Mycobacterium Fortuitum Cutaneous Infection from Amateur Tattoo

Saroj Suvanasuthi MD, PhD*, Chanisada Wongpraparut MD*, Penvadee Pattanaprichakul MD*, Sumanas Bunyaratavej MD*

* Department of Dermatology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

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

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 pigment (Fig. 1).
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(5-14). Most of them occurred from *M. chelonae* infection(6-8,10,14). In addition, two reports were found from *M. abscessus* infection(2-3) 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 microabscesses. *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.

References

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

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

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

โรคติดเชื้อมัยโคแบคทีเรียม ฟอทูอิตุมที่ผิวหนังตามหลังการสัก

สาโรช สุวรรณสุทธิ, ชนิษฎา วงษ์ประภารัตน์, เพ็ญวดี พัฒนปรีชากุล, สุมนัส บุณยะรัตเวช

ผู้ป่วยโรคติดเชื้อมัยโคแบคทีเรียม ฟอทูอิตุมตามหลังการสักที่ผิวหนังได้รับการรายงาน 2-3 วันหลังจากไปทำการสักที่ผิวหนังชายไทยอายุ 25 ปี สุขภาพแข็งแรงดี เกิดตุ่มนูนแดงเล็กจำนวนมากบริเวณที่ทำการสัก ผู้ป่วยได้รับการรักษาเบื้องต้นด้วยยาทาคอติโคสเตียรอยด์ร่วมกับยาต้านฮีสตามีนแต่อาการไม่ดีขึ้น แพทย์จึงทำการตัดชิ้นเนื้อซึ่งผลทางพยาธิวิทยาพบลักษณะแกรนนูโลมาที่มีการอักเสบตอบสนองต่อสิ่งแปลกปลอมคือเม็ดสีของหมึกสัก การย้อมสีทนกรดพบเชื้อแบคทีเรียรูปแท่งผลเพาะเชื้อจากชิ้นเนื้อที่ตัดขึ้นเชื้อมัยโคแบคทีเรียม ผู้ป่วยได้รับการรักษาด้วยยาคลาริโทรมัยซิน 1,000 มิลลิกรัมต่อวันร่วมกับยาซิโพรฟลอกซาซิน 1,000 มิลลิกรัมต่อวันเป็นระยะเวลานาน 10 เดือนพบว่ารักษารักษาที่ผิวหนังจากลักษณะทางคลินิก การติดเชื้อมัยโคแบคทีเรียมจากการสักจะได้ยากจากอาการเจ็บที่ใช้สัก ดังนั้นการตัดชิ้นเนื้อเพื่อส่งตรวจทางพยาธิวิทยาร่วมกับการหารือโรคติดเชื้อมัยโคแบคทีเรียมอาจมีความจำเป็นในการวินิจฉัยโรค