Pasteurella multocida

Pasteurella multocida is a zoonotic organism that causes infection in humans usually after an animal bite.



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Bacteria Characteristics

Gram-Negative
Graham-cracker Negative-devil
Pasteurella multocida is a gram-negative organism.

Coccobacilli
Cockeyed-rod
On microscopy, Pasteurella appear as coccobacilli, meaning they are an intermediate shape between a sphere and a rod, often resembling a very short rod.

Charcoal Yeast with Iron and Cysteine
Charcoal in Sink with Iron and Sistine
Pasteurella grow best on charcoal yeast agar that is infused with iron and cysteine, which act as essential nutrients. This is important when trying to detect the organism from a patient's blood or pus.

Zoonotic - Cats and Dogs
Cats and Dogs
Pasteurella is zoonotic, meaning it can be transmitted from animals to humans. Cats and dogs are frequently implicated, as they harbor this organism in their saliva and oral secretions. Cat and dog bites, or rarely licks, result in transmission of the organism from the animal's mouth into the human, potentially leading to infection.

Signs & Symptoms

Cellulitis
Cell-phone-biting-skin
Pasteurella can quickly spread through soft tissues after an animal bite, leading to cellulitis. Abscesses and deeper tissue infections can also develop. Patients will present with erythema, swelling, and purulent drainage from the wound.

Osteomyelitis
Skeleton-in-flames
Pasteurella can invade from the skin to other parts of the body, typically the bones and joints located near the wound site. Osteomyelitis can result if infection of the bone occurs. Patients will present with fever and worsening pain over a bony site.

Septic Arthritis
Sepsis-snake Around King-Arthur
Pasteurella can invade joints as well, resulting in septic arthritis. This will manifest as a febrile patient with a swollen, erythematous joint. Cat bites have a higher incidence of bone and joint infections than dog bites, likely due to their thin sharp teeth.

Treatment

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Amoxicillin-clavulanate

Armor-ox-pencil with Cleaver

For uncomplicated soft tissue infections secondary to animal bites, amoxicillin-clavulanate can be given to treat both Pasteurella as well as the other pathogens contained in animal saliva. This is important because animal bites are polymicrobial and contain anaerobic organisms as well. Pasteurella is also sensitive to other antibiotics such as fluoroquinolones and cephalosporins.

Intravenous Antibiotics for Invasive Disease

IV-bag

For more severe or invasive Pasteurella infections including septic arthritis or osteomyelitis, intravenous antibiotics are required. Options include ampicillin-sulbactam, piperacillin-tazobactam, carbapenems, or late-generation cephalosporins.

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