

Case Report

Mycobacterium Fortuitum Cutaneous Infection from Amateur Tattoo

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A case of cutaneous *Mycobacterium fortuitum* infection after receiving an amateur tattoo is reported. A few days after tattooing, an otherwise healthy 25-year-old Thai male presented with multiple discrete erythematous papules confined to the tattoo area. He was initially treated with topical steroid and oral antihistamine without improvement. Skin biopsy was carried out, and the histopathology showed mixed cell granuloma with a foreign body reaction (tattoo color pigments). The acid-fast bacilli stain was positive. The tissue culture grew *M. fortuitum* two weeks later. He was treated with clarithromycin 1,000 mg/day and ciprofloxacin 1,000 mg/day for 10 months with complete response. From the clinical aspect, tattoo-associated rapidly growing mycobacterium infection might be difficult to differentiate from the pigment-based skin reactions. Skin biopsy for histopathology and tissue culture for *Mycobacterium* probably will be needed in arriving at the diagnosis.

Keywords: *Mycobacterium fortuitum*, Infection, Tattoo

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Mycobacterium fortuitum belongs to a group of the rapid-growing mycobacteria (RGM). It is worldwide distributed and commonly found in soil and water. Atypical mycobacterium infection usually follows a puncture wound or an unsterile surgical procedure. It can cause local cutaneous infection in immunocompetent host. However, disseminated disease can occur in severely immunocompromised host. The authors report herein a case of cutaneous *M. fortuitum* infection after receiving an amateur tattoo.

Case Report

An otherwise healthy 25-year-old Thai male patient presented with cutaneous lesions at the tattoo area, which developed in a few days after tattooing from a local tattoo shop. He described that the tattoo artist used black ink and a needle staging on a bamboo stick to draw his tattoo on his trunk. In the tattoo procedure, the tattoo artist also used oil to apply over the tattoo area. Three days after the

tattoo session, the patient developed multiple small pruritic tattoo area. On examination, he had multiple discrete erythematous papules size 2 to 5 mm along the black tattoo area on his trunk (Fig. 1). Because he complained of itching symptom, He was treated initially with topical steroid and oral antihistamine for a month without significant improvement. Skin biopsy was done from the erythematous papules. The section showed an epitheloid granulomatous infiltration composing of epitheloid cells, lymphocytes and multinucleated foreign body giant cells and black



Fig. 1 Multiple small pruritic erythematous papules were confined to the tattoo area

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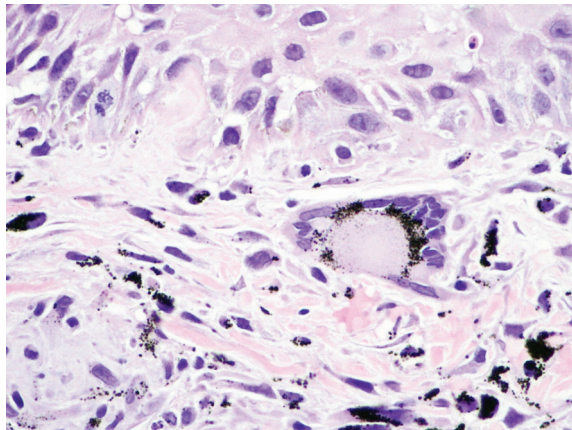


Fig. 2 The histopathology showed tattoo pigments surrounded by mixed cell granuloma and foreign body reaction (H&E x600).

pigmented granules (Fig. 2). The Acid fast bacilli stain of the tissue demonstrated acid-fast bacilli. The tissue culture grew *Mycobacterium fortuitum* two weeks later. A diagnosis of *M. fortuitum* infection in amateur tattoo was made and the patient was treated with clarithromycin 1,000 mg/day and ciprofloxacin 1,000 mg/day. After a few months of treatment, the patient had a substantial clinical improvement.

The following investigations were done to search for comorbidity; serology testing for HIV, hepatitis B, and hepatitis C was negative. Complete blood count, serum creatinine, liver function test, and chest X-ray were normal. The treatment was continued for 10 months and the cutaneous lesions had completely disappeared.

Discussion

Tattoos have been practiced in many parts of the world for thousands of years. Beside cosmetic purpose, tattoos have been performed for religious and supernatural reasons. Several complications from tattooing were reported occurring from the pigment-based reactions and tattooing associated infection⁽¹⁾. There are reports of HIV, hepatitis B, hepatitis C, and mycobacterium transmission from unsterile tattooing.

The Rapidly growing mycobacteria (RGM) comprise three groups including *M. fortuitum* group, *M. smegmatis* group, and *M. chelonae-abscessus* group^(2,3). Their infection usually follows a puncture wound or an unsterile surgical procedure. The cutaneous manifestations are diverse from papules, pustules,

nodules, and abscess to ulcer⁽⁴⁾. An immunocompetent host may become infected but disseminated disease usually occurs merely in immunocompromised host.

To the authors' knowledge, there are 11 reports of tattooing associated with atypical mycobacterium infection^(2,5-14). Most of them occurred from *M. chelonae* infection^(6,8-10,14). In addition, two reports were found from *M. abscessus* infection^(2,11) and one report from *M. immunogenum*⁽¹²⁾. Clinical manifestations included pruritic or tender papules, pustules, nodules, and plaques, which occurred between seven days and three months after tattooing^(2,5-13). A few outbreaks of atypical mycobacterium infection after tattooing were described. Two outbreaks of mycobacterium infection were reported from France (20 and 8 patients), one from the United States (6 patients), and one from Germany (7 patients)^(5,6,8,13). The summary of reports of RGM infection from tattooing is demonstrated in Table 1.

Histopathology of atypical mycobacterium infection demonstrated the dimorphic inflammatory response, neutrophil microabscesses, and granuloma formation with foreign body-type giant cells. There is usually no caseation necrosis. Acid-fast bacilli may be found within the microabscess. *Mycobacterium* identification from culture is crucial in making the diagnosis. Currently, there is no well-established optimal treatment regimen of soft tissue and skin infection by RGM. The treatment regimen usually follows the antibiotic susceptibility result and clinical response^(15,16). The presented patient received clarithromycin and ciprofloxacin with favorable response.

To the authors' knowledge, there has been no report of *M. fortuitum* infection occurring from tattoo. The authors advised the patient to go back to the tattoo shop to get a sample of the tattoo ink for organism identification; however, he refused to go back. From the clinical aspect, tattooing associated RGM infection might be difficult to differentiate from the pigment-based reactions. Physicians should be aware of this form of infection. Skin biopsy for histopathology and tissue culture for mycobacterium probably will be needed in arriving at the diagnosis.

Potential conflicts of interest

None.

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Table 1. Reports of rapid-growing mycobacteria infection following tattoo

Species identification	Number of patient	Method of diagnosis	Clinical manifestation	Treatment (duration)	References
<i>M. abscessus</i>	1	Positive culture and PCR	Tender erythematous papules and plaque	Clarithomycin (4 months)	2
<i>M. abscessus</i>	1	Positive culture and PCR	Nontender erythematous papules	Minocycline and clarithomycin (20 weeks)	11
<i>M. chelonae</i>	20	Positive culture and PCR	Tender/nontender, pruritic papules and plaques	n.a.	5
<i>M. chelonae</i>	8	Positive AFB, exclude other cause	Papules, pustules and ulcerated nodules	Minocyclin or clarithomycin	6
<i>M. chelonae</i>	6	Positive culture	Tender/nontender papules, pustules and lichenoid plaques	Minocyclin or clarithomycin or azithromycin	8
<i>M. chelonae</i>	1	Positive culture	Tender erythematous to violaceous nodules	Clarithomycin and moxifloxacin (4 months)	9
<i>M. chelonae</i>	1	Positive culture	Tender erythematous papules and plaques	Clarithomycin and levofloxacin (4 months)	10
<i>M. chelonae</i>	2	Positive culture	Pruritic erythematous papules	n.a.	14
<i>M. immunogenum</i>	1	Positive culture and identify gene	Tender erythematous papules and nodules	Clarithomycin	12
<i>M. fortuitum</i>	1	Positive culture	Pruritic erythematous papules	Clarithomycin and ciprofloxacin (10 months)	Our case

PCR = polymerase chain reaction; n.a. = not available

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โรคติดเชื้อมัคโคแบคทีเรียม ฟอทอติคุมที่ผิวหนังตามหลังการสัก

สาโรช สุวรรณสุทธิ, ชนิษฐา วงษ์ประภารัตน์, เพ็ญวดี พัฒนปรีชากุล, สุนันต์ บุญยะรัตเวช

ผู้ป่วยโรคติดเชื้อมัคโคแบคทีเรียม ฟอทอติคุมตามหลังการสักที่ผิวหนังได้รับการรายงาน 2-3 วัน หลังจากไปทำการสักที่ผิวหนัง ชายไทยอายุ 25 ปี สุขภาพแข็งแรงดี เกิดตุ่มนูนแดงเล็กจำนวนมากบริเวณที่ทำการสัก ผู้ป่วยได้รับการรักษาเบื้องต้นด้วยยาทาาคอติโคสเตียรอยด์ร่วมกับรับประทานยาต้านฮีสตามีนแต่อาการไม่ดีขึ้น แพทย์จึงทำการตัดชิ้นเนื้อซึ่งผลทางพยาธิวิทยาพบลักษณะแกรนูโลมาที่มีการอักเสบตอบสนองต่อสิ่งแปลกปลอม คือ เม็ดสีของหมึกสัก การย้อมสีทึนกรดพบเชื้อแบคทีเรียรูปแท่ง ผลเพาะเชื้อจากชิ้นเนื้อที่ตัดชิ้นเชื้อมัคโคแบคทีเรียม ฟอทอติคุมใน 2 สัปดาห์ต่อมา ผู้ป่วยได้รับการรักษาด้วยยาคลาริโทรมัซซิน 1,000 มิลลิกรัมต่อวัน ร่วมกับยาซิโพรฟลอกซาซิน 1,000 มิลลิกรัมต่อวันเป็นระยะเวลา 10 เดือนพบว่ารอยโรคหายไปทั้งหมด จากลักษณะทางคลินิก การติดเชื้อมัคโคแบคทีเรียมจากการสักแยกได้ยากจากอาการแพ้สียที่ใช้สัก ดังนั้นการตัดชิ้นเนื้อเพื่อส่งตรวจทางพยาธิวิทยา ร่วมกับการเพาะเชื้อมัคโคแบคทีเรียมอาจมีความจำเป็นในการวินิจฉัยโรค