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Case Report

Streptococcus gallolyticus infection after knee arthroplasty: A case report

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ABSTRACT

Infection after arthroplasty is disastrous both for the patient and surgeon. Infection by certain micro-organisms have additional important systemic implications. *Streptococcus gallolyticus* is one such organism which has been implicated in colon carcinoma. We report a case of *S. gallolyticus* infection of a total knee prosthesis implant in a 72-year-old female who was managed successfully by two-stage revision. A thorough work-up did not show any evidence of gastro-intestinal malignancy, but nonspecific colitis was present on biopsy.

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1. Introduction

Infection is a dreaded complication after any orthopedic procedure and especially so after hip and knee arthroplasty. Various studies have reported incidence of infection after total knee arthroplasty (TKA) in the range from 0.5 to 5%.^{1,2} The most common organisms causing post-operative infection in total knee replacement (TKR) are *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Streptococcus* species.³ Post-TKR infection with *Streptococcus gallolyticus* is relatively rare, however several individual case reports and few case series have been published. *S. gallolyticus* has been more often isolated from the gut and has often been shown to be associated with colon carcinoma.^{1,2,4} An association has also been claimed between this organism and

infective endocarditis.^{5–7} Some studies have reported biliary tract infection, brain abscess, meningitis, peritonitis to be caused by this pathogen.^{8–10} Several orthopedic problems including septic arthritis, osteomyelitis have also been reported by many workers.¹¹

We report a case of infection with *S. gallolyticus* in an elderly immunocompetent female patient who had undergone total knee replacement. She also had history of gastrointestinal infection and was therefore subjected to thorough diagnostic work-up to rule out any associated malignancies, especially colon carcinoma.

2. Case report

A 72-year-old female underwent TKA of left knee in March 2015 for advanced osteoarthritis. The procedure was done

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Fig. 1 – Anteroposterior and lateral radiographs showing osteolysis and loosening of the prostheses.

under strict aseptic conditions in an operation theater equipped with vertical laminar airflow system and air changes of more than 16 air changes per hour (ACH). Knee was exposed by midvastus approach and using standard instrumentation non restrictive geometry (NRG) knee system of Stryker™ was implanted. Post-operative recovery was uneventful with no unexpected event in the early post-operative period. Eleven months after the surgery, patient presented with pain and swelling in the operated knee. Pain was insidious in onset, gradually progressive, non-radiating, and aggravated by weight bearing, especially on climbing stairs and was associated with knee swelling. Pain was also present at rest with visual analogue scale (VAS) scores in range of 3–4. Patient also gave history of some abdominal discomfort along with gastrointestinal infection 2 months preceding the onset of knee symptoms. She had diarrhea with episodes of nausea and vomiting which persisted for 3 weeks. On examination she was febrile (temperature recorded 37.6 °C), her left knee was erythematous, warm and tender. The range of movement in the affected knee was reduced (10°–80°) as compared to previous record, and it was painful throughout the range. Synovial fluid was aspirated and sent for analysis and was negative for any bacterial growth. Radiographs of the knee



Fig. 2 – After the first stage revision surgery. Left knee with non-articulating antibiotic cement spacer.

showed osteolysis in all the zones and loosening of both tibial and femoral components of the prosthesis (Fig. 1). Blood investigations revealed increased white cell count ($12.8 \times 10^3/\text{mm}^3$) and raised erythrocyte sedimentation rate (92 mm/1st hour). Based on the clinical presentation, laboratory reports and the radiographs, a diagnosis of infected total knee prosthesis with loosening of components was made. Bone scan showed increased uptake in left knee in all the three stages, suggestive of infection.

3. Management

A two-stage revision procedure was planned. The first stage was done in February 2016, prosthesis was removed and after thorough debridement of the joint an antibiotic (Vancomycin 2 g) impregnated non-articulating spacer was packed loosely in the resulting defect (Fig. 2). Debrided tissue was sent to the laboratory for aerobic, anaerobic, fungal cultures as well as for histopathological examination. Aerobic culture and sensitivity report showed non-enterococcus *Streptococcus* further identified as *S. gallolyticus* (Fig. 3a and b) sensitive to Penicillin G, Amoxicillin + Clavulanate, Ciprofloxacin, Teicoplanin and Vancomycin, Ceftriaxone, Gentamicin, intravenous antibiotic

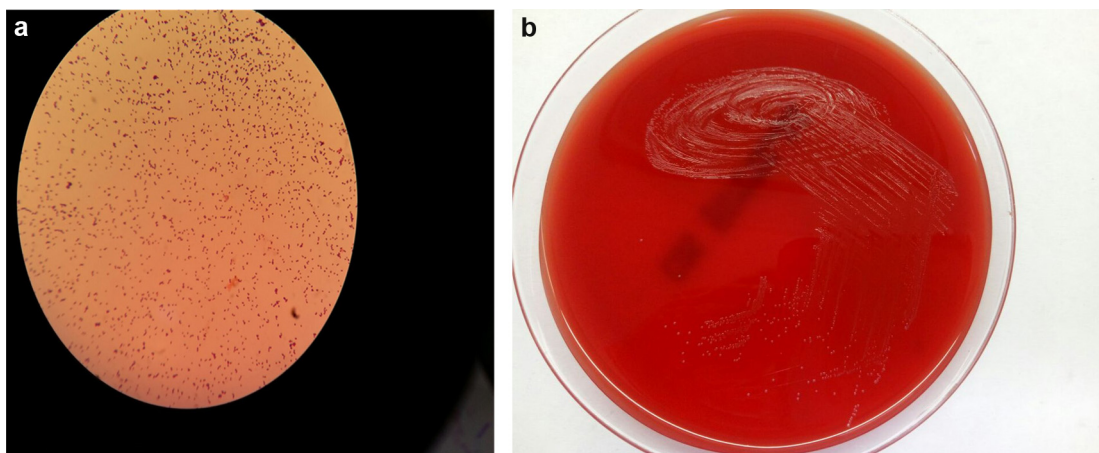


Fig. 3 – (a) Gram staining pattern of *S. gallolyticus*. (b) Colony morphology of *S. gallolyticus* on blood agar plate.

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