Bilateral septic arthritis of the knee secondary to group G streptococcal endocarditis

Shah Jehan, Rupali Rajpurohit and Ellile Pushpanathan

Departments of Trauma and Orthopaedics, Colchester General Hospital, Colchester, UK

Corresponding address: Shah Jehan, Flat 4, Cromwell House, Charter Way, Colchester, CO4 5JL, UK.
E-mail: shahjehan200@hotmail.com

Date accepted for publication 18 August 2008

Abstract

We report on an 81-year-old male with bilateral septic arthritis of the knee joints, who was treated with multiple joint washouts and intravenous antibiotics. As far as we know, there has been no case report in the English literature, on bilateral septic arthritis of the knee secondary to group G β-haemolytic streptococcal endocarditis.

Keywords

Bilateral knee septic arthritis; Endocarditis; Group G Streptococcus.

Case report

An 81-year-old male presented to the hospital with acute bilateral knee pain for 3 days. He had a 3-week history of progressive exertional dyspnoea and malaise. He gave no history of trauma or injury to his knees. Importantly he also denied any chest pain, palpitations, and syncope. His past medical history included mitral regurgitation, atrial fibrillation, gastric adenocarcinoma and bilateral knee osteoarthritis.

On examination his observations were: temperature 37.6°C, heart rate 86 beats/min, respiratory rate 19, oxygen saturation 95% on room air and blood pressure 130/60 mmHg. Both knees had moderate swelling with decreased range of movement and slightly raised temperature compared to the surrounding skin. He had difficulty in bearing weight and extreme tenderness in both knees.

On cardiovascular examination, he had a grade III pan-systolic murmur, heard loudest in the mitral area, which was radiating to the axilla. Despite his obvious dyspnoea, only scattered crepitations were heard bilaterally in the lung bases.

Initial blood tests revealed: haemoglobin 11.8 g/dl, white cell count 10.2 (neutrophils 9.4), urea 16.4, creatinine 244 and C-reactive protein 244.

Bilateral knee aspiration confirmed a strong clinical suspicion of septic arthritis and cultures grew Group G β-haemolytic Streptococcus, sensitive to penicillin. With no history of trauma to the knees, the absence of any other source of infection, and a history of valvular heart disease, the initial clinical diagnosis was infective endocarditis leading to bilateral septic arthritis.

He underwent bilateral knee washouts with continuous irrigation of both knee joints on the day of admission (Fig. 1). After the initial washouts, he was commenced on empirical intravenous

This paper is available online at http://www.grandrounds-e-med.com. In the event of a change in the URL address, please use the DOI provided to locate the paper.
antibiotics whilst awaiting sensitivities of the knee aspirates. In addition, three sets of blood cultures taken on admission also grew Group G *Streptococcus* (Fig. 2). However, no obvious source of infection for *Streptococcus* such as skin and soft tissue, throat, genitourinary or bowel was identified.

An echocardiogram revealed large vegetations on both the mitral and aortic valves. The cardiology team reviewed the patient and advised conservative management with antibiotics
followed by consideration of valve replacement if the vegetations had not decreased after antibiotic treatment. The patient was treated with 6 weeks of benzyl penicillin along with the initial 2 weeks of gentamicin.

Following two further bilateral knee washouts and a week of continuous joint irrigation, he started to make a good recovery.

However, unfortunately he died suddenly from an asystolic arrest due to a massive pulmonary embolism, despite anticoagulant prophylaxis.

**Discussion**

Although the knee is the most common joint involved in septic arthritis in the elderly\(^1\), bilateral involvement is uncommon. As far as we know there has been no case report on bilateral septic arthritis of knee joints secondary to group G streptococcal endocarditis.

The elderly population is more susceptible to joint infections than younger age groups\(^2\). The age factor is independent of joint prosthesis or rheumatoid arthritis. Therefore, the increased risk is due to the presence of chronic illnesses\(^2\). Generally speaking, the risk factors of septic arthritis can be divided into pre-existing joint diseases or chronic systemic illnesses. The pre-existing joint diseases include rheumatoid arthritis, osteoarthritis, gout, systemic lupus erythematosus and trauma\(^1,2\). The common chronic illnesses which can predispose to joint infections include diabetes mellitus, malignancy, renal disease, liver disease and endocarditis\(^2,1\).

*Staphylococcus aureus* is the commonest organism associated with septic arthritis\(^3\). Amongst *Streptococcus*, groups A and B are the common pathogens for joint infections\(^3,5\). Although Group G *Streptococcus* are not common organisms for septic arthritis, isolated cases of unilateral joint infections have been reported\(^4\).

Diagnosis can be challenging especially when clinical features are confused with underlying joint disease\(^5\). On the other hand, in cases of infective endocarditis the rheumatic manifestations may not always be due to the infection. Immune complex depositions and complement activation can cause joint inflammation mimicking septic arthritis\(^6\). Given the chronology of the evolution of symptoms, our patient clearly had symptoms suggestive of infective endocarditis 3 weeks prior to the onset of joint symptoms. Both blood cultures and synovial fluid cultures grew the same organism, therefore, whenever there is suspicion of septic arthritis, both synovial fluid and blood cultures should be sent to microbiology.

Joint washout with continuous irrigation and intravenous antibiotics are the mainstay of treatment in the native knee\(^2\). In the case of a prosthetic joint, removal of the prosthesis may become necessary, but in fragile elderly patients this may not be possible and prolonged antibiotic treatment can sometimes control the infection\(^5\).

**Teaching points**

Bilateral septic arthritis of the knees secondary to endocarditis has not been reported before. Unilateral septic arthritis is common in elderly patients and has a significant mortality and morbidity. The clinical features can be masked by the presence of chronic joint disease. We need to be vigilant and in the presence of risk factors, bilateral septic arthritis should be considered along with the other causes of bilateral arthritis.

**References**