CASE REPORT

Presentation of *Mycobacterium abscessus* infection following rhytidectomy to a UK plastic surgery unit

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SUMMARY

We report the presentation of a patient to a UK plastic surgery unit with *Mycobacterium abscessus* infection following a facelift surgery in Southern India. Treatment was protracted requiring surgical debridement and 6 months of antibiotics including a 3-week hospital admission for intravenous antibiotic therapy. We describe the clinical presentation, diagnosis and treatment of this unusual microorganism with reference to more familiar pyogenic infections.

BACKGROUND

This case report highlights *Mycobacterium abscessus* as a cause of atypical soft tissue infection following facelift surgery overseas, the need for domestic clinicians to be mindful of the increased risk of unusual infections requiring complex treatments in this growing patient group and the potential risk to patients undergoing elective surgery abroad.

CASE PRESENTATION

A 52-year-old white British woman had undergone rhytidectomy in Kerala, India. Two and a half months after returning to the UK she presented to our plastic surgery unit with a painful facial swelling below the surgical incision. On examination, a localised right-sided facial abscess was identified at the angle of the mandible. The overlying skin was erythematous, tethered and inflamed (figure 1A, B). Her medical history was relevant for ulcerative colitis, currently quiescent, and the inflammatory markers were normal.

INVESTIGATIONS

Ultrasonography revealed a fluid collection 4 mm in diameter suggestive of pus formation. This was drained surgically under general anaesthetic. The original incision was explored, a small amount of necrotic subcutaneous tissue debrided and nylon sutures removed from the superficial muscular aponeurotic system (SMAS) layer. Samples sent for culture revealed no growth although the patient had received a dose of antibiotics prior to surgery. Over the next 2 weeks, the erythema and inflammation failed to settle and the pain persisted. Although the remaining collection was insufficient to indicate further surgical drainage (1 mm diameter), an additional sample aspirated under ultrasound guidance was sent for further microbiological analysis. The sample tested positive for mycobacteria after 3.8 days incubation in liquid culture media (bioMérieux BacT/ALERT liquid culture system for mycobacteria) and antibiotic supplement. The presence of acid-alcohol fast

bacilli (AAFB) was confirmed by Ziehl-Neelsen stain. The sample was then referred to the Health Protection Agency National Mycobacterium Reference Laboratory (NMRL) where species level identification was performed using commercially available line probe assays (Hain Lifescience GenoType *Mycobacterium* CM/AS). The species *M. abscessus* was identified. Antimicrobial susceptibility testing on the isolate was carried out by the reference laboratory using disc diffusion in Lowenstein-Jensen slants. Tigecycline and clarithromycin tested as susceptible. Imipenem tested as intermediate.

DIFFERENTIAL DIAGNOSIS

The recent surgical history and the erythematous, inflamed of the neck lump in this case make an infective process the most likely differential diagnosis. While *Staphylococcus aureus* is a more usual bacterial pathogen in such cases, failure to respond to the standard treatment of surgical incision and drainage and oral antibiotics suggested the possibility of atypical infection.

TREATMENT

The patient was referred to the infectious diseases department at the local University Teaching Hospital. Acting on advice from the local microbiology department, antimicrobial therapy since presentation had comprised broad-spectrum antibiotics (oral coamoxiclav 625 mg three times a day and oral clindamycin 500 mg twice daily) targeting pyogenic microorganisms commoner to the UK (eg, *S. aureus*). Under the care of infectious diseases a course of oral moxifloxacin (400 mg once daily) and clarithromycin (500 mg twice daily) was started. Despite this, the symptoms progressed with a further lesion developing below the right ear and the patient was admitted to hospital by the infectious diseases department for intravenous antibiotic therapy. Antimicrobial drug sensitivities requested from the Health Protection Agency NMRL suggested triple therapy with intravenous tigecycline (50 mg twice daily) and meropenem (1 g three times a day) (a local alternative to imipenem) and oral clarithromycin (500 mg twice daily). On this regimen, the patient experienced multiple side effects including deranged liver function tests, anxiety, tinnitus, diarrhoea and nausea, but her symptoms did improve. Tigecycline was temporarily discontinued owing to hepatic insult. An inpatient MRI served to rule out the suspicion of deep infection demonstrated no evidence of osteomyelitis and confirmed the resolution of localising abscess in the soft tissues. After 17 days of

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Figure 1 (A and B) The right jaw showing erythematous lesion and inflamed, tethered skin 10 weeks after the facelift procedure.

intravenous antibiotics the patient was discharged from hospital with a long-term course of oral ciprofloxacin (500 mg twice daily) and clarithromycin (500 mg twice daily).

OUTCOME AND FOLLOW-UP

The patient was discharged from the outpatient clinic 5 months later, her symptoms having resolved after 6 months of antibiotic treatment (figure 2A,B). Further surgery was not required.

DISCUSSION

An EMBASE/MEDLINE search and review of the literature revealed no previous UK cases of *M. abscessus* complicating rhytidectomy and two existing US reports where the organism is more prevalent.^{1 2} This case highlights the risk to patients of medical tourism and the potentially complex clinical considerations for domestic clinicians charged with a duty of care to provide emergency treatment.^{3 4} *M. abscessus* is classed as a rapidly growing, non-tuberculous mycobacteria (NTM) under the Runyon classification system of NTM. It is known to produce six clinical syndromes including skin and soft tissue disease.⁵ NTM are found in soil, water, animal and plant material. The UK incidence of *M. abscessus* infection reported to the Health Protection Agency by hospital laboratories increased from 1/100 000 in 2000 to 60/100 000 in 2006.⁶ While the clinical significance of this remains unconfirmed it is thought to be due, in part, to a growing immunocompromised population (an ageing population and the rise of acquired-immunocompromised deficiency syndrome).⁶ Our patient recalls the nursing staff rinsing and vigorously scrubbing the wound with non-sterile water on the first postoperative day. Although surprised by the use of a non-sterile solution as a cleaning agent, she deferred to the judgement of the clinical staff. This suggests a probable route for the transmission of the infection although

Figure 2 (A and B) Clinical appearance after surgical debridement and 6 months of multiantibiotic treatment.

contaminated skin-marking solution used intraoperatively has also been reported to cause such infections.⁷

Failure to respond to surgical debridement and antibiotic therapy along with the delayed presentation prompted consideration of an atypical infection. When mycobacterial infection is suspected, acid-fast staining should be requested as the cell walls contain large amounts of lipid substances which are resistant to usual staining methods.²

M. abscessus has limited in vitro susceptibility and any observed correlation between in vitro antimicrobial susceptibilities and clinical response has yet to be prospectively evaluated.⁸ However, the current treatment of non-pulmonary *M. abscessus* is based on in vitro susceptibility and a macrolide-based regimen (eg, clarithromycin) is frequently used.⁸ *M. abscessus* carries the novel 'erm 41' gene which confers inducible resistance through mutation and therefore a cautious approach to monotherapy is advised.^{5 9}

For soft tissue *M. abscessus* disease, currently there is no existent adequate simple protocol of drug susceptibility. British guidelines on the management of non-tuberculous mycobacteria are being prepared by the British Thoracic Society and will be available in 2015. Currently, the NMRL references the 2007 American Thoracic Society statement on the diagnosis, treatment and prevention of non-tuberculous mycobacterial disease. This recommends that clinically significant NTM isolates should be routinely identified to the species level and stress that communication between the clinician and the laboratory is essential for successful management of this difficult to treat pathogen. Surgical resection is indicated in localised infection and a multi-disciplinary approach with infectious diseases specialists is essential with the antibiotic treatment of 4–6 months duration.⁸

Clinicians treating patients who present with postoperative infections following treatment overseas should remain mindful of the risk of atypical organisms and the benefits of early culture and consultation with the Health Protection Reference Laboratory. The increasing trend in medical and cosmetic tourism is well documented.^{3 10 11} However, it is relevant to note that as a result more patients are presenting to domestic hospitals following surgery overseas with postoperative complications, which may be uncommon in their home country.

Learning points

- ▶ When treating soft tissue infections that are refractory to conventional treatment, mycobacteria infection should be considered and acid-fast bacilli testing requested.
- ▶ This is particularly the case in patients who present after having undergone a surgical procedure abroad and when a prolonged incubation time is suspected.
- ▶ In cases where mycobacteria infection is suspected, early consultation with the Health Protection Agency is advised. Species level identification and specific antimicrobial susceptibilities are recommended and can be performed and provided by the Health Protection Agency National Mycobacterium Reference Laboratory.
- ▶ Communication between the clinician and the laboratory is essential in the successful management of this difficult to treat microorganism.

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REFERENCES

- 1 Agarwal A, Maloney RW. Mycobacterium abscessus outbreak after rhytidectomies performed in an outpatient surgery center. *Plast Reconstr Surg* 2011;128:58e–86e.
- 2 Akers OJ, Mascaro JR, Baker SM. Mycobacterium abscessus infection after facelift surgery: a case report. *J Oral Maxillofac Surg* 2000;58:572–4.
- 3 Jeevan R, Birch J, Armstrong AP. Travelling abroad for aesthetic surgery: informing healthcare practitioners and providers while improving patient safety. *J Plast Reconstr Aesthet Surg* 2011;64:143–7.
- 4 York D. Medical tourism: the trend toward outsourcing medical procedures to foreign countries. *J Contin Educ Health Prof* 2008;28:99–102.
- 5 Caplivski D, Scheld WM. *Consultations in infectious diseases: a case based approach to diagnosis and management*. New York: Oxford University Press; 2012:274–6.
- 6 Moore JE, Kruijshaar ME, Ormerod LP, et al. Increasing reports of non-tuberculous mycobacteria in England, Wales and Northern Ireland, 1995–2006. *BMC Public Health* 2010;10:612.
- 7 Safranek TJ, Jarvis WR, Carson LA, et al. Mycobacterium chelonae wound infections after plastic surgery employing contaminated gentian violet skin-marking solution. *N Engl J Med* 1987;317:197–201.
- 8 Griffith DE, Aksamit T, Brown-Elliott BA, et al. An official ATS/IDSA statement: diagnosis, treatment, and prevention of non-tuberculous mycobacterial diseases. *Am J Respir Crit Care Med* 2007;175:367–416.
- 9 Mandell GL, Bennett EB, Dolin R. *Principles and practice of infectious diseases*. 7th edn. Philadelphia: Churchill Livingstone Elsevier, 2010:3194–95.
- 10 Miagi K, Auberson D, Patel AJ, et al. The unwritten price of cosmetic tourism: an observational study and cost analysis. *J Plast Reconstr Aesthet Surg* 2012;65:22–8.
- 11 Birch J, Caulfield R, Ramakrishnan V. The complications of 'cosmetic tourism'—an avoidable burden on the NHS. *J Plast Reconstr Aesthet Surg* 2007;60:1075–7.

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