

Two cases of occupationally acquired *Mycobacterium marinum* infection in Chinese restaurant workers in Melbourne, Australia

Occupational *Mycobacterium marinum*

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Mycobacterium marinum (*M. marinum*) is a nontuberculous mycobacterium which affects both freshwater and saltwater fish. Human infection arises when broken skin is exposed to a contaminated source. We describe two cases of occupationally acquired *M. marinum* infection in Chinese restaurant workers, whose dealings with fish were only elicited on careful history.

The first case is a 36-year-old systemically well male who presented with an 11-month history of a non-healing ulcerated plaque following a superficial skin injury on his left index finger (Figure 1a). He worked at a Chinese restaurant where he handled fish without gloves. Biopsy showed occasional granulomas but no acid-fast bacilli (Figure 1b). Tissue cultures were positive for methicillin-sensitive *Staphylococcus aureus* but negative for mycobacteria. He was treated with cephalexin and doxycycline for several months without success. A subsequent QuantiFERON-TB Gold (Cellestis International, Melbourne, Vic) assay returned positive and a fluid aspirate grew *M. marinum* on culture. He is being successfully treated with rifampicin 600mg daily and ethambutol 800mg daily.

The second case involves a 33-year-old systemically well male who presented with a 12-month history of erythematous nodules coalescing into plaques on his right forearm (Figure 2a). A chef at a different Chinese restaurant, he reported a preceding minor burn to the area. He wore gloves but they left the upper forearms exposed to direct contact with fish during cooking. Initial skin biopsies revealed non-necrotising sarcoidal granulomatous inflammation with no acid-fast bacilli (Figure 2b). Tissue cultures, including mycobacterial cultures, were negative. A provisional diagnosis of

cutaneous sarcoidosis was made and the lesions were treated with intralesional corticosteroid. However, this caused the plaques to ulcerate and enlarge. Repeat skin biopsies were obtained showing necrotising granulomas. Subsequent tissue culture was positive for *M. marinum* and QuantiFERON assay also returned positive. He is currently being treated with rifampicin 600mg daily and clarithromycin 500mg twice daily to good effect.

M. marinum is difficult to diagnose as the condition is rare and patients present late with varied, non-specific clinical findings (1). Investigations involve pathological evaluation of tissue and specialized mycobacterial culture. However, cultures are not always positive and often take several months to yield results (2). Furthermore, pathological evaluation has poor sensitivity and specificity (3). A strong index of suspicion is required as multiple biopsies and repeated testing may be necessary to make the diagnosis.

Interestingly QuantiFERON testing was positive in both cases. Chest X-rays did not reveal any stigmata of latent tuberculosis in either patient. This may represent theoretical cross-reactivity between *Mycobacterium tuberculosis* and *M. marinum* as both express peptides ESAT-6 and CFP-10 (4). If treating for both latent tuberculosis and *M. marinum*, a combination of rifampicin and ethambutol may be used.

We identify Chinese restaurant workers as a uniquely at-risk group for *M. marinum* infection in the Australian context. This is likely due to the common presence of live fish and fish tanks in Chinese restaurants. Similarly, a recent outbreak of *M. marinum* was traced back to the fish markets of New York's Chinatown (1). Our case report highlights the need for adequate personal protective equipment in this occupational group and other workers who may regularly handle fish.

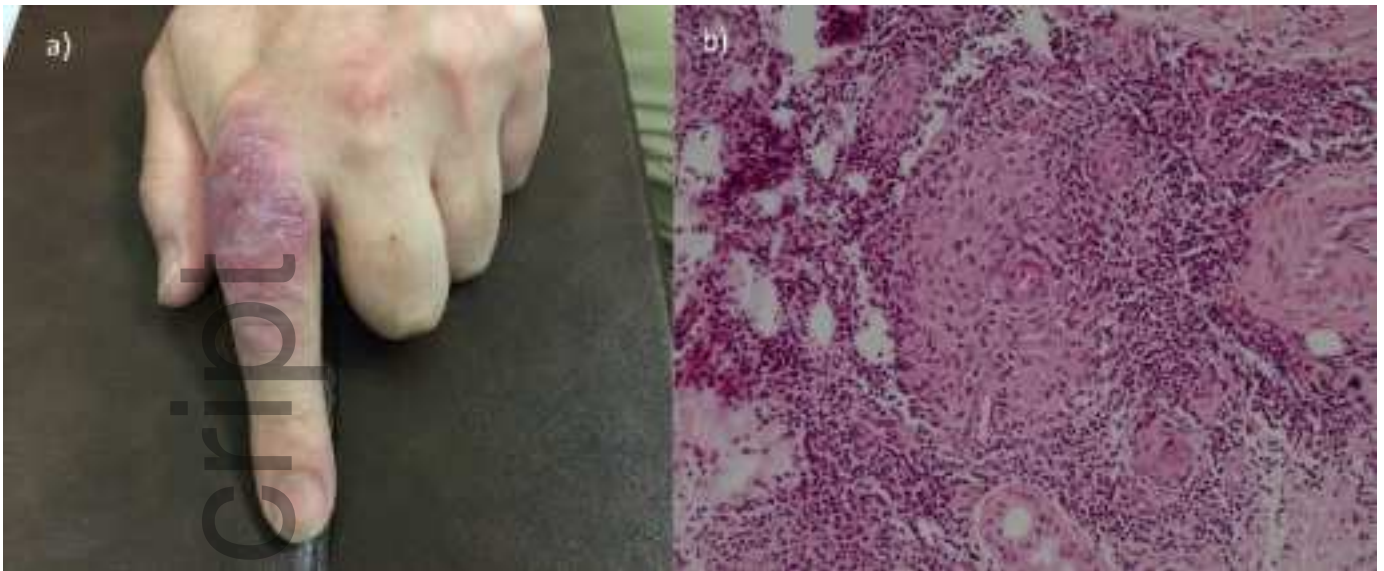
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Figure legends

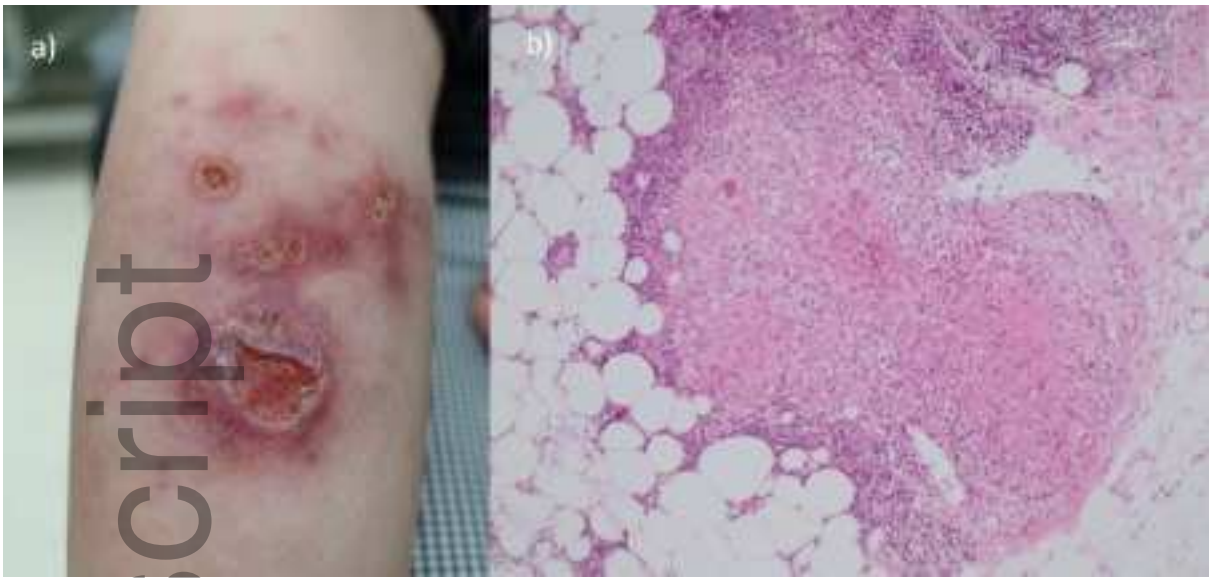
Figure 1 a) Violaceous plaque caused by *M. marinum* on the index finger of a 36-year-old Chinese restaurant worker. b) Superficial and deep perivascular lymphoid infiltrate with occasional granulomas but no acid-fast bacilli (HE x400)

Figure 2 a) Ulcerated plaque caused by *M. marinum* post-intralesional corticosteroid on the forearm of a 33-year-old Chinese restaurant chef. b) Necrotising granulomas caused by *M. marinum* infection (HE x400)



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