LESSON OF THE MONTH

Mycobacterium malmøense infection of the knee

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CASE REPORT

A 53 year old woman presented to the rheumatology department in November 1988 with polyarthralgia, Raynaud's phenomenon, proximal weakness, and high creatine kinase. Muscle biopsy confirmed an inflammatory myopathy. Treatment was started with high dose corticosteroids and azathioprine. During the next 10 years her myositis was persistently active and her disease modifying treatment was changed to oral methotrexate, and then a combination of oral cyclosporin and intramuscular methotrexate. She continued receiving doses of prednisolone above 10 mg.

In May 1998 she developed a tense effusion of her right knee. Several synovial aspirates were negative for culture and crystals (mycobacterium was not tested for at this stage). Synovial microscopy showed ++ polymorphs (range 0 to +++, quantitative leucocyte counts were not performed) and no red blood cells. Her C reactive protein became raised at 39 mg/l and her blood neutrophil count was $18 \times 10^9/l$. Plain radiography showed mild degenerative changes only. Ultrasound confirmed a knee effusion, which communicated with her prepatella bursa. At this time her muscle disease was in remission. For the next two years her knee remained intermittently swollen with fluctuating high C reactive protein and neutrophil counts. She was treated with various antibiotic courses for presumed joint sepsis, although no organisms were ever grown.

By December 2000 her knee clinically looked more like an intense prepatella bursitis rather than an effusion. No fluid could be aspirated from her knee and it was injected with 80 mg methyprednisolone acetate. There was some lateral extension of a tense Baker's cyst and this was aspirated. Microscopy of this aspirate showed ++ polymorphs, and subsequent growth was of a coagulase negative staphylococcus. This was thought to be insignificant in the absence of a prosthesis. Magnetic resonance imaging confirmed a large multiloculated Baker's cyst with synovial proliferation and a knee effusion (fig 1). Her blood neutrophil count was still around $20 \times 10^9/l$ with a C reactive protein of 50 mg/l. Her polymyositis was well controlled by intramuscular methotrexate 10 mg, oral cyclosporin 100 mg, and prednisolone 15 mg. She was referred for consideration of a limited synovectomy.

In February 2001 the laboratory grew a non-tuberculous mycobacterium from the December aspirate. Her cyclosporin and methotrexate were stopped and her prednisolone reduced to 5 mg. Azithromycin and rifampicin were started. Three months later *Mycobacterium malmøense* was grown from her December aspirate. This was sensitive to rifampicin and clarithromycin but resistant to isoniazid and ciprofloxacin, with intermediate sensitivity to ethambutol. Azithromycin was changed to clarithromycin, and ethambutol added. Treatment was also restarted with 50 mg cyclosporin.

A few months later repeated cultures from her knee were negative for *M malmøense*.

Her knee was reassessed in December 2001. Unfortunately, she continued to have a tense knee effusion with obvious

Figure 1 Magnetic resonance imaging of the right knee. Large multiloculated Baker's cyst (A), which has mixed signal intensity suggesting synovial proliferation with a degree of effusion within it.

extension into the upper calf. Thick caseating material was withdrawn from this extension through a large bore cannula with some pressure relief. She currently awaits consideration of a surgical exploration and debridement.

DISCUSSION

Mycobacterial infections are relatively uncommon in developed countries and tend to occur in immunocompromised hosts; however, they maybe more common than we think. Cases of *M tuberculosis* within the joint may easily masquerade as chronic synovitis in a patient with an autoimmune disease. Atypical mycobacterial infections are even more elusive and difficult to diagnose. We have reported the case of a woman who developed *M malmøense* infection of her right knee on a background of chronic immunosuppression. This case highlights the need for a high degree of awareness when dealing with chronic joint swelling in immunosuppressed patients. Atypical mycobacterium are particularly difficult to grow, even on specialised medium, and therefore recurrent aspiration is required. Referral to a highly specialised laboratory was necessary for complete identification and sensitivity testing in this case. Diagnostic perspectives regarding mycobacterial infections are discussed in detail in a *Textbook of Rheumatology*.¹

M malmøense was first described in 1977.² It was initially isolated in northern Europe, but it has now been documented world wide.³ It is an opportunistic pathogen with increasingly recognised clinical importance, and data from Sweden show it to be second only to the *M avium* complex as a cause of atypical mycobacterial infection.⁴ Many cases of

infection with this organism have been noted, primarily in the chest, skin, and lymph nodes, but a review of published reports found no cases of isolated joint infections with *M malmoense*. Four reports of infected tendon sheaths were found,⁵⁻⁹ but interestingly none of these patients were immunosuppressed. In most infections with *M malmoense* elsewhere, the host was usually significantly immunosuppressed with either malignancy or HIV. Conventional treatment of *M malmoense* infections with antituberculosis drugs is often of limited value. Most strains are resistant to monotherapy, and synergistic combination treatment is required.¹⁰

THE LESSONS

- Monarthrititis always requires a thorough evaluation for sepsis.
- *M malmoense* is an extremely rare pathogen in humans.
- Atypical mycobacterial infections must always be considered in patients receiving immunosuppressive treatment.
- Joint sepsis is a rheumatological emergency and requires early diagnosis and treatment to prevent permanent joint damage.
- Atypical mycobacterium can be extremely difficult to grow in vitro and repeated cultures should always be obtained. Specimens should also be inoculated on a range of media and incubated at a range of temperatures.
- In mycobacterial and fungal arthritis synovial leucocyte counts may be in the inflammatory (+ to ++), and not the septic (+++), range. Measuring synovial leucocytes, however, can be difficult and misleading.
- Treatment requires combination treatment after microbiological sensitivity results.

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