

Acute Septic Arthritis due to *Streptococcus sanguis*

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Key Words

Septic arthritis · Bacterial arthritis ·
Streptococcus sanguis · *Streptococcus viridans*

Abstract

Objective: To present a case of acute septic arthritis due to *Streptococcus sanguis*, a member of the viridans group streptococci. **Clinical Presentation and Intervention:** A 73-year-old woman presented with fever and increasing swelling and pain of the right knee several weeks after she had been treated for severe periodontal disease. Arthrocentesis yielded purulent synovial fluid. *S. sanguis* was isolated in synovial fluid cultures, and the patient was treated with intravenous cefotaxime for 3 weeks and repeated aspiration of the knee joint with gradual resolution of fever, joint swelling and effusion. **Conclusion:** Although *S. sanguis* is believed to be a rare cause of septic arthritis in native joints, it should be considered in the differential diagnosis of this disorder, especially in patients with recent treatment of severe dental caries and periodontal disease.

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Introduction

Despite advances in antimicrobial and surgical therapy, septic arthritis remains a rheumatological emergency that can lead to rapid joint destruction and irreversible loss of function. In adults, *Staphylococcus aureus* is the most common bacterium isolated from native joints, found in 40–60% of a large series [1]. After *S. aureus*, β -hemolytic streptococci are the most common cause of bacterial arthritis; in contrast, viridans streptococci are rarely associated with joint infection [2]. We describe here a case of septic arthritis due to *Streptococcus sanguis* (a member of the viridans streptococcal group) in a woman with severe osteoarthritis of the knees and periodontal disease.

Case Report

A 73-year-old woman suffering from severe osteoarthritis of the knees and spine presented with fever and increasing swelling and pain of the right knee. During the last month, the patient had been treated for severe periodontal disease, and the last treatment had been carried out 20 days before admission. No antibiotics were prescribed, and the patient on occasion used diclofenac or paracetamol for relief of the joint pain. She came to the hospital with a painful, swollen, warm right knee that had begun 6 days earlier, and fever, anorexia, malaise and chills. On physical examina-

tion, the patient's temperature was 38.2°C, blood pressure was 155/88 mm Hg, and pulse was 94 beats/min. There were no cardiac murmurs, hepatosplenomegaly or rash. The right knee was swollen, warm and tender with a large synovial effusion and severe functional impairment. In the initial laboratory evaluation, her hemoglobin concentration was 12.2 g/dl, the leukocyte count was 11,800/mm³ (with a neutrophilic predominance), and the erythrocyte sedimentation rate was elevated at 80 mm/h. Findings of a urinalysis were normal. A plain X-ray of the right knee showed severe degenerative changes with subchondral sclerosis and narrowing of the articular space. A chest X-ray was normal. A transesophageal echocardiogram did not detect any vegetation on the cardiac valves. Arthrocentesis of the right knee performed at admission yielded synovial fluid with 54,000 cells/mm³ (95% polymorphonuclear leukocytes), glucose 40 mg/dl (simultaneous glycemia 98 mg/dl) and total protein 4 g/dl. There were no crystals on microscopic examination under polarized light, and a Gram stain was negative. *S. sanguis* was isolated in synovial fluid cultures but not in blood or urine cultures. Therapy with intravenous cefotaxime at a dose of 8 g/day for 3 weeks and repeated aspiration of the knee joint was followed by the gradual disappearance of fever, joint swelling and effusion. There was no relapse of the arthritis after a follow-up of 6 months, and the patient remains asymptomatic.

Discussion

Streptococcal septic arthritis accounts for 15–30% of all nongonococcal causes of bacterial arthritis in adults [1]. Most infections are due to *S. pyogenes* (group A), but group B (*S. agalactiae*) and group G streptococci are well reported, especially in patients with underlying predisposing conditions, such as diabetes, malignancy, alcoholism or established joint disease [1, 3, 4].

S. viridans has a low virulence, and infection by this microorganism usually appears on a previously injured focus [2]. However, its association with dental caries and bacterial endocarditis has been well established [2, 4]. Septic arthritis due to the viridans group of streptococci has been reported rarely. Comprehensive reviews of the topic do not mention viridans group streptococci as etiological agents in septic arthritis [5]. However, some isolated cases have been identified, mainly affecting the knee, sternoclavicular, acromioclavicular and sacroiliac joints [2, 6–8]. In one of these cases, septic arthritis was associated with bacterial endocarditis [8]. In the case of Blankstein et al. [7], minor trauma preceded shortly the development of the septic process. Recently, Weber et al. [9] have reported 3 cases of spondylodiscitis caused by viridans streptococci.

S. sanguis, a member of the viridans group of streptococci, is a well-known commensal of the mouth, upper respiratory tract, lower intestinal tract, genitourinary

tract and skin of healthy humans [4]. There are only three previous reports of septic arthritis due to *S. sanguis* [10–12]. Nitsche et al. [10] described a young man with polymicrobial infection of the sternoclavicular joint due to *S. sanguis* and *Pasteurella multocida*. The authors believed that the primary infective agent was probably *P. multocida* and that *S. sanguis* was introduced secondarily at the time of local injection of corticosteroids for relief of the arthritic pain in the sternoclavicular joint, 10 days before admission to the hospital. Patrick and Lewis [11] described a previously healthy 56-year-old man with obvious dental caries who had septic arthritis of the knee due to *S. sanguis*. In the report by Edson et al. [12], a 66-year-old man developed septic arthritis of the knee due to *S. sanguis* after he had been treated for severe periodontal disease, which likely contributed to his joint sepsis through hematogenous spread. To our knowledge, our case represents the third documented case of monomicrobial septic arthritis due to *S. sanguis*. Our patient had had treatment for periodontal disease before the development of septic arthritis. Although blood cultures at the time of admission were negative, it is postulated that she experienced transient bacteremia from a dental source leading to involvement of a previously abnormal knee joint.

Conclusion

Although viridans group streptococci in general and *S. sanguis* in particular are rare causes of septic arthritis in native joints, they should be considered in the differential diagnosis of this disorder, especially in the setting of severe periodontal disease and dental caries.

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