

Acute Infection of a Total Hip Arthroplasty by *Pasteurella multocida* Successfully Treated With Antibiotics and Joint Washout

Layth Alsaffar^{a, c}, Soma Gaur^b

Abstract

Pasteurella infections in humans are usually zoonotic in origin, presentations including cellulitis, septic arthritis and even respiratory illness in the elderly and immunocompromised, so called “cat cuddler’s cough”. Septic arthritis in patients with prosthetic joints associated with *Pasteurella* frequently leads to loss of the joint. We present a case of prosthetic hip infection in a 74-year-old woman secondary to cellulitis caused by a cat bite. The patient in our case had a joint washout followed by an initial course of 2 weeks intravenous antibiotics and subsequently 6 weeks of oral antibiotics without the removal of her hip prosthesis.

Keywords: Pasteurella; Joint infection; Hip arthroplasty

Introduction

Pasteurella multocida (*P. multocida*) is a gram negative coccobacillus which can be isolated from the mouths of domestic and wild animals. Studies have shown that 50-66% of healthy dogs carry the organism in their nasal secretions [1]. Animal bites or scratches have been shown to cause *P. multocida* associated cellulitis, pneumonia, bacteremia and even acute septic arthritis in humans [2].

Prosthetic joint infection following an animal bite caused by *P. multocida* is rare with very few infections in replacement knee and hip joints being reported in the literature

in the 10 years up to 2010 [3]. The majority of cases reported resulted in replacement or removal of the prosthetic joint and all required prolonged antibiotic treatment. One case has been reported where *P. multocida* was isolated from the hip aspirate of a 48-year-old woman with long-term bilateral hip replacements after being bitten by a cat [4]. The patient ultimately underwent a one-stage revision left hip and made a full recovery after a further 6 weeks antibiotic treatment. Prosthetic hip infection caused by *P. multocida* was also reported in a 57-year-old female with rheumatoid arthritis on methotrexate [5]. She presented with pyrexia and leg cellulitis and tender swollen lymph nodes after being scratched by a cat 24 h earlier. Initial intravenous antibiotic treatment failed to clear the infection and she had to undergo a two-stage revision of her hip. A further two cases of *P. multocida* prosthetic hip joint with infections following cat scratches, have been reported both of which required joint replacement [6].

We report a case of a prosthetic joint infection following a cat bite treated with incision, drainage and washout, followed by antibiotics.

Case Report

A 74-year-old woman presented to the medical admissions unit of the Royal Gwent Hospital with pain on mobilization so severe that she required intravenous morphine. Her past medical history included osteoporosis and osteoarthritis which required bilateral total hip primary replacements in 1988 and a revision of her left hip in 1999. She was not on any steroid treatment or immunosuppressive therapy. On examination she was afebrile, with a normal respiratory and cardiovascular examination. She did, however, have a marked erythema on her left foot extending up to just below her knee and a puncture wound on the lateral side of the leg. The range of movement in her left leg was severely restricted by pain. She reported to have been bitten by her cat 4 days previously, apparently jealous, as she had returned home after being taken out for a Mother’s Day lunch by her family. Chest and limb X-rays were all normal but her CRP was 136 mg/L, and she had a raised neutrophil count of 8.7

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^aDepartment of Medical Microbiology, University Hospital of Wales, Heath Park, Cardiff CF14 4XW, UK

^bDepartment of Medical Microbiology, Royal Gwent Hospital, Cardiff Road, Newport NP20 2UB, UK

^cCorresponding Author: Layth Alsaffar, Department of Medical Microbiology, University Hospital of Wales, Heath Park, Cardiff CF14 4XW, UK. Email: layth@doctors.org.uk

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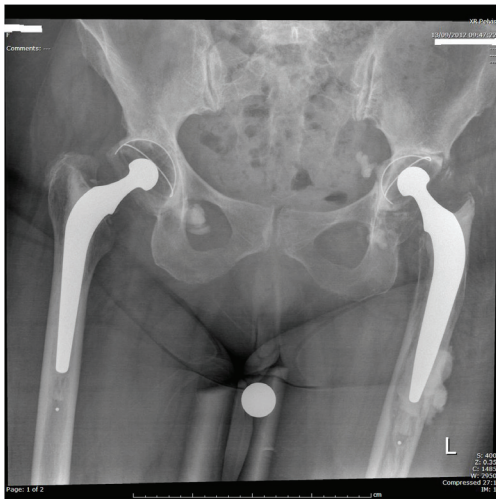


Figure 1. Pelvic X-ray 6 months after initial presentation.

$\times 10^9/\text{mL}$. A diagnosis of septic arthritis was made, and she was started on intravenous benzyl penicillin 1.2 g and flucloxacillin 2 g both four times daily. She underwent a left hip washout under general anesthesia and 10 mL of frank pus was removed. Her antibiotics were changed to IV co-amoxiclav 1.2 g and metronidazole 500 mg both three times daily the day after her washout. *P. multocida* sensitive to amoxicillin and ciprofloxacin was isolated from the hip pus, and the patient was switched to ciprofloxacin 500 mg twice daily plus intravenous amoxicillin 2 g four times daily on micro-biology advice. She received 2 weeks of intravenous antibiotics followed by a further 6 weeks of oral amoxicillin and ciprofloxacin. Eleven days after her hip washout the patient was mobilizing well, and her CRP had fallen to 62 mg/L. A follow-up X-ray 6 months after the initial presentation is shown in Figure 1 which indicates no evidence of joint loosening or residual infection. The patient reported at that time that the cat had found a new home.

Discussion

Prosthetic joint infection following a cat scratch or bite with *P. multocida*, although rare, usually leads to the loss of the prosthetic joint. Most of the cases reported in the literature have involved prosthetic knee replacements, but a few cases involving hip joint infections have been reported as well.

Joint infection was the result of distal spread of the organism and seeding into the prosthetic joint. It is essential therefore to highlight the importance of prompt medical review for anyone with a prosthetic joint who is subject to an animal bite or scratch. It would be interesting to compare the incidence of animal bite associated cellulitis and secondary joint infections in patients with and without prosthetic joint as it is likely that the relative risk of developing a joint infection is higher in people with prosthetic joints. The *P. multocida* isolated in our case was sensitive to amoxicillin and ciprofloxacin. Given the high risk of loss of the prosthetic joint, we chose to treat the infection with 2 weeks intravenous amoxicillin plus oral ciprofloxacin followed by a further 6 weeks of oral amoxicillin and ciprofloxacin (although there are established guidelines for treating prosthetic joint infections, these do not specifically deal with zoonotic infections). The joint was washed out but no revision or major debridement was needed as there was no evidence of joint loosening. This may be related to the early presentation, diagnosis and treatment received by her. She remains well with a CRP of less than 5 mg/L, pain free and mobile, 2 months following the infection.

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