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Case report

Atypical mycobacterial infection mimicking carbuncle in an elderly patient: A case report

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Abstract

Background: Atypical mycobacterium infection occurs under certain skin conditions, namely the disruption of skin integrity and mucous membranes accompanied by the reduction of cellular immunity. However, atypical mycobacterial infection in elderly patients is rarely reported.

Case: A 64 years old male patient, complained of red lumps on the upper-back for a month, accompanied by mild fever and minimal pain. Three months before, the patient had accupuncture on the neck and upper back. Physical examination showed multiple miliar to lenticular sized papules and pustules on an erythematous-violaceus base with hard and immobile palpable nodes and infiltrate. After clinical and laboratory workup, the patient was diagnosed with carbuncle with *Candida spp* colonization. The treatment consisted of systemic antibiotics and topical antifungals. There was no clinical improvement after 3 weeks. Histopathology and laboratory results suggested atypical mycobacterium infection.

Discussion: Atypical mycobacterium infection should be considered in elderly patients with skin and soft tissue infections that show no clinical improvement to standard therapy.

Keywords: *Skin and soft tissue infection, atypical mycobacterium, geriatric patients*.

Introduction

Mycobacteria are a group of rod-shape bacteria that cause several diseases in humans namely leprosy and tuberculosis. Non-tuberculous mycobacteria (NTM) is widespread in the natural enviroment and are usually commensals or saprophytes rather than pathogens. About 120 species have been identifiedas the cause for skin disease, occurring more frequently than *Mycobacteriumtuberculosis*.[1,2] The incidence of infections caused by atypical mycobacterium are not known due to underreported and underdiagnosed of the cases. Similar clinical manifestation and histopathological features with mycobacterium tuberculosis pose difficulties in diferentiating these two microorganism.[1,3]

Runyon, et al classified atypical mycobacteria into 4 group based on the growth rate, colony morphology and the ability of the organism to form pigmentation with or without photo-exposure.[4] Group 1 includes slowly growing photochromogens mycobacteria such as *M. marinum* and *M. kansasii*. Group 2 includes slowly growing mycobacteria that produce pigment with or without light exposure the so called *scotochromogens* includes *M. scrofulaceum, M. szulgai,* and *M. gordonae*. Group 3 includes slow growing mycobacterium that can not produce pigment (nonchromogens) such as M. *avium, M. malmoense* and *M. xenopi*. Group 4 are rapidly growing mycobacteria, noncromogens, which are also the most pathogens for human being, such as *M. fortuitum, M. chelonae,* and *M. abscessus.*

Case

A male patient, 64 years old, complained of red lumps on the upper-back for a month, accompanied by slight fever and pain. Three months before, accupuncture was done on his neck and upper back for neck stiffness. Physical examination showed multiple miliar to lenticular sized papules and pustules on an erythematous-violaceus base with hard and immobile palpable nodes and infiltrate (figure 1a, 1b). There was no lymph nodes enlargement. Gram stain revealed gram positive cocci, leukocytes and blastospora. Patient was diagnosed with carbuncle with *Candida spp* colonization and was treated with clindamycin 300 mg twice a day and topical ketoconazole cream once daily.

Figure 1. (a) and (b) papules, nodes, and infiltrate on an erythematous-violaceous base. (c) Lesions healed with atrophic scar formation on the 9th month of treatment.

There was no clinical improvement after 3 weeks despite negative Gram staining for *Candida spp*. New red lumps emerged and some of the previous lesions were drained, showing serosanguineous pus. Multiple ulcers, 0.5-1 cm in diameter, with irregular border without undermined wall was observed. A biopsy was performed with a differential diagnosis of deep mycosis, *Mycobacterium tuberculosis* and atypical mycobacterium infections.

Histopathological findings illustrated foreign body-type giant cell granuloma formation (figure 2a, 2b). Ziehl-Nielsen staining was positive for acid fast bacilli. PAS and GMS staining was negative for fungal element. PCR examination yielded negative results for *Mycobacterium tuberculosis.* The diagnosis of atypical mycobacterium infection was established. Treatment consisted of minocycline 100 mg twice a day and rifampicin 600 mg daily and clinical improvement was observed after one month of therapy. Treatment was continued until 9 months and achieved complete resolution of lesions, leaving hyperpigmented and hypotrophic scars (figure 1c).

Discussion

Atypical mycobacteria are organisms that can be found in water, dust, soil, marine life and other animals. Skin infections may occur from contaminated surgical instruments or as a complication of surgery, aesthetic procedures, and traumatic inoculation, such as body piercing which is a growing trend especialy in young people and has been reported to be associated with atypical mycobacterial infections.[4,5] Diagnosis of infection caused by NTM can be established by culture on selective media, histopathology and biomolecular techniques, if available.[4]

The diagnosis of this case is based on the histopathologic features, positive Ziehl-Nielsen staining and by exclusion of *M. tuberculosis* by the PCR-negative result. The histopathologic features of atypical mycobacterium infection were dimorphic inflammatory response where polymorphonuclear leukocyte, microabcesses, and granuloma formation with foreign body-type giant cells.[1] The subtype of the NTM in this case was not identified due to unavailability of atypical mycobacterial primer in our laboratory. The most common subtype

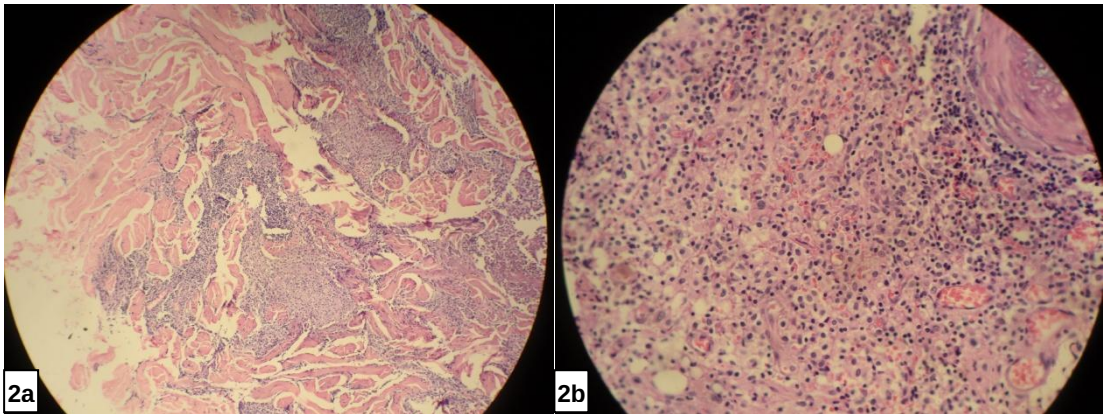

Figure 2. (a) Epiteloid granuloma formation (HE,10x) and (b) dense inflamatory cells (HE, 40x)

of atypical mycobacterium that infect skin and soft tissue manifests as cellulitis, draining nodules, with reddish infiltrate are *M. haemophilum, M. genavense, M. fortuitum, M. chelonae* and *M. abcessus*. Infection usually follows a puncture wound or a surgical procedure.[1]

The clinical presentation of skin infections caused by atypical mycobacteria varies and often leads to the delay in the diagnosis.[4] Carbuncle is a rare clinical manifestation of atypical mycobacterial infection especialy in elderly patients. A high index of suspicion is needed when dealing with the case of nonspesific skin and soft tissue infections which show no clinical response to standard treatment. Most cases are treated empirically due to the lack of an antimicrobial susceptibility profile. Combination treatment of antituberculosis and antibiotics is recomended to avoid resistance and relapse of the disease.[1,4]

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