

Spread of *Streptococcus pneumoniae* between artificial joints in a rheumatoid patient

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A 70-year-old woman with a 20-year history of seropositive rheumatoid arthritis had a Charnley hip installed on the right side in 1975; and in 1977 and 1982, respectively, her left and her right knee were replaced with cemented Geomedic total knee prostheses. No clinical or radiographic complications were observed during follow-up examinations through 1986. In June of 1987, she contracted pneumonia and was treated with penicillin V for 1 week. Her fever and respiratory symptoms disappeared; but 1 week later, the patient again became febrile and complained of pain from the right prosthetic hip. Radiographs showed no signs of infection or loosening; however, her rheumatologist prescribed doxycycline for 2 weeks, and her hip pain decreased temporarily.

Three months after the onset of pneumonia, a peri-prosthetic infection was suspected, and revision surgery was planned. No antibiotic treatment was given while the patient was waiting for the procedure. During the following month, the patient became acutely ill with septic fever and had pain and swelling in both knees. Cultures of blood and aspirated pus

from both knees and the hip all yielded growth of *Streptococcus pneumoniae*. Both knees were thoroughly rinsed with saline through an arthroscope on the second and fourth days. Parenteral benzylpenicillin was administered. A hip radiograph now showed socket migration, and a week later the hip prosthesis was extracted. Pus was oozing through the pilot hole used for acetabular reaming at the index operation. Contrast radiography on the table revealed a pelvic abscess close to the external iliac vessels. The abscess was drained through a separate inguinal incision. Four weeks later, a new hip prosthesis was inserted, and since then oral penicillin has been continuously prescribed.

At the latest follow-up examination, after almost 3.5 years, both knees and the right hip were asymptomatic, and there has not been any radiographic progression of the tibial zones that were already present before the infection (Figure 1) or of any new zones around the femoral components in the knee. Also the revised hip prosthesis was radiographically intact.

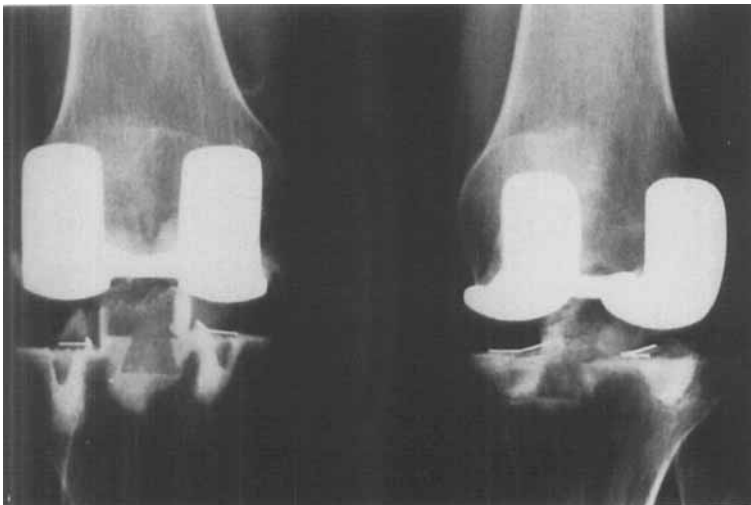


Figure 1. Geomedic knee arthroplasties inserted 10 years (left side) and 5 years (right side) before a simultaneous bilateral hematogenous infection. The prostheses could be retained after arthroscopic rinsing and antibiotic treatment. No progression of radiolucent zones can be seen on these radiographs 3 years later.

Discussion

Deep infection of hematogenous origin following hip arthroplasty is said to occur in less than 0.5 percent of the patients (Ahlberg et al. 1978, Charnley 1979, Ainscow and Denham 1984). The incidence will, of course, increase with lengthening periods of follow-up. Patients with rheumatoid arthritis run a higher risk of contracting this complication in hip as well as in knee replacements (Ainscow and Denham 1984, Bengtsson et al. 1987). In reviews of the literature on hematogenous periprosthetic infections, *Streptococcus pneumoniae* was reported to be the causative agent in five of the infections of 61 total hip replacements but in none of the infections of 25 total knee replacements (Blomgren 1981, Bengtsson et al. 1987).

Hematogenous periprosthetic infections usually begin dramatically and cause severe illness. In the present case, oral antibiotic treatment suppressed symptoms; and while the patient was waiting for revision surgery, an abscess probably developed in the hip region causing septicemia and subsequent infection in both of her knees.

Conservative treatment of total knee-joint infections is usually unsuccessful. However, in hematogenous infections, parenteral antibiotic treatment with or without an early debridement may succeed (Bengtson et al. 1989, Moorey et al. 1989). Early treatment and the fact

that *Streptococcus pneumoniae* is highly sensitive to penicillin presumably contributed to the favorable result in my patient. Arthroscopic rinsing of acute knee joint infections, also in the replaced knee, is an alternative to open debridement.

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