CASE REPORT

Mycobacterium fortuitum infection of the scalp after a skin graft

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SUMMARY

Mycobacterium fortuitum is a non-tuberculous mycobacterium found in the soil and water of most regions of the world, and it can cause disease in immunocompetent and immunocompromised hosts. We present a 52-year-old man who developed a scalp abscess under a free flap for cranium coverage after a motor vehicle accident. Culture of material drained from the abscess grew *M. fortuitum*.

BACKGROUND

Mycobacterium fortuitum (MF) is a non-tuberculous mycobacterium characterised by its rapid growth in culture media.¹ This bacterium can be found in the soil and water of most regions of the world, and it causes disease in immunocompetent and immunocompromised hosts.² Disseminated infections are more common among the latter, whereas soft tissue infections, especially postoperative, do not correlate with the host's immune status.¹⁻³

We present a 52-year-old man who received a free flap with split-thickness skin graft for cranium coverage after a motor vehicle accident and subsequently developed a scalp abscess. Culture of material drained from the abscess grew MF. To the best of our knowledge, this is the first case of MF infection causing a flap-related scalp abscess reported in the literature.

CASE PRESENTATION

A 52-year-old African-American unemployed man with a history of hypothyroidism, schizophrenia and hypertension presented to Lyndon B Johnson Hospital with a 2-month history of scalp pain and 2 days of purulent discharge from a scalp wound. The patient was involved in a motor vehicle accident 3 months prior, at which time he sustained a scalp injury that resulted in a significant area of exposed cranium. Since this time, the patient has undergone multiple irrigation and debridements as well as a latissimus dorsi free tissue transfer with split-thickness skin graft in order to achieve adequate tissue coverage of the area. The night before presentation the patient experienced swelling and pain in the area of his flap and noticed bloody and purulent discharge from the wound.

On presentation, the patient was overall healthy appearing, his temperature was 36.8°C, blood pressure 145/100 mm Hg, pulse 82 bpm, respiratory rate 18 breaths per minute and oxygen saturation 98% on room air. On examination, the patient's scalp flap appeared viable with no apparent signs of tissue necrosis. An abscess was appreciated at the superior-most portion of the flap, with purulent

material noted to be expressed from under the free flap. The flap and scalp were non-erythematous. The remainder of the examination was normal.

INVESTIGATIONS

His laboratory results showed a white cell count of 8.3K/ μ L (68.1% neutrophils, 19.2% lymphocytes), haemoglobin of 12.8 g/dL with a mean corpuscular volume of 82 fL and a platelet count of 332K/ μ L. His serum electrolytes were normal, blood urea nitrogen of 17 mg/dL and creatinine of 1.0 mg/dL. CT of the head revealed multiple rim-enhancing lesions associated with the right frontal scalp flap, the largest of which measured 3.8 cm in diameter. The CT did not demonstrate any underlying irregularity of the skull.

TREATMENT

Empirical therapy with vancomycin was started. The patient underwent irrigation and debridement the day after admission, which he tolerated well, with no complications. Cultures from the scalp abscesses were collected during the surgery. Our patient started empiric antibiotic therapy with vancomycin and cefepime and underwent debridement with Jackson-Pratt drain placement. After the procedure, he was discharged on trimethoprim-sulfamethoxazole.

The initial Gram stain reported no organisms. However, 10 days after discharge from the hospital, the wound culture isolated MF sensitive to amikacin, linezolid, moxifloxacin and trimethoprim/sulfamethoxazole. The organism was intermediately susceptible to clarithromycin.

Then, the antimicrobial regimen was changed to doxycycline and ciprofloxacin.

OUTCOME AND FOLLOW-UP

Currently, the patient has received 2 of 4 months of antibiotic treatment and is progressing favourably.

DISCUSSION

The reported incidence of non-tuberculous mycobacterial (NTM) cutaneous infections continues to rise, and penetrating wounds or the presence of foreign bodies appear to be predisposing conditions.⁴ MF has been associated with a broad variety of exposures, such as acupuncture, lacerations, body-scrubbing in public baths, chemotherapy and organ transplants.^{5 6} Outbreaks have been reported in nail salons and with the use of electromyograms, ventriculoperitoneal shunts and steroid injections.⁷⁻¹¹ These infections have been described in immunocompetent and immunocompromised patients.^{2 12-14} Laboratory cross-contamination is a known cause of

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pseudo-outbreaks. However, when MF or other non-tuberculous mycobacteria are isolated from normally sterile sites, it is recommended to consider a true infection until proven otherwise.¹⁵ No other case of MF infection was contemporarily found in our hospital.

To the best of our knowledge, we are reporting the first case in the literature of MF causing a skin graft-related scalp abscess. Although MF is widely distributed in the environment, it is unclear how the organism reached this patient's scalp. We hypothesise that this might be a late infection related to his prior surgical graft.

In typical cases of skin and soft tissue MF infections, the lesions develop after an inoculation period of 4–6 weeks and can present as painful nodules, abscesses, ulcers, draining sinus tracts or cellulitis.¹⁶ Histologically, older lesions have a poorly specific infiltrate, whereas acute lesions display suppurative granulomas without caseation, local tissue destruction and a mixed infiltrate.¹⁷

Antimicrobial sensitivity usually guides the therapy, and using a combination of antibiotics is recommended. For limited skin and soft tissue infections, such as in our case, oral therapy with two agents is recommended. The tendency to cause drainage, ulceration and deeper infection with fistulous tracts when untreated makes observation a non-advisable intervention.¹⁵ The duration of treatment should be for a minimum of 4 months. The preferred regimens include clarithromycin or azithromycin combined with ciprofloxacin, levofloxacin, doxycycline, minocycline or trimethoprim–sulfamethoxazole. For severe or disseminated disease, initial parenteral treatment is recommended with two to three effective antibiotics, followed by oral treatment for 6–12 months.^{1 18}

In conclusion, we describe a case of skin graft-related scalp abscess caused by MF treated with dual antibiotic treatment and extensive surgical debridement. As with other infections caused by uncommon pathogens, this case shows the importance of the microbiological analysis of material drained from skin abscesses.

Learning points

- *Mycobacterium fortuitum* are environmental non-tuberculous mycobacteria formerly found to cause postoperative wound infections in immunocompetent patients.
- When presenting like a skin abscess, debridement is paramount; antibiotic therapy should follow in vitro susceptibilities.
- As with other infections caused by uncommon pathogens, this case shows the importance of the microbiological analysis of material drained from skin abscesses.

Contributors All authors contributed sufficiently to the project to be included as authors, and all who are qualified to be authors are thus listed. BDS and INL compiled the initial draft of the manuscript. IADC provided with the final draft and initial revision and obtained consent. GMA provided with the final revision and acts as guarantor.

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