Applied Medical Research

Case Report

DOI: doi.org/10.47363/AMR/2015(2)120

Disseminated *Mycobacterium scrofulaceum* infection in a patient with lymphoma

Yu-Wen Wang[1], Chuan-Chuan Hung[2], Chi-Chou Tseng[3], Ping-Jen Chen[3], Chien-Ming Chao[4,5]

[1]Department of Cardiovascular Surgery, St. Martin De Porres Hospital, Chiayi, Taiwan, [2]Department of Nursing, Chung Hwa University of Medical Technology, Tainan, Taiwan, [3]Department of Surgery, Chi Mei Medical Center, Liouying, Tainan, Taiwan, [4]Department of Intensive Care Medicine, Chi Mei Medical Center, Liouying, Tainan, Taiwan, [5]Department of Nursing, Min-Hwei College of Health Care Management, Tainan, Taiwan

Address for correspondence: Chien-Ming Chao, Department of Intensive Care Medicine, Chi Mei Medical Center, Liouying, Tainan, Taiwan. E-mail: ccm870958@yahoo.com.tw

Received: February 26, 2015
Accepted: March 31, 2015
Published: April 06, 2015

ABSTRACT

Mycobacterium scrofulaceum is one of the slowly growing scotochromogenic nontuberculous mycobacteria. In adult, the clinical manifestations of *M. scrofulaceum* infections include pulmonary disease, hepatitis, osteomyelitis, and cutaneous infection. Herein, we report a rare case of disseminated *M. scrofulaceum* infection in a patient with lymphoma. The patient had the *M. scrofulaceum* infections that involved lung and joint, and the clinical condition responded to the antimycobacterial agent and surgical debridement well.

KEY WORDS: Chemotherapy, disseminated infection, immunocompromised, lymphoma, *Mycobacterium scrofulaceum,* non-tuberculous mycobacterium

INTRODUCTION

Mycobacterium scrofulaceum is one of the slowly growing scotochromogenic nontuberculous mycobacteria (NTM). Its name is derived from "scrofula" – an infection of cervical lymph nodes, because of the high frequency of isolating *M. scrofulaceum* in children lymphadenitis [1]. In adult, the clinical manifestations of *M. scrofulaceum* infections include pulmonary disease, hepatitis, osteomyelitis, cutaneous infection, and disseminated diseases [2-11]. Disseminated *M. scrofulaceum* infection always develops in patients with immunocompromised status, such as acquired immunodeficiency syndrome or interferon-γ receptor 1 deficiency [8-10]. Herein, we report a rare case of disseminated *M. scrofulaceum* infection in a patient with lymphoma.

CASE REPORT

A 75-year-old woman had the Hodgkin's lymphoma (Ann Arbor stage IV) and received cyclophosphamide (50 mg/day) and dexamethasone (0.5 mg twice daily) for 3 months. This time, she presented with erythematous and painful swelling over the left knee for 1-week during the course of oral chemotherapy. However, she did not have fever or chills and did not recall any recent trauma. Her vital signs were as the following: Her body temperature was 36.8°C, pulse rate was 85 beats/min, respiratory rate was 18 breaths/min, and her blood pressure was 104/65 mmHg. The only notable finding on physical examination was swelling, redness, and local heat over left knee. Laboratory examinations revealed the following values: White blood cell count, 18,400/mm^3 (89% neutrophils); erythrocyte

sedimentation rate 104 mm/h; creatinine, 0.6 mg/dL; and C-reactive protein, 167.2 mg/L (reference range <6 mg/L). Radiography of left knee only showed the degenerative change. Chest radiography showed one nodular patch over right upper lobe [Figure 1]. Ultrasonography disclosed one lobulated-margin hypoechoic mass at left knee suprapatellar region, and another heterogeneous mass lesion at the intramuscular region of left suprapatellar region with extension to the lateral side of the left knee. Computed tomography of left knee disclosed 18 mm × 8 mm × 10 mm fluid accumulation with marginal enhancement in the prepatellar region and abundant effusion in suprapatellar bursa with marked synovial enhancement [Figure 2]. Joint fluid aspiration was performed and sent for bacterial and mycobacterial culture. Therefore, arthroscopic synovectomy and debridement of left knee joint and bursectomy and debridement of left anterior knee were performed for septic arthritis and soft tissue infection. The pathologic examination of surgical specimen disclosed suppurative inflammation with foci of granulomatous formation, and acid-fast bacilli (AFB) within it. Two weeks later, NTM was isolated from the joint fluid specimen, and surgical specimen, and further confirmed as *M. scrofulaceum*. At the same time, three sets of her sputum yielded *M. scrofulaceum*. Aspirated synovial fluid or concentrated specimens (sediment obtained after centrifugation) were inoculated onto both Lowenstein-Jensen slants and the fluorometric BACTEC system (BACTEC MGIT 960 system, Becton-Dickinson). AFB staining was performed on digested and decontaminated specimens and was repeated on all positive cultures from the BACTEC system. Furthermore, all of the identification of mycobacteria was performed in Rui-Fu-Shi Medical Laboratory. After the growth of AFB, mycobacterium was further analyzed using the BluePoint TM MycoID kit (Bio Concept Inc. Taichung, Taiwan). The kit is a DNA array that could simultaneously differentiate six species of *Mycobacterium tuberculosis* complex and 19 species of clinically relevant NTM. The BluePoint TM MycoID identification method consists of PCR-based amplification, which targets the 16S-23S rRNA gene intergenic spacer (ITS) regions and gyrB gene, of the nucleic acids from cultured media, followed by hybridization of the digoxigenin-labeled PCR products with oligonucleotide probes immobilized on a membrane. After hybridization, the array was read by BluePoint TM CHR analyzer.

However, no other bacterium was isolated from the joint fluid and surgical specimen. Therefore, rifampicin (450 mg daily), ethambutol (800 mg daily), and clarithromycin (500 mg twice daily) (body weight of the patient was 45 kg) were prescribed for disseminated *M. scrofulaceum* infection. In addition, the test for HIV was negative. Finally, the local condition gradually improved during the follow-up 1-year later.

DISCUSSION

The patient described herein had the *M. scrofulaceum* infections that involved lung and joint, and the diagnosis of disseminated *M. scrofulaceum* infection based on the positive culture from two separate anatomic sites (sputum, and synovial fluid). The deficit of her immune status should be due to her underlying lymphoma. To our knowledge, this is the first case

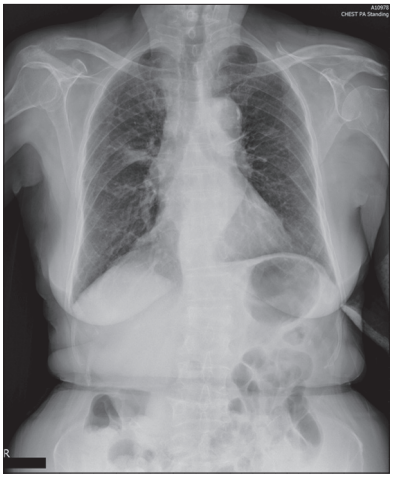

Figure 1: Chest radiography showed a nodular patch over right upper lobe

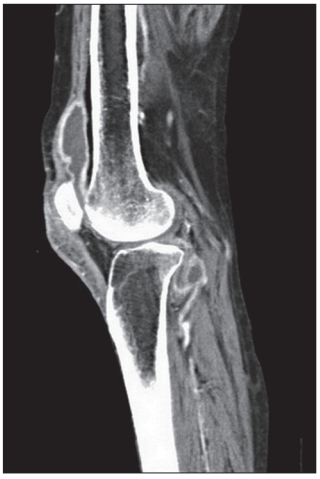

Figure 2: Computed tomography of left knee disclosed 18 mm × 8 mm × 10 mm fluid accumulation with marginal enhancement in prepatellar region, and abundant effusion in suprapatellar bursa with marked synovial enhancement

of disseminated *M. scrofulaceum* in a patient with lymphoma undergoing chemotherapy. As previous reports, this finding reminds us that *M. scrofulaceum* can cause disseminated infection in immunocompromised patients, such as lymphoma, HIV infection, or interferon-γ receptor 1 deficiency [8-10].

Because disseminated *M. scrofulaceum* infections were rare and the susceptibility data are lacking, the treatment regimen for this clinical entity remains controversial [11]. In our patient, the clinical condition improved after antimicrobial agents and surgical debridement. However, we still need more evidence to recommend the drug of choice for *M. scrofulaceum* infections. Therefore, further study should be warranted to investigate the choice of the appropriate anti-mycobacterial agent.

In conclusion, *M. scrofulaceum* should be considered as a possible etiology causing disseminated infection in the immunocompromised patient, such as hematological cancer patients.

REFERENCES

1. Masson AM, Prissick FH. Cervical lymphadenitis in children caused by chromogenic mycobacteria. Can Med Assoc J 1956;75:798-803.
2. LeMense GP, VanBakel AB, Crumbley AJ 3rd, Judson MA. *Mycobacterium scrofulaceum* infection presenting as lung nodules in a heart transplant recipient. Chest 1994;106:1918-20.
3. Ishiguro T, Takayanagi N, Kurashima K, Saito H, Yanagisawa T, Sugita Y. A case of pulmonary *Mycobacterium scrofulaceum* infection and review of the tendency towards recent acid-fast bacilli infection. Nihon Kokyuki Gakkai Zasshi 2009;47:731-6.
4. Phoa LL, Khong KS, Thamboo TP, Lam KN. A case of *Mycobacterium scrofulaceum* osteomyelitis of the right wrist. Ann Acad Med Singapore 2000;29:678-81.
5. Patel KM. Granulomatous hepatitis due to *Mycobacterium scrofulaceum*: Report of a case. Gastroenterology 1981;81:156-8.
6. Touma Z, Haddad A, Gladman DD, Uleryk EM, Urowitz MB. Skin nontuberculous mycobacterial infection in systemic lupus erythematosus: An unusual skin infection mimicking lupus vasculitis. Semin Arthritis Rheum 2013;42:498-506.
7. Ito A, Yoshida Y, Higaki-Mori H, Watanabe T, Nakanaga K, Ishii N, *et al.* Multiple skin lesions caused by *Mycobacterium scrofulaceum* infection. Eur J Dermatol 2011;21:1014-5.
8. Marazzi MG, Chapgier A, Defilippi AC, Pistoia V, Mangini S, Savioli C, *et al.* Disseminated *Mycobacterium scrofulaceum* infection in a child with interferon-gamma receptor 1 deficiency. Int J Infect Dis 2010;14:e167-70.
9. McNutt DR, Fudenberg HH. Disseminated scotochromogen infection and unusual myeloproliferative disorder. Report of a case and review of the literature. Ann Intern Med 1971;75:737-44.
10. Sanders JW, Walsh AD, Snider RL, Sahn EE. Disseminated *Mycobacterium scrofulaceum* infection: a potentially treatable complication of AIDS. Clin Infect Dis 1995;20:549.
11. Griffith DE, Aksamit T, Brown-Elliott BA, Catanzaro A, Daley C, Gordin F, *et al.* An official ATS/IDSA statement: Diagnosis, treatment, and prevention of nontuberculous mycobacterial diseases. Am J Respir Crit Care Med 2007;175:367-416.

Source of Support: Nil, Conflict of Interest: None declared.