Case report

Infection of a prosthetic knee joint with Peptostreptococcus magnus

URSULA M DAVIES,1 ALISON M LEAK,1 AND JAYSHREE DAVE2

From the 1Division of Rheumatology, Clinical Research Centre and the 2Department of Microbiology, Northwick Park Hospital, Harrow, Middlesex

SUMMARY Infection of a prosthetic knee joint with Peptostreptococcus magnus in an immunosuppressed patient with rheumatoid arthritis is described. The organism is a skin commensal, generally thought to be of low pathogenicity; the difficulty in making the diagnosis is emphasised.

Key words: rheumatoid arthritis, pyrexia of unknown origin, immunosuppression.

Case report

A 54 year old man with erosive seropositive rheumatoid arthritis, unresponsive to gold, penicillamine, sulphasalazine and a course of intensive immunosuppression,1 underwent bilateral total knee replacement (TKR) under antibiotic cover, 10 years from onset. A right Stanmore TKR was performed in February 1985; the only complication was a small wound haematoma with sterile serosanguinous discharge, treated with flucloxacillin for 10 days. A kinematic TKR was inserted in the left knee the following June.

Two months later, while taking 150 mg azathioprine and 7.5 mg of prednisolone daily, he developed fatigue and rigors. He was pyrexial; lymphadenopathy and splenomegaly, previously noted before intensive immunosuppression, persisted; and an ejection systolic murmur was heard. The knee joints were not painful and there were no clinical signs of septic arthritis. Eight sets of blood cultures were negative. An x ray of the prostheses was unremarkable; a bone scan showed increased activity in relation to the femoral component of the right TKR (Fig. 1), but this was difficult to interpret only nine months postoperatively. Lymph node and liver biopsy were performed; histology of each was benign and culture was negative. Echocardiogram was inconclusive, but the patient was treated for possible bacterial endocarditis with a two week
course of parenteral penicillin and gentamicin followed by four weeks oral ampicillin with probenecid. This relieved symptoms and pyrexias for one month, after which he again began to feel unwell, though he declined readmission.

Fifteen months from surgery he had a sudden discharge of serosanguinous fluid from the scar of his right TKR; the joint itself was not painful, warm, tender, or swollen. Aspiration produced scanty fluid, sterile on culture, and contrast radiography failed to demonstrate a sinus. He was treated with oral cephalxin for two weeks. Discharge from the wound continued, but multiple swabs were sterile. Five months later he began a two month course of flucloxacinil; azathioprine was discontinued.

In February 1987 he developed cutaneous vasculitis and treatment with cyclophosphamide 50 mg daily was started. Three months later he developed a small abscess over the right shin: the discharge from his right TKR scar persisted. The shin lesion ulcerated, and one swab grew Staphylococcus epidermidis and another anaerobic cocci. The significance of the bacteriological findings was uncertain, but a further six week course of flucloxacinil was prescribed. The patient was now so unwell he finally agreed to admission.

The vasculitis had improved, but cyclophosphamide had to be discontinued owing to leucopenia (white cell count 3.3×10^9/l). Pus from the discharging wound and from the shin abscess after two to three days in anaerobic culture medium grew Peptostreptococcus magnus sensitive to benzylpenicillin. Aspiration from the right knee joint grew the same organism. (The organism Peptostreptococcus magnus was identified according to Bergey's Manual of Systematic Bacteriology^2 on the basis of a Gram stain, gas liquid chromatography of volatile fatty acids, which showed acetic acid only, and biochemical profile using the rapid antinuclear antibody system for the biochemical identification of anaerobic bacteria (Innovative Diagnostic Systems Inc.).)

An x ray examination showed there was now a small area of lysis around the tibial component, and repeat bone scan showed extensive uptake around the tibial and femoral components (Fig. 2). He was treated with 2 MU of benzylpenicillin intravenously every four hours for one month. The prosthesis was removed. At operation there was evidence of soft tissue infection but no loosening of either component or the cement. All tissue was sterile on culture.

Discussion

The occurrence of pus and granulation tissue in relation to an artificial implant from which no bacteria can be isolated on routine culture has been termed 'sterile infection' and thought to be due to sensitivity to the implanted material. By careful collection and processing of specimens Whyte and coworkers reported the isolation of 51 organisms from faulty joint implants, 42 of which would normally be considered to be non-pathogenic or of low pathogenicity, including Staphylococcus epidermidis, anaerobic diphtheroids, and Gram positive anaerobic cocci.

Peptococci are anaerobic cocci normally regarded as skin commensals but have occasionally been reported as the cause of infection in prosthetic joints. The organism grows easily under appropriate conditions, but inadequate swabs allowed to dry in transit to the laboratory make culture difficult.

In 1985 within six months of his knee replacements the patient complained of pyrexias and rigors. There were no clinical clues as to the source of infection, and strenuous efforts to find an organism failed. Because of the previous intensive immuno-suppression and lymphadenopathy we considered lymphoma had to be excluded first.

Fig. 2 Isotope bone scan (July 1987) showing extensively increased uptake around both tibial and femoral components of the right total knee replacement.
Retrospectively it seems that a low grade soft tissue infection developed via the serosanguinous discharge in the early months and may have been partially suppressed by his treatment with parenteral penicillin for possible endocarditis and several courses of oral flucloxacillin. The site of infection only became obvious when he became neutropenic and frank pus was obtained from the abscess over the right shin.

Superficial postoperative infection has been shown to be associated with infection around the prosthetic joint, and clinical features of infection such as fever and leucocytosis are often absent. Pain is usually the predominant symptom in prosthetic joint infections but was absent in this man.

Rheumatoid patients may be especially prone to deep sepsis, particularly when immunosuppressed. In a series of 821 TKRs, however, deep sepsis occurred in less than 2% of knees whatever the cause of the original arthritis. Infections remain one of the major causes of increased mortality in RA, and close liaison with the microbiology laboratory to isolate the organism and provide a specific guide to treatment cannot be overemphasised.

We should like to thank Dr B Ansell, Division of Rheumatology, Mr C McCullough, Division of Orthopaedics, and Dr R Wall, Department of Microbiology, for helpful advice in the preparation of this manuscript.

References
Infection of a prosthetic knee joint with Peptostreptococcus magnus.

UM Davies, A M Leak and J Davé

doi: 10.1136/ard.47.10.866

Updated information and services can be found at:

http://ard.bmj.com/content/47/10/866

Email alerting service

These include:

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/