Reminder of important clinical lesson

An unusual surgical site infection in a liver transplant recipient

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Summary

Mycobacterium abscessus is a rare cause of human infection and is difficult to diagnose unless it is suspected. A 45-year-old woman underwent deceased donor liver transplantation following which she developed non-healing surgical site infection, which did not resolve with routine antibiotics for 2 months. The scraping of the wound revealed *M abscessus* infection. Definitive identification of this species of mycobacterium was possible by its growth characteristics on culture and reverse line blot hybridisation assay. She was treated with clarithromycin and cotrimaxazole as per sensitivity and showed complete recovery from the infection within 6 weeks of starting the drugs, which were continued for 6 months. We believe that this is the first documented case of surgical site infection by *M abscessus* in a liver transplant recipient.

BACKGROUND

Mycobacterium abscessus is a fast-growing non-tuberculous mycobacteria (NTM) that has been reported to cause a variety of cutaneous and soft tissue infections, usually presenting as ulcerations, abscesses, sinuses or nodules. We report a unique cause of surgical site infection in a liver transplant recipient.

CASE PRESENTATION

A 45-year-old woman underwent deceased donor liver transplantation 1 year ago for decompensated hepatitis C related liver cirrhosis. The postoperative period was uneventful (no surgical complications) and she was discharged after 2 weeks. On follow-up, she complained of pain and persistent serosanguinous discharge from the

Figure 1 Wound image showing erythema and induration.

Figure 2 (A) Ziehl Neelsen stain smear from the wound discharge showing pink beaded acid fast bacilli (black circle) (100×). (B) Smear of acid fast bacilli grown on Lowenstein Jensen culture medium (100×).

Figure 3 Reverse line blot hybridisation (RLBH) assay showing a common mycobacterial probe (point 1) and presence of *M. abscessus* (point 11).

surgical site. She had persistent ascites leak from the wound and, initially, the non-healing was attributed to the leak. Local examination revealed erythema and induration (figure 1). The wound did not heal in spite of multiple courses of antibiotics, including amoxycillin-clavulanic

and levofloxacin. On initial wound exploration, cultures (aerobic, anaerobic and fungal) from the discharge were negative. Acid-fast bacilli (AFB) cultures were not sent during this exploration. As the wound failed to, with persistent discharge even after the ascites leak had stopped, a second

exploration was done after 2 months. This revealed caseous material and pale granulation tissue in the depth of the wound.

INVESTIGATIONS

Scraping of the wound was done and the tissue was sent for AFB smear and culture. The smear was positive for AFB (figure 2A). Culture in Lowenstein Jensen medium revealed a rapid-growing NTM (figure 2B). On molecular typing using reverse line blot hybridisation assay with species-specific mycobacterial probes, the organism was identified as *M abscessus* (figure 3).

TREATMENT

She was started on antibiotics as per sensitivity (clarithromycin, linezolid and cotrimaxazole). Linezolid had to be discontinued as she had persistent thrombocytopenia secondary to persistent hypersplenism. She was also sensitive to amikacin, which was not administered as she had tacrolimus-related renal dysfunction. She initially received immunosuppression in the form of tacrolimus, which had to be discontinued in the view of renal dysfunction, and was started on sirolimus, which was after the wound had healed. She did not develop rejection and did not require any bolus steroid doses. There were no concurrent opportunistic infections and no contributing environmental factors predisposing to mycobacterial infection.

OUTCOME AND FOLLOW-UP

The wound healed completely after about 6 weeks of starting the drugs, which were continued for 6 months. She is asymptomatic on follow-up.

DISCUSSION

Non-tubercular mycobacterial infections are becoming increasingly common. Among them, the rapidly growing organisms, such as *M chelonae*, *M fortuitum* and *M abscessus* are widespread in nature and in hospital environments. These can be isolated from water, soil and dust, and have been identified in cutaneous and joint abscesses. Infections caused by rapid-growing NTM have been reported in immunocompromised patients, frequently in renal transplant recipients¹ with few reports in liver transplant recipients.² There is no report of a surgical site infection with *M abscessus* in a liver transplant recipient.

The commonest presentation of NTMs described in literature is cutaneous nodules separate from the wound sites mainly on the extremities. These infections have also been commonly described at laparoscopy port sites.³ Typically, wound infections due to NTM do not occur as an immediate postoperative complication. There is apparent immediate postoperative healing and, gradually over a variable period of time, the scar breaks down to a persistent non-healing superficial wound with discharging sinuses. This was also the presentation in our patient. These wounds are painless and patients are afebrile with no other systemic illness. Therefore, mycobacterial infection should always be ruled out in patients with chronic non-healing wounds. Investigations should include AFB smear and culture in addition to the routine gram stain and culture. These wounds do not respond to antibiotics used for the usual

infections and persist for a prolonged period of time,^{4 5} as was observed in our patient.

Treatment of the disease depends largely on its extent and the host immune status. Surgical intervention, such as drainage of abscesses, removal of foreign bodies or wound debridement, may be required as anti-mycobacterial treatment may be less effective if dead or foreign material is present at the infection site. As the three pathogenic species of rapidly growing mycobacteria differ in antimicrobial sensitivity, susceptibility testing is recommended for successful treatment. *M abscessus* has been described to infect surgical sites in non-transplant patients⁵ and also other organs, including lungs, prosthetic valves, lymph nodes and eyes.⁶ This bacterium is usually resistant to most traditional anti-mycobacterial agents. Also, *M abscessus* is resistant to drugs used for NTMs, including tetracyclines, fluoroquinolones and sulphonamides. Our patient too did not respond to levofloxacin. This infection is usually sensitive to amikacin, clarithromycin and azithromycin. As clarithromycin is available in oral formulation, it is usually the first-line treatment for localised disease. Disseminated disease may require parenteral treatment with intravenous amikacin or cefoxitin, together with clarithromycin. The recommended duration of treatment is 6 months. Although our patient had localised disease, combination treatment was given in the view of her immunocompromised state. Newer drugs that have been reported to be efficacious against *M abscessus* include faropenem⁷ combined with clarithromycin and tigecycline.⁸

Learning points

- ▶ Chronic non-healing surgical site infections are often misdiagnosed as bacterial or fungal infections.
- ▶ Any chronic non-healing wound should raise a suspicion of non-tuberculous mycobacteria, including a post-transplant setting.
- ▶ All chronic non-healing wounds should have acid fast bacillus smear and culture done from the wound scrapings or discharge.
- ▶ Reverse line blot hybridisation assay is useful in identifying species of non-tuberculous mycobacteria.
- ▶ Non-tuberculous mycobacteria do not respond to routine anti-mycobacterial drugs and need treatment for up to 6 months.
- ▶ *M abscessus* surgical site infection can occur in a liver transplant recipient.

Competing interests None.

Patient consent Obtained.

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