

Successful treatment of Lyme arthritis after knee surgery

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Doctors described a 67-year-old avid outdoorsman from central Pennsylvania with a 3-month history of progressive left knee pain and swelling. [1] There was no history of trauma, tick bite, or rash nor evidence of joint effusion, infection, or Baker's cyst. There was no record of whether a Lyme disease (LD) test was ordered.

Ten months earlier, the patient had undergone surgery for unicompartmental joint arthroplasty (partial knee replacement) of his left knee due to advanced single compartment degenerative arthritis. He later presented with a moderate joint effusion but did not have a erythema migrans rash, warmth, instability, or significant pain with range of motion. [1]

Aspiration of his knee revealed turbid purulent pleocytosis with 91.8% neutrophils, elevated C-reactive protein, and a positive *B. burgdorferi* polymerase chain reaction (PCR). Serologic tests were positive for an elevated erythrocyte sedimentation rate (ESR), C-reactive 0.7, positive *B. burgdorferi* antibody enzyme immunoassay (EIA) screen, and 10 of 10 immunoglobulin G (IgG) Western blot bands were reactive.

Clinicians diagnosed the patient with a particular type of periprosthetic joint infection (PJI), called Lyme arthritis based on detection of *B. burgdorferi sensu stricto* DNA by PCR. The diagnosis was based on criteria established by the Musculoskeletal Infection Society (MSIS) and the Infectious Disease Society of American (IDSA).

"Although there was no communicating sinus tract or direct result from traditional microbiological culture, our patient met these criterion for PJI based upon elevated synovial fluid leukocyte count (>3000 cell/ μ L), elevated synovial neutrophil count (>65%), purulence, and evidence of a microorganism with identification to the level of genus and species," [according to Wright and colleagues](#) from the Division of Infectious Disease, Department of Medicine, Memorial Medical Center in York, Pennsylvania. [1]

The authors summarized their concern over the seriousness of a PJI. "Periprosthetic joint infection is a devastating complication following joint arthroplasty that causes significant morbidity with an estimated cumulative incidence of 1% - 2% for both hips and knees." [1]

The authors concluded that the IDSA treatment recommendations were not applicable for this patient. They cited two guidelines which would have limited the types of treatment to oral antibiotics and duration to no more than four weeks. These included:

1. "Late Lyme arthritis can usually be treated successfully with antimicrobial agents administered orally (e.g., doxycycline, amoxicillin, or cefuroxime) for 28 days in adult patients without

evidence of neurologic disease."

2. "Previous studies have also been published demonstrating the efficacy of once daily ceftriaxone (2 gram dose) for 14 or 28 days in the treatment of late Lyme disease."

Doctors elected to treat the 67-year-old man with antibiotics rather than surgical incision and drainage or excision arthroplasty. Twice daily, 100 mg of oral doxycycline was initiated empirically for a week until testing confirmed the diagnosis. The treatment was converted to a six-week course of daily intravenous 2 grams of ceftriaxone. [1]

The antibiotic treatment was successful. "Clinically, the patient had cessation of his knee pain, resolution of joint effusion, normalization of synovial infection and inflammatory parameters, and negative end-of-therapy detection of *B. burgdorferi* DNA by PCR," according to Wright. [1]

"It is unclear whether these results could also be achieved with any of IDSA-recommended oral antimicrobial agents," reports Wright and colleagues. [1]

However, the authors cautioned that their strategy of prolonged intravenous antibiotics might not be effective in other types of joint arthroplasties. "Although this patient's clinical outcome was achieved without the need for surgical incision and drainage or staged excision arthroplasty procedure, it is unclear whether this same strategy would produce similar results in patients with other types of joint arthroplasties."

Are there any other cases of arthroplasties that might be prevented by antibiotic therapy? More than 82,660 patients underwent total knee arthroplasty (TKA) across the Medicare and United Health Care populations from 2009 to 2011 at a cost exceeding \$10 billion per year. [2]

The authors stressed the need for early, prompt diagnosis and adequate antibiotic treatment for unexpected findings in clinical practice. "This case highlights how early prompt diagnosis and adequate antimicrobial therapy may obviate the need for additional aggressive orthopedic surgical intervention," stressed Wright. "This case also highlights the value of an aggressive need to further investigate and interpret unexpected findings in clinical practice." [1]

References:

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