

Unresolving Furunculosis in a Diabetic Patient: Cutaneous *Mycobacterium abscessus* Infection

Dear Editor,

Mycobacterium abscessus is a ubiquitous rapidly growing mycobacterium which is widespread in soil, water and dust. It is known to cause cutaneous infections in the form of furuncles, nodules and ulcers. Infections typically develop following trauma such as injections, acupuncture, operations and other penetrating injuries.¹ We describe a diabetic patient who developed multiple furuncles over her abdomen due to an infection with *M. abscessus* from which several learning points are highlighted.

Case Report

A 59-year-old Indian lady complained of tender lesions over her abdomen, which have been increasing in size and number over 2 months. She had type 2 diabetes mellitus for 12 years and had been treated with metformin as well as prandial insulin aspart (NovoRapid® FlexPen®) twice daily and basal insulin glargine (Lantus®) once daily.

The lesions first appeared in April 2007 over the injection sites on her anterior abdominal wall. They were mildly painful, had occasional purulent discharges and were not associated with fever. Over the course of the next 6 weeks, the nodules were aspirated on 3 occasions for pyogenic cultures, which were persistently sterile. Over the same period, she was treated with various antibiotics including oral augmentin, oral clindamycin, oral metronidazole and intravenous ceftriaxone without any resolution. A presumptive diagnosis of allergy to the excipient of insulin aspart was suggested by her allergist and she was advised to switch her prandial insulin to regular insulin (Actrapid® NovoLet®) and to inject them over her thigh. Her lesions continued to increase in numbers over her abdomen despite the switch and she was admitted to hospital for further management.

On admission, she was afebrile and a clinical examination showed multiple tender, discrete hyperpigmented nodules distributed over her lower abdomen which corresponded to her previous injection sites. Some of the nodules had overlying punctum with minimal discharge (Fig. 1).

Laboratory investigations including a complete blood count, electrolytes, liver function tests and C reactive protein were normal. Her HbA1C was 8.1%. A skin biopsy performed over the abdomen showed superficial and deep perivascular dermatitis with infiltrates of lymphocytes with a few eosinophils and plasma cells. Microbiological



Fig. 1. Multiple hyperpigmented nodules and furuncles on the abdomen

culture of the skin biopsy yielded *M. abscessus*. Further history obtained from the patient revealed that since she started using insulin aspart in December 2006, she had been washing the pen needles under running tap water and re-using them to save costs. She was treated with clarithromycin. Following 6 months of treatment, the lesions cleared completely with residual post-inflammatory hyperpigmentation.

Discussion

M. abscessus are rapidly growing mycobacteria that are distributed in diverse environments such as water, soil and dust. Primary cutaneous disease occurs in the immunocompetent host and typically follows a traumatic injury such as acupuncture, injections, cosmetic procedures and day surgeries. Infections have also been reported following roadside accidents, gardening injuries and the use of pedicures.¹

Although extra-cutaneous infections such as lung infections, meningitis, osteomyelitis and keratitis have been reported, cutaneous and soft tissue infections remain the most common manifestation, occurring in more than 50% of patients. The cutaneous manifestations include papulonodular lesions, furuncles, cellulites, ulcers, sinus tract infections and postoperative wound infections.¹

Lesions can be painless and minimally secretent. Fever, elevated white cells and inflammatory markers are uncommon. Routine pyogenic cultures are often sterile. The onset of cutaneous lesions occurs between 3 days and up to 7 months post-inoculation and the median time to

diagnosis ranges between 65 and 125 days.²

Microbiological diagnosis is essential, with lesional biopsies offering the highest yield (55%) compared to debridement specimens (34%) and swabs of wound (11%).²

Optimal treatment guidelines have not been established. *M. abscessus* is generally insensitive to traditional anti-tubercular treatments but is almost uniformly sensitive to clarithromycin. Wallace et al³ suggested that single drug therapy with clarithromycin can be effective and safe when the drug is taken continuously for no less than four and a half months. Resistance to clarithromycin have been reported in 8% of treated patients, hence, some experts have advocated the role of combination therapy and surgery in patients with widespread disease although this must be balanced with the risk of side-effects, the increased cost with intravenous antibiotics and hospitalisation. Combinations of antibiotics that have been effective include the use of clarithromycin in conjunction with others such as amikacin, cefoxitin, doxycycline and trimethoprim-sulfamethoxazole. Although the optimal duration of treatment has not been well defined, the suggested treatment duration is between 3 and 6 months of antibiotic treatment.⁴

There was a delay in establishing diagnosis in our patient and this is contributed in part to her relatively mild and indolent symptoms as well as the persistently sterile pyogenic cultures. This case illustrates the need to consider atypical mycobacterial infections in patients with persistent cutaneous infection, especially in those with a history of antecedent trauma, persistently sterile cultures, relatively mild symptoms and poor response to standard treatment. In such cases, skin biopsy for histology and microbiological studies are essential.

A survey across the USA found that non-tuberculous mycobacteria, including *M. abscessus*, was recovered from 83% of water supplies to dialysis units.⁵ Another survey held in Korea⁶ showed that atypical mycobacteria were

isolated from 50% of the tap water samples. Hence, we postulate that in our patient, the source of the atypical mycobacterium was from the colonised tap water that she used to rinse her pen needles. This underscores the importance for diabetics to use a new sterilised syringe and needle for each injection.

REFERENCES

1. Murillo J, Torres H, Bofill L, Rios-Fabra A, Irausquin E, Isturiz R, et al. Skin and wound infection by rapidly growing mycobacteria. *Arch Dermatol* 2000;136:1347-52.
2. Uslan DZ, Kawalshi TJ, Wengenach NL, Virk A, Wilson JW. Skin and soft tissue infections due to rapidly growing mycobacteria. *Arch Dermatol* 2006;142:1287-92.
3. Wallace RJ, Tanner D, Brennan PJ, Brown BA. Clinical trial of clarithromycin for cutaneous (disseminated) infection due to *Mycobacterium chelonae*. *Ann Intern Med* 1993;119:482-6.
4. Joon YS, Jang WS, Hey WJ, Hee JC, Woo JK, Min JK. An outbreak of post-acupuncture cutaneous infection due to *Mycobacterium abscessus*. *BMC Infect Dis* 2006;6:6.
5. Morris-Jones R, Fletcher C, Morris-Jones S, Brown T, Hilton RM, Hay R. *Mycobacterium abscessus*: a cutaneous infection in a patient on renal replacement therapy. *Clin Exp Dermatol* 2001;26:415-8.
6. Shin JH, Lee EJ, Lee HR, Ryu SM, Kim HR, Chang CL, et al. Prevalence of non-tuberculous mycobacteria in a hospital environment. *J Hosp Infect* 2007;65:143-8.

Haur Yueh Lee,¹MBBS, MRCP, Yong Mong Bee,²MBBS, MRCP, T Thirumoorthy,¹FRCP, FAMS

¹ Dermatology Unit, Singapore General Hospital, Outram Road, Singapore

² Department of Endocrinology, Singapore General Hospital, Outram Road, Singapore

Address for Correspondence: Dr Lee Haur Yueh, Dermatology Unit, Singapore General Hospital, Outram Road, Singapore 169608.

Email: lee.haur.yueh@singhealth.com.sg