Mycobacterium abscessus; lessons learnt from a complex case

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Introduction

A 27-year-old female presented with a tender lump in the right buttock following a steroid injection for rheumatoid arthritis in a European city. MRI pelvis demonstrated a multifocal fluid collection confined to the adipose tissue, the largest collection measured 4x3cm. There was no osteomyelitis or extension beyond the deep fascia. She was systemically well. Her only regular medication was hydroxychloroquine.

Culture of tissue obtained during initial surgical debridement yielded *Mycobacterium abscessus*. Treatment was commenced pending sensitivity results. This was Meropenem 3g OD, Azithromycin 250mg OD, Amikacin 850mg OD was given for a month before switching to Moxifloxacin 400mg OD, Azithromycin 250mg OD, and Doxycyline 100mg BD. A week into the oral phase of treatment the initial sensitivities reported that the isolate was resistant to Moxifloxacin, Co-trimoxazole, Tobramycin, Doxycycline, and Clarithromycin (inducible) see figure 1. At this point treatment was held pending further sensitivities and investigations.

Additional sensitivities showed a Tigecycline MIC 0.25, Imipenem MIC 16, Minocycline MIC >8 (regarded as resistant), and Linezolid MIC 32 (regarded as resistant). Clofazamine was not tested. MRI showed a moderate reduction in size of the right buttock abscess with no new fluid collections identified. Further surgical debridement was undertaken (this was limited in extent due to lack of a distinct area of diseased tissue at operation) followed by repeated antimicrobial therapy with Tigecyline 50mg BD, Azithromycin 500mg OD, Amikacin 500mg OD and Clofazamine.

Treatment was complicated by significant intolerance; Clofazamine was discontinued after a few days at the patient's request due to concern regarding pigmentary change. Tigecyline caused significant nausea despite antiemetics and advice from the palliative care team. There was a temporary decline in renal function, and Amikacin repeatedly had to be held and then dose reduced. Although hearing tests did not demonstrate any hearing loss, the patient reported mild tinnitus. The patient also developed a transaminitis.

Figure 1 Susceptibility testing for the isolate of *Mycobacterium abscessus*

Resistant	Intermediate	Sensitive
Moxifloxacin Co-trimoxazole Tobramycin Doxycycline Clarithromycin (inducible) Minocycline Linezolid Imipenem	Cefoxitin	Amikacin Tigecycline

Results

Histology from the second debridement suggested that the abscess had been completely excised with Ziehl-Neelsen, Grocott, Gram and DPAS stains for microorganisms negative. At 42 days mycobacterium cultures remained negative. At this point the decision was made to stop treatment. An MRI at this point, and subsequent scans, revealed a marked improvement with only a residual linear signal abnormality. At nearly six months post treatment cessation there has been no sign of recurrence.

Discussion

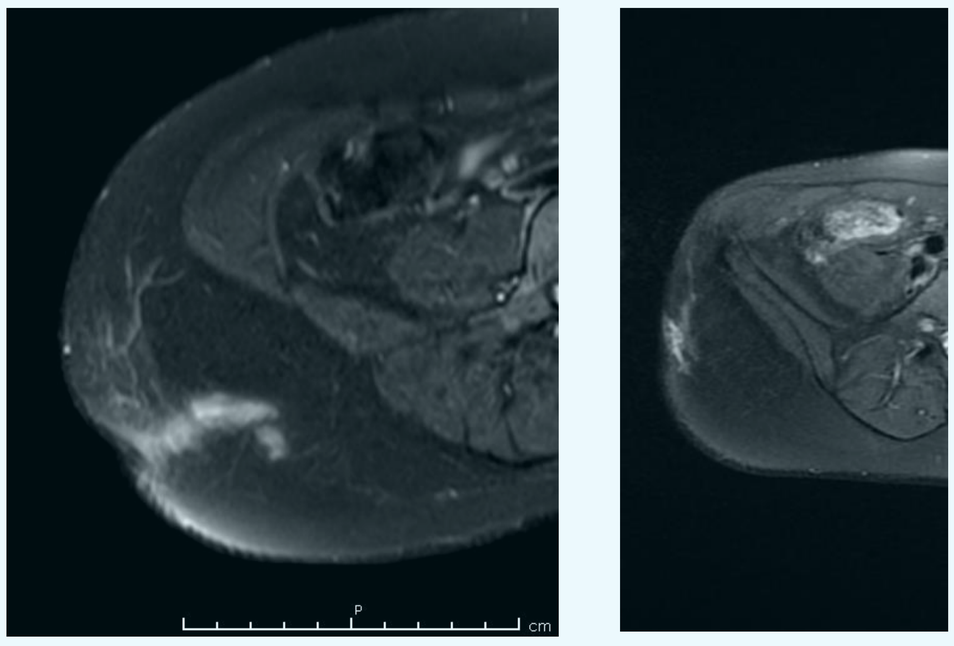
Patients with rheumatoid arthritis are at increased risk of both TB and non-tuberculous mycobacterium. *M. abscessus* is a nontuberculous mycobacterium, the incidence of which is increasing world wide. Skin and soft tissue is frequently associated with direct contact with contaminated material through traumatic injury, surgical wounds, or environmental exposure (hot springs). It is almost certain that the steroid injection was responsible for this patients infection.

The management of patients is often challenging due to multidrug resistance. *M. abscessus* has intrinsic resistance to a number of agents due to the low permeability of the cell envelope and multidrug export systems (2). The interpretation of susceptibility testing is difficult as in vitro results do not always predict clinical response.

Further to this the complex treatment regimes often come with multiple toxicities and monitoring. Amikacin in particular needs drug levels, and monitoring for ototoxicity and renal impairment. Nausea was a huge issue during her second admission. This was believed to be secondary to Tigecyline, studies have shown women are more likely to experience nausea and that is can be around 46% in this group(3). Unfortunately there is no research specifically looking at the efficacy at antiemetics and we sought advise from palliative care. A combination of cyclizine and haloperidol was used to try and control this. We also involved the nutrition team as weight loss became an issue. Managing the side effects and compliance can be very challenging and we were grateful to our patient for preserving with the treatment regime.

Given the fact that we were unable to culture *M. abscessus* following the second debridement despite the short course of antimicrobial therapy, initial surgery was likely key to management in this case. Debridement has a central role in these patients and a multidisciplinary approach to care is essential.

Figure 2 MRI findings
Left At presentation treatment
Right 9 months later (4 months after stopping treatment)



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