Yersinia enterocolitica coxitis after hip replacement

A case report

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We report a case of hematogenous *Yersinia enterocolitica* coxitis 10 years after hip replacement. Despite extraction of the prosthesis and antibiotic treatment, the infection relapsed. Infections in replaced joints with *Yersinia enterocolitica* call for long-standing treatment with specific antibiotics.

Three categories of human infection with *Yersinia enterocolitica* have been described. Most common are symptoms simulating appendicitis or terminal ileitis (Wormser and Keusch 1981). Reactive arthritis is seen 1 to 3 weeks after the acute onset of abdominal pain. The condition affects both minor and major joints (Ejlertsen 1988). The third category of symptoms is caused by hematogenous spread of the bacteria, mostly in patients with an underlying illness, such as diabetes mellitus, liver diseases, or blood disorders (Rabson et al. 1975, Butzler et al. 1979, and Bissett 1976).

We report on a case of deep infection after hip replacement.

Case report

A previously healthy man underwent bilateral hip replacement for arthrosis in 1978 at the age of 62.

He was referred back 10 years later because of pain in the right hip of 5 months' duration. Radiographs showed loosening of the femoral component on the right side (Figure 1). Four months later, he experienced muscle pain and chills with body temperature up to 39.4 °C.

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On admission, the right thigh was tender and swollen. A radiograph showed a broken femoral stem. He had no history of gastrointestinal symptoms.

A revision arthroplasty was carried out 4 days after admission, with removal of the right total hip prosthesis including cement and wires. Pus was found under the fascia and in the femoral canal. Tissue and swabs were taken for bacteriologic studies. The patient was administered 2 g of cloxacillin i.v. Gentamicin chains (totally 60 beads) were placed in the femoral and acetabular cavities.

The following day the temperature had dropped to 36.8 °C, and he has remained afebrile since then. The swabs taken during the operation were positive with *Y. enterocolitica* biotype 4, serotype 0:3; and treatment with cefotaxime 1 gram t.i.d. (i.v.) for 8 days was started.

The drains were removed on the 9th postoperative day. Five days after the cefotaxime treatment had been discontinued, dense growth of *Y. enterocolitica* was reported in specimens from all four drain points. *Yersinia* titers were negative.

It became necessary with a second revision. New gentamicin beads were inserted. During the operation, he was started on piperacillin 3 g t.i.d. (i.v.) for the first 24 hours and gentamicin 80 mg b.i.d. for 6 days. When gentamicin was discontinued, he was given mecillinam 400 mg (i.m.) t.i.d. for 14 days followed by 0.5 g ciprofloxacin orally b.i.d. for another 14 days.

His condition now gradually improved, and he was discharged to his home. Fourteen months after the primary admission, he had no signs of infection.

Immediately after hip replacement.

Ten years later, there is increased distance of the bone-cement interface around the distal part of the femoral stem.

Another 5 months later, the femoral stem has broken.

Figure 1. A 72-year-old man with *Yersinia enterocolitica* coxitis after hip replacement.

Discussion

The most common bacterial species found in delayed infections of the hip prosthesis are coagulase negative staphylococci (Sanzén 1989). In contrast, hematogenous infections are caused by a variety of organisms. *Y. enterocolitica*, however, has never been demonstrated (Buchholz et al. 1981).

Three serotypes of *Y. enterocolitica* are important as human pathogens. In Europe most strains belong to serotype 3. In Denmark the source of infection is most likely to be from slaughterhouses (pork; Ejlertsen 1988). The clinical picture varies from asymptomatic cases to sepsis and death (Verhaegen et al. 1985). Most hematogenous infections with *Y. enterocolitica* are seen in patients with disturbances in blood-forming organs (Rabson et al. 1975).

The underlying cause is most likely that *Y. enterocolitica* consumes iron, and also that a high iron content in tissue decreases the resistance against infections (Jepsen et al. 1976). Therefore it is important to consider the fact that removal of a total hip endoprosthesis leaves a great cavity containing blood and breakdown products in the surrounding tissue. These conditions with a high iron content provide excellent conditions for survival of the *Y. enterocolitica* and call for long-standing treatment with specific antibiotics.

Traditionally, tetracycline, mecillinam, or cotrimoxazole have been employed in the treatment of *Y. enterocolitica* infections. Also cefotaxime is appropriate (Garn-Hansen and Søgaard 1990). *Y. enterocolitica* has an extremely low MIC for ciprofloxacin (Arpi et al. 1987). The latter antibiotic can be given orally for a long time, and therefore it seems suitable in bone infections caused by *Y. enterocolitica*.

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