

Fistulating periprosthetic *Staphylococcus lugdunensis* hip infection cured by intra-articular teicoplanin injections—a case report

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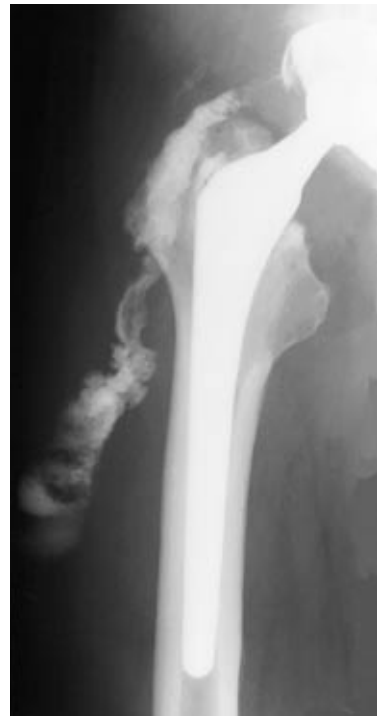
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A 54-year-old male traffic policeman with osteoarthritis in the right hip was operated on with an uncemented hydroxyapatite-coated titanium alloy prosthesis (Omnifit, Osteonics-Stryker-Howmedica, Allendale, New York, USA). He returned to work and was pleased with the result, but had some pain in the groin, especially in full flexion. The ESR and CRP were slightly elevated 1 year after surgery (22 mm/h and 23 mg/L, respectively).

At a routine follow-up 2 years postoperatively, he complained of a swelling in the lateral part of his thigh, which had increased in size during the past 3 weeks. Examination with ultrasound showed a 6 × 12 × 3 cm abscess in the lateral mid-thigh. The overlying skin was dark red and slightly warm, but he had hardly any tenderness. He had no pain in the hip on weight bearing. The ESR had increased to 46 mm/h and the CRP to 42 mg/L. The radiographs showed no radiolucent lines. Bacteriological tests of aspirated pus from the abscess showed a sensitive strain of *Staphylococcus lugdunensis*. The abscess was drained and oral rifampicin and clindamycin were prescribed. The pain on flexion of the hip disappeared and the patient could continue working. However, a slight secretion persisted. No connection with the joint was found on fistulography after 2 months, but on arthrography, two expansions were seen, which intended from the joint cavity in a distal direction towards the abscess.

In the outpatient clinic, under image intensifier control, 200–400 mg teicoplanin in 3.2 mL of fluid was injected into the artificial joint 3 times a week on 7 occasions. Rifampicin and clindamycin were given orally for 6 more weeks. He was then asymptomatic for 5 months until the abscess recurred. *S. lugdunensis* was found again, but there were still no radiographic signs of prosthesis loosening. The patient complained of only slight pain with

some limitation of hip flexion, but he was in good general condition and could work full-time. On arthrography, he was now found to have a fistula in front of the greater trochanter from the joint to an abscess in the lateral part of the thigh (Figure). Slight drainage from the fistulating abscess was present when a silicone catheter was introduced percutaneously into the hip joint and connected to a subcutaneous membrane for injections. However, movements in the hip joint displaced the catheter. Intra-articular teicoplanin injections were started again, and given 3 times a week for 7 weeks followed by oral rifampicin and clindamycin for 3



Arthrogram after recurrence of an abscess 3 years postoperatively showing a communication from the joint to a lateral abscess.

months. The fistula healed and the patient has had no pain and regained full flexion.

At the latest follow up 6 years after completion of treatment, we found no clinical signs of persistent infection, the radiographs were normal and ESR was 12 mm/h and CRP < 9 mg/L.

Discussion

Curative treatment of infections in totally replaced hips without removal of the implant is occasionally reported in patients with a short history of infection and stable implants (Crockarell et al. 1998, Zimmerli et al. 1998). We had an unusual case of a long-standing infection adjacent to an uncemented hip prosthesis cured by repeated intra-articular injections of teicoplanin in combination with oral antibiotics.

S. lugdunensis, a coagulase-negative staphylococcus, well-described in 1989 by Fleurette et al., has a considerable potential as a human pathogen. In some situations, it is more aggressive than most *S. epidermidis* strains (Burgert et al. 1999). Two knee periprosthetic infections caused by *S. lugdunensis* have been reported (Sampathkumar et al. 2000). Both of them had an acute onset, one 4 years after surgery and the other was diagnosed 6 weeks after delayed reimplantation for treatment of a *S. aureus* infection. Our patient had mild clinical symptoms for 2 years—i.e., a low virulent infection. The cementless interface of this titanium alloy prosthesis seems to have been resistant to osteolysis. This differs from rapidly worsening bone defects, which are usually seen in chronic periprosthetic infections with cemented implants. Titanium alloys, like pure titanium, may produce an antiseptic substance (Tengvall et al. 1990) that causes less septic periprosthetic bone resorption than cemented implants.

S. lugdunensis, like other coagulase-negative staphylococci, produces glycocalyx, which facilitate periprosthetic infections (Lambe et al. 1990). The glycocalyx surrounding bacterial colonies can be an effective barrier against systemic antibiotics (Evans et al. 1998). However, by injecting teicoplanin directly into the joint cavity, very high concentrations are obtained on the surfaces facing the cavity and the antibiotic solution can also reach

the space between the metallic shell and plastic liner. We chose teicoplanin instead of vancomycin because it irritates local tissue less. We also gave rifampicin orally. The in vitro activity of rifampicin against clinical isolates of coagulase-negative staphylococci is not reduced by the presence of slime (Souli and Giamarellou 1998). In a rabbit model of implant-related infections caused by slime-producing *S. epidermidis*, the combination of vancomycin and rifampicin achieved a 90% cure rate (Isiklar et al. 1996).

Since our patient has been well for 6 years since the last treatment, we consider the infection cured.

No competing interests declared.

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