

Septic Arthritis of the Knee Due to *Fusobacterium necrophorum*

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Gram-negative, anaerobic bacilli are unusual organisms to be isolated in cases of acute septic arthritis. We report the isolation of *Fusobacterium necrophorum* from joint aspirate in a case of acute septic arthritis, which presented 3 weeks after the drainage of a dental abscess.

CASE REPORT

An 8-year-old boy presented with a 2-day history of fever (38.7°C), general malaise, and painful swelling of the right knee. Three weeks before presentation he had suffered a dental abscess, which had been drained by his dental practitioner. The knee was severely swollen and tender. There was a fixed flexion deformity of 15° of the knee, and any attempt to move the joint caused severe pain. The patient was unable to bear weight on the affected limb. The peripheral white blood cell count was 10.5×10^9 /liter with 80% polymorphonuclear neutrophils, and the erythrocyte sedimentation rate was 23 mm/h. A provisional diagnosis of a septic arthritis was made. The patient was taken to the operating room, where the joint was opened and drained. This yielded 30 ml of pale, yellowish brown, foul-smelling joint fluid. The knee was washed out with aqueous chlorhexidine. The articular cartilage and other intra-articular structures were normal. The surgical wound was closed primarily over a drain in layers. The patient was started on intravenous flucloxacillin at 250 mg every 6 h and ampicillin at 250 mg every 6 h pending culture results. He became afebrile and remained so for 5 days, but on the 6th day he again became febrile. By this time the culture result on the joint fluid was available and showed growth of *Fusobacterium necrophorum*. Consequently he was started on oral metronidazole at 200 mg every 8 h. The fever gradually settled over 10 days, and the patient had recovered 50% of flexion of the knee by the end of a further week. In 10 weeks the patient recovered the full range of movement of the knee. Two-and-a-half years later he reported no problems with his knee.

Microbiological studies. A Gram-stained smear of the aspirate showed many polymorphonuclear leukocytes but no organisms. The specimen was directly inoculated onto standard solid medium (Oxoid Columbia agar base with 5% defibrinated horse blood and the same agar made into chocolate agar) incubated both in 5% CO₂ and anaerobically at 37°C for 48 h. The culture plate incubated under anaerobic conditions yielded a heavy growth of a pleomorphic gram-negative bacillus which on subculture was shown to be an obligate anaerobe

sensitive to metronidazole and penicillin. The organism was identified as *F. necrophorum* by the Rapid ID 32A identification system for anaerobes (Biomerieux Diagnostics).

Lemierre (5) wrote a review of *F. necrophorum* infection in 1936. He described a syndrome in which oropharyngeal sepsis was complicated by septic thrombophlebitis of the internal jugular vein and multiple metastatic infections such as septic arthritis. *F. necrophorum* rarely causes isolated joint infection as reported in this case. Sinave et al. (8) analyzed 38 cases of Lemierre syndrome, out of which only five cases had joint infections. Ninety-seven percent of the patients had pleuropulmonary disease. Almost all the patients had acute tonsillar infection as the portal of entry rather than a dental infection as in the case we report. Sinave et al. found that the interval between the appearance of the oropharyngeal infection and the onset of septicemia was typically 1 week or less. The case that we report presented with isolated septic arthritis and not with the typical features of Lemierre syndrome. A Medline literature search revealed one reported case of isolated *F. necrophorum* septic arthritis. This was an infection of the hip in a 9-year-old boy 3 days following tonsillectomy (1). There are a number of cases reported in the literature of Lemierre syndrome with associated septic arthritis (1, 4, 7). A study of anaerobic infections over 10 years (1976 to 1986) found 65 cases of septic arthritis (2). Fusobacteria were the cause in only five cases, and none of them had sepsis in the knee joint. Another study over 3 years found 46 cases of anaerobic septic arthritis (3). *Fusobacterium* species were isolated in two cases, one of which was a postoperative infection and the other of which occurred in a patient with a chronic debilitating disease.

F. necrophorum is an obligate anaerobic, nonmotile, gram-negative bacillus about 0.5 to 0.7 μm in diameter with rounded tapered ends. Cells from older cultures may be irregularly stained, and beaded forms are common. Colonies on agar are pale and semitranslucent with an irregular edge, and cultures produce a notable putrid odor. Fusobacteria are usually sensitive to penicillin G as well as other antimicrobials with activity against anaerobic bacteria such as clindamycin, metronidazole, cefoxitin, and chloramphenicol (6, 8).

In the case reported here two important clues to the microbial etiology of the infection went unnoticed: firstly the history of a recent dental abscess and surgery and secondly the foul-smelling nature of the joint fluid. Recognition of these impor-

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tant pointers as to etiology would have better directed initial antimicrobial therapy.

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