Various Cutaneous Tuberculosis with Rare Clinical Manifestations: A Case Series

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Abstract

Cutaneous tuberculosis (TB) has several clinical manifestations. The most common forms include cervical scrofuloderma and plaque type of lupus vulgaris (LV), otherwise the rare cases including inguinal scrofuloderma, ulcerative LV, and acute miliary TB. The highlight of this case series was to report various rare clinical manifestations of cutaneous TB.

Keywords: Acute miliary tuberculosis, cutaneous tuberculosis, lupus vulgaris, scrofuloderma

Introduction

Tuberculosis (TB) is a disease caused by Mycobacterium tuberculosis that affects various organs. One of the most infected organs is lungs.\(^1,2\) The number of extrapulmonary TB reaches up to 14%,\(^2\) and 1%–2% are cutaneous TB.\(^2,3\) Cutaneous TB is frequently found worldwide, especially in tropical countries.\(^1\)

Clinical manifestation of cutaneous TB is varied and causes difficulties to diagnose.\(^4\) Scrofuloderma is the most common form of cutaneous TB, often affects the supraclavicular, axilla, and both sides of the neck.\(^5\) The other common form of cutaneous TB is plaque type of lupus vulgaris (LV).\(^6\) The rare presentation of cutaneous TB is including inguinal scrofuloderma, ulcerative type of LV, and acute miliary cutaneous TB.\(^2,7,8\) The aim of this case series was to report several rare clinical manifestations of cutaneous TB.

Case Reports

Case 1

A 55-year-old-male complained of a discharging sinus on the left groin for the last month. For 15 months before admission, the lesions appeared as papules that progressed to nodules and leading to draining sinuses. Some of the lesions healing with scars formation. Patient admitted a history of weight loss within the past 3 months. Physical examination revealed a discharging sinus with an enlargement of an inguinal lymph node on the left inguinal region, accompanied with scars and fistules [Figure 1a-c]. The bacteriological examination of pus showed acid-fast bacilli (AFB) [Figure 1d]. The polymerase chain reaction (PCR) test for M. tuberculosis was negative. The histopathological examination revealed granulomas consisting of inflammatory cells and Langhans cells, which supported the diagnosis of scrofuloderma [Figure 1e]. The patient was treated with anti-TB drugs Category 1 World Health Organization. Clinical improvement was observed after 9 weeks of treatment.

Case 2

A 20-year-old-male on the 4th-month anti-TB drugs Category 1 treatment for tuberculous lymphadenitis presented with a painless ulcer on the right thigh. Initially, the skin lesion appeared as a nontender nodule for the past 3 weeks. It became enlarged and ruptured forming an ulcer that produced pus. There was a history of weight loss within 2 months. On physical examination, an ulcer about 3 cm × 4 cm in size with granulation tissue based was found [Figure 2a and b]. The bacteriological examination showed AFB [Figure 2c], while the PCR test for M. tuberculosis was positive. From the histopathological examination, the epidermis demonstrated...
erosive, ulcerative, and hyperplasia; whereas the dermis showed granulomas consisting of epithelioid cells, lymphocytes, and Langhans cells, with caseous necrosis [Figure 2d-f]. These results are consistent with the diagnosis of ulcerative LV. The anti-TB drugs Category 1 were continued, and the skin lesion was markedly improved on the 22nd day of observation.

Case 3
A 37-year-old-male presented with erythematous papules without itch on almost entire part of the body for 2 weeks before admission. In 2006, the patient was diagnosed with acquired immunodeficiency syndrome (AIDS). He stopped antiretroviral medications since 2015. The patient suffered from cough, intermittent fever, malaise, and excessive sweating. On physical examination, the patient was underweight with pale complexion. There were multiple, discrete pinhead-sized papules with central crust on almost entire body surface [Figure 3a-c]. Sputum examination and skin scrapping from the skin lesion on the right arm were positive for AFB [Figure 3d]. Chest radiograph showed upper lobes consolidation [Figure 3e]. Therefore, the patient was diagnosed with pulmonary and acute cutaneous miliary TB and treated with anti-TB drugs Category 1. Clinical improvement was obtained on day 43rd observation.

DISCUSSION
Cutaneous TB was frequently found especially on developing and tropical countries. It has various clinical manifestations including LV, scrofuloderma, TB verrucosa cutis, orificial TB, tuberculous gumma, tuberculous chancre, and acute cutaneous miliary TB.

The diagnosis of cutaneous TB was established based on absolute and relative criteria. The absolute criteria consist of finding of *M. tuberculosis* from tissue culture, inoculation on guinea pig, or positive result on PCR. The relative criteria are based on history taking and clinical manifestations which supported for the diagnosis of cutaneous TB, active TB found on other organs, finding of AFB on lesions, finding of tuberculous granuloma on histopathological examination, positive tuberculin test, and responsiveness toward anti-TB medications.

Scrofuloderma occurs due to the spread of infection from structures beneath the skin, especially lymph nodes. The clinical manifestation of scrofuloderma is initially a firm, well-defined border, mobile, and asymptomatic subcutaneous nodule. The nodule will enlarge and soften, after several months. Therefore, it will rupture and forming ulcer and sinus. Furthermore, a fistule which secreted caseous material
was found. Spontaneous involution of the lesions might happen, leaving behind keloid-like scar and skin atrophy. The predilection of scrofuloderma is mostly on the neck, axilla, and supraclavicular. Otherwise, less often on inguinal region. The patient on Case 1 had an initial erythematous nodule on the left inguinal which was neither pruritic nor tender, mobile, and had sinus on the surface. Pus emerged from the sinus when pressed. Scar tissues were also found around the lesion. The clinical manifestation of this case was consistent with the diagnosis of scrofuloderma.

Lupus vulgaris is one of the clinical manifestations of cutaneous TB which commonly found in patients who are sensitized to M. tuberculosis. LV has five major clinical variations including plaque, hypertrophic or ulcerative, tumor-like, papular or nodular, and ulcerative types. Based on a study in India, ulcerative was the least common (14.2%) type of LV. On ulcerative LV, the ulcer is the main type of lesion. The predilection sites for LV are the face, neck, lower arms, chest, trunk, and leg. In Case 2, the LV occurred on a patient who was on 4th-month TB treatment for tuberculous lymphadenitis. Initially, there was a nontender nodule on the right thigh, which enlarged and ruptured forming an ulcer that produced pus. The clinical manifestation of Case 2 supported the diagnosis of the ulcerative type of LV.

Acute cutaneous miliary TB is cutaneous TB that occurred due to hematogenous spread of TB in immunocompromised patients, for example, in AIDS patients. The characteristics of this type of cutaneous TB are pinhead sized to 6 mm sized in diameters of erythematous macules and papules. Vesicles or pustules would form on the center of the lesions, which would rupture and dry forming crusts. When the crusts are lifted, it will leave an umbilicated lesion behind. The skin lesions might appear all over the body. However, it was more commonly found on the trunk, thigh, genitalia, buttocks, and extensor extremities. The skin lesions are neither pruritic nor painful; however, commonly accompanied with constitutional symptoms such as fever, malaise, anorexia, and weight loss. All those signs and symptoms fitted for Case 3.

There are several examinations to support the diagnosis of cutaneous TB. Bacteriological examination for AFB using Ziehl–Neelsen staining of the skin lesion is an important additional examination to diagnose cutaneous TB. AFB was found in all cases of this case series. Cutaneous TB might vary in histopathological appearance; however, in general, it shows granulomas consisting of epithelioid, mononuclear, plasma, and Langhans cells, with or without caseation necrosis. On scrofuloderma, the granulomas are less well formed. Kumar et al. reported that 47.5% of scrofuloderma patients had classic histopathological examination result, whereas the rest 52.5% of patients had nonspecific result. On LV, the epidermis might appear hyperplastic, atrophic, or ulcerative. Multiple tuberculoid granuloma with caseous necrosis might be found on the superficial dermis of LV. On initial lesion of acute miliary cutaneous TB, focal necrosis and abscess were found, with many AFB scattered around nonspecific inflammatory cells.

The histopathological examination of Case 1 revealed a granuloma which consisted of inflammatory and Datia Langhans cells. In Case 2, the histopathological examination showed a granulomatous reaction that composed of epithelioid cells, lymphocytes, and Langhans cells, with caseous necrosis area. In Case 3, the histopathological examination cannot be done due to low hemoglobin level of the patient.

PCR might help establishing the diagnosis of several types of cutaneous TB. PCR procedure is increasingly recognized to detect the deoxyribonucleic acid of M. tuberculosis on skin specimen. Negative PCR result is not strong enough to eliminate the diagnosis of cutaneous TB; hence, the diagnosis should never be established by PCR examination alone. In this case series, PCR was done for Case 1 and Case 2; however, the positive result for M. tuberculosis is only showed on Case 2.

The treatment of TB in Indonesia follows the guidelines from the Ministry of Health, which divided into Category I and II. Category I anti-TB drugs are considered to new TB patients with positive AFB, pulmonary TB patients with negative AFB but positive radiograph examination, and extrapulmonary TB. This Category I consists of a 2-month intensive phase with multiple drugs (rifampicin, isoniazid, ethambutol, and pyrazinamide) and 4-month continuation phase with two drugs (rifampicin and isoniazid). In our cases, all the patients were treated with anti-TB drugs Category I and gave good results.
CONCLUSION

The cutaneous TB has various clinical manifestations. Some of the cases are uncommon, and it makes difficulties to diagnose. Therefore, the clinicians should recognize all types of cutaneous TB. Hence, therapy could be started immediately, and the morbidity could be reduced.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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