Acta Orthop. Belg., 2005, **71**, 119-121

CASE REPORT

Infection of a total knee prosthesis by candida glabrata : A case report

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Infection of a total knee prosthesis by candida glabrata is very uncommon. It should be considered in immune suppressed patients. Adequate treatment consists of removal of the prosthesis and administration of antimycotic drugs. However, in selected cases, if the general condition of the patient does not allow revision surgery, suppressive treatment alone can be considered.

CASE REPORT

A 74-year-old female presented at the orthopaedic clinic in November 1996. She had undergone coronary bypass surgery in 1987 and was intolerant to nonsteroidal anti-inflammatory drugs because of a duodenal ulceration. She reported a 2-year history of progressive left knee pain. Radiologic studies showed severe medial joint space narrowing with lateral shift of the tibia. One year later the pain had become intolerable, and a left total knee arthroplasty was proposed.

An uncomplicated procedure was performed in July 1997. A cruciate retaining prosthesis was used (Genesis II with a 9mm polyethylene insert), and all components were cemented. The perioperative antibiotic regimen included administration of cefazolin 2g immediately before incision, with 1g continued every 8 hours over the next 48 hours. The patient progressed uneventfully through the postoperative physical therapy. A follow-up visit in September 1997 confirmed a painless range of motion (0-115°), stable components and no clinical signs of inflammation.

In November 2002 she suffered from an acute cholecystitis, and a laparoscopic cholecystectomy was performed, after a three-week period of IV antibiotics. Postoperatively she presented with prolonged fever and a catheter tip infected with candida glabrata was found. After removal of the catheter her general status improved and no antimycotic treatment was started, however she gradually started to have pain in the left knee.

She presented in our department in June 2003. The knee was warm and moderately tense, and a pretibial collection evolving into a fistula was palpable. No signs of loosening were seen on the radiographs. Laboratory results showed a WBC of 6000/mm^3, a sedimentation rate of 67 mm after one

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hour and a C-reactive protein of 4.9 mg/dl (0-0.7). Aspiration from the knee joint and the pretibial collection showed in both cases a candida glabrata as infecting agent. Haemocultures remained negative. Two weeks later the extra articular abscedation in the anterior tibial compartment was drained and irrigated with 9 liters of physiological saline solution. No comminucation with the joint space was noted. An IV therapy of voriconazole (Vfend at a dose of 4mg/ kg twice a day) was started and after 3 days converted into an oral therapy of 200 mg twice a day.

The pus collection gradually reappeared. Because of cardiac insufficiency, two-stage revision arthroplasty could not be considered, and a second debridement was therefore performed. During this debridement a thin tissue wall separating the joint from the extraarticular collection was found. Oral treatment with voriconazole was continued. The sedimentation rate was back to normal by september 2003, the C-reactive protein 2 months later.

Antimycotic therapy with voriconazole was prolonged until January 2004. Fourteen days after cessation of the voriconazole, the abscess recurred. For that reason voriconazole was restarted without further surgery, resolving the abscess in less than 2 weeks.

Until the end of February 2004, no clinical or laboratory signs of re-infection were noted. She died in February 2004 from unrelated causes.

DISCUSSION

Candida infection of an articular prosthesis is uncommon. Thirty cases have been reported previously, only two with the glabrata species (*1, 3, 4, 6, 7, 8, 10-16*). Candida parapsilosis and Candida albicans were the commonest causative organisms. All but two were treated with implant removal and administration of amphotericin B with or without fluconazole or ketoconazole (*12, 13*). When infection occurs more than a few months after implantation, the prosthesis can rarely be salvaged.

In most reported cases, amphotericin B was the cornerstone of therapy for prosthetic candidal infection. Amphotericin B is an antibiotic that has nephrotoxicity as a major side effect. The group of the azoles are less toxic (fluconazole, itraconazole, voriconazole) and can also be given orally. Both fluconazole and amphotericin B are equally efficacious against candidemia (*2, 9*).

The infections generally present insidiously and progress with pain and swelling. There are usually no signs of systemic disease. Delay in diagnosis is common and a source of fungal infection often is not found, although in this case a clear cause could be identified. Candida infection is usually associated with prolonged antibiotic treatment, decreased immune status, intravenous drug abuse or prolonged indwelling catheter (*5*). In this patient previous antibiotic treatment, gastro-intestinal surgery and catheter infection were present in the medical history. Among the earlier case reports however, only 15 had one of these predisposing factors, so intraoperative contamination remains an important cause.

Treatment in most instances combines surgical removal and debridement followed by prolonged antimycotic administration. More than one antibiotic agent may be beneficial. In selected cases a conservative suppressive treatment may be succesful, especially in patients in a bad general condition (*12, 13*).

Over the last 15 years, the incidence of haematogenous infection caused by Candida species has increased 5- to 10-fold, to become the fourth leading cause of nosocomial haematogenous infection. The incidence of non-Candida albicans haematogenous infection has also been increasing, and now even surpasses Candida albicans. Candida (Torulopsis) glabrata accounts for 11%-16% of all candidemias. C. glabrata is a saprophyte of the human gastrointestinal tract, the skin, and the vagina. Three sites (abdominal, genitourinary, and catheter-associated) accounted for 62% of all the known sources (*5*). The most prevalent concomitant pathogens are coagulase-negative staphylococci, enterococcus, and C. albicans. Common diagnoses on admission are malignancy and coronary heart disease.

Even patients without sustained fungemia have a high mortality, so it is prudent to treat aggressively each patient with a positive blood culture for Candida glabrata.

In conclusion, one must always consider the possibility of a candida species as infective agent in a prosthetic infection, all the more if the above mentioned risk factors are present.

A positive culture of a catheter tip should not be disregarded in these patients.

Two-stage revision surgery remains the standard therapy, although suppressive therapy with antimycotics may be preferred in patients in a poor general condition.

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