admitted to having provided palliative pet care when asked specifically if she had any animal contacts in the past 3 months. With the emergence of the International Association of Animal Hospice and Palliative Care as an organization supporting palliative pet care as an alternative to pet euthanasia and with the recent report that >50% of dog owners consider pets as family members and more often than not sleep in bed with them [12], it appears that we may be on the cusp of a potential increase in the number of recognized non-bite–associated P. multocida infections, including those associated with palliative pet care. Only diligence and very detail-oriented, pet-related histories will likely uncover further patients with invasive P. multocida infection related to the pet owner’s provision of palliative pet care to dying animals.

Note

Potential conflicts of interest. All authors: No reported conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

References


