Case Report

A Case of Polyarticular *Pasteurella multocida* Septic Arthritis

Sarah Nitoslawski,1 Todd M. McConnell,2 Makeda Semret,3 and Michael A. Stein4

1McGill University, Montreal, QC, Canada H3A 2T3
2Division of General Internal Medicine, St. Mary’s and Royal Victoria Hospital, McGill University, Montreal, QC, Canada H3T 1M5
3Division of Infectious Diseases, St. Mary’s Hospital, McGill University, Montreal, QC, Canada H3T 1M5
4Division of Rheumatology, St. Mary’s and Royal Victoria Hospital, McGill University, Montreal, QC, Canada H3T 1M5

Correspondence should be addressed to Todd M. McConnell; todd.mcconnell@ssss.gouv.qc.ca

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A 76-year-old man with a history of osteoarthritis presents with right leg erythema and inability to weight-bear and pain in his right shoulder. Synovial fluid cell count of the knee and shoulder showed abundant neutrophils, and cultures of the knee showed growth of *Pasteurella multocida*. The patient owned four cats with which he had frequent contact, but history and physical examination elicited no evidence of scratches or bites. This case highlights the invasive potential of *Pasteurella multocida* in an immunocompetent individual and its capacity to cause septic arthritis in the setting of frequent animal contact.

1. Introduction

*Pasteurella multocida*, a small Gram-negative coccobacillus, is part of the commensal oral-pharyngeal flora in many domestic animals, notably dogs (isolated in 50–60% of cultures) and cats (isolated in 70–90% of cultures) [1, 2]. Human infections with *P. multocida* most commonly occur following animal bites or scratches but may occur in the absence of trauma, likely secondary to contact with the animal’s secretions [3, 4]. Local wound infections from an animal bite are the most common human infections caused by *P. multocida* [4–6]. Rarely, *P. multocida* may also be more responsible for more serious human infections, such as septic arthritis, particularly in joints previously damaged by rheumatoid arthritis or osteoarthritis [7, 8].

2. Case Presentation

A 76-year-old male presented to the emergency room with a ten-day history of unilateral erythema and edema of the right leg and a two-day history of right knee pain and inability to weight-bear. He had experienced fever and rigors the day before, along with some “delirious” behavior, according to a family member. His past medical history was significant for hypertension, dyslipidemia, and bilateral osteoarthritis of the knees. There was a remote history of reactive arthritis in the 1970s with an unknown infectious cause.

He was afebrile on presentation. His white blood cell count was elevated at 16.2; CRP was markedly elevated at >380 mg/L; his ESR was normal at 19 mm/h. Blood cultures and synovial fluid from the knee were collected, and he was started on cefazolin 2 g every 8 hours. Upon his admission to the medical ward, the patient was delirious and also complaining of significant right shoulder and right ankle pain. Both joints were tender to touch and warm with restricted range of motion. Synovial fluid was drained from both the shoulder and the ankle on the second day of admission. An immunoglobulin panel was drawn to rule out possible immune deficiency, including multiple myeloma. The patient continued to be very confused; therefore, CT brain and lumbar puncture were performed. Total body bone and gallium, as well as imaging of the ankle and knee, were performed several days later.

3. Diagnosis

Synovial fluid from the knee and the shoulder showed abundant neutrophils (133 995 × 10⁶ per liter for the knee and
Septic arthritis due to Pasteurella multocida is rare and most commonly occurs by direct percutaneous inoculation following penetrating animal bites [5, 9]. The case described is unusual, because there was no evidence of trauma on history, although the patient did admit to frequent exposure to at least four cats. Upon further probing, the patient did admit to often allowing the cats to lick his skin. We postulate that P. multocida infection and subsequent septic arthritis occurred due to frequent contact with the cats’ saliva. Infection in humans may occur with no apparent animal contact in approximately 5–10% of cases [3, 10]. Contiguous spread to a joint from a local bite or scratch is the most common route of infection, and hematogenous dissemination is considered rare [4, 11–13]. Indeed, Weber et al. found 47 reported cases of P. multocida bacteremia, with few reports since then, other than in three immunocompromised patients [3, 14]. In this case the infection involved three distant sites (ankle, knee, and shoulder), which strongly suggests that the spread was through the hematogenous route, even though the patient was not immunosuppressed.

P. multocida septic arthritis seems to have a predilection for previously damaged joints, with cases reported in patients with rheumatoid arthritis or prosthetic joints [3, 15, 16]. There have been 22 cases reported of prosthetic joint infections with P. multocida [14]. In our case, the patient had a long-standing history of bilateral severe knee osteoarthritis and a remote history of reactive arthritis of his knee, but he was not known for degenerative joint disease in the shoulders or ankles. Polynarticular involvement in P. multocida septic arthritis is quite unusual; a single joint is affected 88% of the time [3, 17]. Most previously reported cases of polynartricular septic arthritis due to P. multocida occurred in the context of underlying systemic illness, such as rheumatoid arthritis on steroids, severe liver disease, and end-stage renal disease [7, 8, 12, 13]. However, our patient had no such predisposition for polynartricular P. multocida septic arthritis, as he had no prior systemic chronic illness nor was he immunocompromised.

This case report highlights the invasive potential of P. multocida even in patients without overt immunosuppression and particularly its capacity to cause polyarticular septic arthritis in the setting of frequent animal contact. It suggests a potential association between osteoarthritis and P. multocida joint infection, which should be further explored.

Competing Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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