Mycobacterium avium infection of the knee in a child

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We report a case of *Mycobacterium avium* infection of the knee joint in a 5-year-old
child. He was successfully treated by surgery and antituberculous drugs.

Osteoarticular infections caused by atypical (nontuberculous) mycobacteria (Wolinsky 1984) seem to be reported increasingly often (Marchevsky et al. 1985). The patients usually have a variety of symptoms that may resemble those of rheumatoid arthritis, soft-tissue inflammation, arthrosis, and osteomyelitis. Usually, the organism is unexpectedly identified. We present a case of *Mycobacterium avium* osteomyelitis in a 5-year-old child.

Case report

A previously healthy 5-year-old boy hit his left knee in January 1985 with a hammer, started to limp, and complained of pain in his knee, which appeared somewhat swollen. Radiography 1 month later showed a small osteolytic lesion in the lateral aspect of the distal femoral epiphysis. On admission to the local hospital, he was afebrile, the ESR was 11 mm, and the leucocyte count 10.1 x 10^9/L. A bone scan showed increased uptake in the periarticular soft tissues and in the lateral femoral condyle.

The knee was aspirated, and a relatively clear joint fluid was obtained and sent for bacterial cultures, including tuberculosis. No growth was obtained. The patient was then treated with oral penicillin for 3 weeks for a presumed septic arthritis/osteomyelitis, but with no clinical improvement. Under the suspicion of juvenile rheumatoid arthritis, he was then transferred to a special hospital for rheumatic diseases. His left knee was at that time grossly swollen and warm. The ESR was 57 mm and the leucocyte count 12.1 x 10^9/L. Rheumatoid factor was negative and the Mantoux test was interpreted as slightly positive. Chest radiographs were normal. Repeat radiographs of his left knee revealed progression of the osteolytic lesion (Figure

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1). An arthrotomy with extensive synovectomy and bone grafting of the epiphyseal lesion was performed in the middle of March. Histologic examination showed a necrotizing, granulomatous inflammation, most likely representing tuberculosis. No acid-fast bacteria were identified at this time.

Treatment with isoniazid and rifampicin was initiated. The patient's postoperative course was complicated by a markedly decreased range of motion of his left knee. He was subsequently transferred to Martina Hansen's Hospital during the middle of April. On admission, his left knee was still markedly swollen and warm, with a range of motion of approximately 5° from 40° to 45° of flexion. The ESR was 8 mm and the leucocyte count 5.4 x 10^9/L.

Repeat chest radiographs showed a small calcification in the right upper hilus. Intermittent traction and vigorous physical therapy was initiated, with rather poor progress. Manipulation under anesthesia proved futile. Repeat arthrotomy with extensive lysis of all the adherent tissue was performed. At surgery full extension and flexion to 120° was obtained. Postoperatively, he was equipped with flexion and extension splints. In addition, a continuous passive motion machine was used, alternated with active exercises. The specimen taken during surgery in March 1985 subsequently revealed growth of *Myobacterium intracellulare* serotype 8, which has recently been identified as *M. avium* (Baess 1983). The organisms were resistant to all the antituberculous drugs tested. Treatment with isoniazid and rifampicin was discontinued. The patient had then received treatment with antituberculous drugs for a total of 9 weeks. He was discharged from the hospital in good condition at the end of May 1985. When last seen at our clinic in February 1987, the patient essentially had full extension of his left knee, and he could flex to approximately 150°. Clinically, there was no evidence of any ongoing infection. Repeat radiographs showed a slightly irregular epiphyseal contour, but there appeared to be an almost complete healing of the osteolytic lesion.
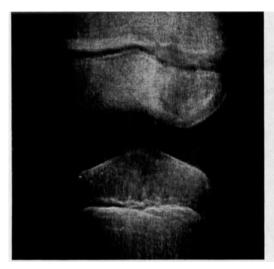
Figure 1. A 5-year-old boy with *Mycobacterium avium* osteomyelitis. Osteolytic lesion in the left distal femoral epiphysis.

Discussion

Infections with atypical mycobacteria of the extremities are rare. Synovial tissue and tendon sheaths of the hand and wrist appear to be the most commonly affected sites (Kelly et al. 1967). However, several cases of septic arthritis and osteomyelitis caused by atypical mycobacteria have been reported (Marchevsky et al. 1985). We have been able to find only 2 cases of skeletal *M. avium* infection previously reported from Scandinavia. Collert et al. (1983) reported a case of disseminated skeletal *M. avium* infection with a favorable outcome. Hansen and Calmeyer (1981) and Solheim and Kjelsberg (1982) reported a case of osteomyelitis of the calcaneus caused by *M. avium;* this infection later became disseminated.

Disseminated infections with *M. avium* are known frequently to be fatal. In cases of disseminated atypical mycobacterial infections, treatment with five or six different antituberculous drugs may be indicated. Sometimes this must be combined with surgical intervention to remove all grossly diseased tissue. However, the role of antituberculous drugs in localized infections remains controversial (Marchevsky et al. 1985).

The atypical mycobacteria are frequently resistant in vitro to all antituberculous drugs. Despite in-vitro resistance, a possible clinical response to antituberculous medication has been reported (Booth et al. 1979, Khermosh et al. 1979, Hansen and Calmeyer 1981, Collert et al. 1983). Surgery alone may be the treatment of choice in patients who are not immunodeficient and who have a localized atypical mycobacterial infection (Marchevsky et al. 1985). We believe that surgical intervention was the decisive factor regarding the favorable outcome of our case, and that treatment with two antituberculous drugs for only 9 weeks hardly had any influence.

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