Pasteurella Multocida Infection in Cats: ABCD guidelines on prevention and management

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What is This?
**Bacterial properties**

*Pasteurella multocida*, a Gram-negative, facultative anaerobic, non-spore-forming pleomorphic coccobacillus, is a commensal bacterium and part of the natural flora in the nasopharynx and upper respiratory tract of the cat.\(^1,2\) In one study, a 90% carrier state in gingival margins was shown.\(^1\) Several subtypes have been associated with human infections: *P. multocida* subspecies *multocida*, *P. canis*, *P. multocida* subspecies *septica*, *P. stomatis* and *P. dagmatis*.\(^3\)

**Epidemiology and pathogenesis**

Cat bites frequently become infected (20–80%), and *P. multocida* is the most commonly cultured bacterium from infected bite wounds.\(^1\) Apart from bites, scratches and licks, close contact has also been sufficient for infection. Bacteria usually enter through skin wounds, but inhalation of secretion droplets from the upper respiratory tract is another possible source.\(^4\)

**Clinical presentation**

*P. multocida* is one of the most frequent pathogens in infected skin wounds and subcutaneous abscesses.\(^5\) It is also one of the common bacteria producing pyothorax in cats.\(^6–8\) *Pasteurella* species may also cause secondary lower respiratory tract infection and have been associated with spinal empyema and meningoencephalomyelitis.\(^9,10\)
Diagnosis

Diagnosis is made on the basis of bacterial culture from infected tissues or secretions. Pasteurella grows readily on chocolate and sheep-blood agar media, but fails to grow on MacConkey agar, the usual medium for Gram-negative bacteria. Strains are usually catalase-, oxidase-, indole- and sucrose-positive.

Treatment

Penicillins and potentiated beta-lactams (amoxicillin-clavulanic acid) are first-line antibiotics for the treatment of Pasteurella species infections [EBM grade II].\(^1\,^5\,^12\)

Zoonotic potential

P multocida infection leads to an important zoonotic disease.\(^4\) Local infections are common, including in immunocompetent persons, and the high prevalence of the bacterium is an indication for the use of prophylactic antibiotic therapy (amoxicillin-clavulanate) after a cat bite [EBM grade II].\(^1\) Septicaemia and severe, even fatal, disease may occur, especially in immunocompromised patients, patients with cirrhosis and those undergoing dialysis. In these circumstances the risk of keeping a cat must be discussed with the owner, especially because transmission of the bacterium may occur just through close contact — not necessarily after a bite or scratch.

Disease in humans

P multocida infection typically produces cellulitis and/or abscesses at the site of the bite or scratch, usually 3–6 h after inoculation.\(^11,^12\) Occasionally, the local infection can progress to necrotising fasciitis, septic arthritis and osteomyelitis.\(^13\) Respiratory infection, pneumonia and bronchopneumonia also are common, mostly in patients with pre-existing lung disease.\(^13\) Less frequently, a disseminating infection may produce septicaemia, which may lead to septic shock, meningitis, endocarditis, peritonitis, arthritis and other serious consequences.\(^12\)

Pasteurella peritonitis transmission through a dialysis catheter after contact with a cat has been reported.\(^14,^15\)

Quinolones, cephalosporins and modern macrolides are also indicated.\(^3\) In severe cases, therapeutic decision making must be based on antibiotic susceptibility tests.

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KEY POINTS

- Pasteurella species are commensal bacteria present in the oral cavity of most cats.
- Cat bites, scratches or even simple close contact may transmit Pasteurella species to humans.
- Local infections are common in persons after a cat bite.
- Severe infections, septicaemia and peritonitis may occur in immunocompromised people, and less frequently in immunocompetent individuals in contact with cats.
- Pasteurella is common in subcutaneous abscesses and pyothorax in cats.
- Diagnostic confirmation of Pasteurella species infection is not difficult, as it grows readily in routinely used bacterial culture media.
- Penicillins and potentiated beta-lactams are first-line antibiotics in both humans and cats.
- The zoonotic potential is important, especially in immunocompromised people, and cat ownership in these situations must be discussed.
References


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