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Case Report

Verrucous cutaneous tuberculosis: a report of an undiagnosed case that has lasted for 20 years

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ABSTRACT

Cutaneous tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*. One form of cutaneous tuberculosis that is rare and often difficult to diagnose is verrucous cutaneous tuberculosis (VCTB) with an incidence of 1-2% of all tuberculosis cases. This case report aims to describe the clinical presentation, diagnosis and management of VCTB in a patient who was delayed in receiving appropriate therapy. A 32 year old man presented with a painful verrucous rash and yellowish discharge on his left thigh that has lasted for 20 years. The patient had a history of trauma at the lesion site and had received topical and oral therapy but did not show satisfactory results. Physical examination and histopathology confirmed the diagnosis of VCTB. The patient was treated with antituberculosis drugs for six months and experienced significant clinical improvement. VCTB is often difficult to diagnose because of its non-specific clinical manifestations and its similarity to other skin diseases. Delay in diagnosis and therapy may worsen the prognosis and increase the risk of complications. The diagnosis of VCTB is made based on a combination of history, physical examination, histopathological examination, and other supporting tests. Treatment for VCTB is the same as pulmonary tuberculosis, namely with anti-tuberculosis drugs for six months. VCTB needs to be considered in diagnosis because many clinical verrucous rashes resemble this disease, especially in patients with a history of trauma and inadequate response to therapy.

Keywords: Cutaneous tuberculosis, Verrucous cutaneous tuberculosis, Skin biopsy

INTRODUCTION

Infection caused by *Mycobacterium tuberculosis* most commonly attacks the lungs, but can also attack other organs, such as the skin.[1] Cutaneous tuberculosis is a relatively rare form of tuberculosis infection, with a prevalence of around 1-2% of all tuberculosis cases. Cutaneous tuberculosis can be classified into four types based on the route of infection: exogenous, endogenous, lymphogenous and hematogenous spread.[2]

Verrucous cutaneous tuberculosis (VCTB) is a type of cutaneous tuberculosis caused by exogenous reinfection in individuals with weakened immune systems who have previously been susceptible to tuberculosis.[1,3] Clinically, the manifestations of VCTB are generally nonspecific. VCTB usually begins as a small papule that quickly becomes a hyperkeratotic verrucous plaque that is often accompanied by mild irritation at the edges. In addition, VCTB can also manifest as brownish lesions in other areas, such as the fingers, hands, lower extremities and buttocks.[3]

VCTB is generally found in developing countries, especially among low socioeconomic groups, and mainly attacks children and young adults. The incidence of this disease varies globally, depending on country and region.[4] Cutaneous tuberculosis accounts for a small proportion (1.5%) of extrapulmonary tuberculosis cases.[5] Currently, VCTB is reported to occur more frequently in

Asia. Cutaneous tuberculosis attacks around 4.76% of tuberculosis patients in Indonesia.[5] The causative agents of cutaneous tuberculosis in Indonesia are mainly *Mycobacterium tuberculosis* and atypical *Mycobacterium*. At Dr. hospital Cipto Mangunkusumo, scrofuloderma is the cause of the majority (84%) of cutaneous tuberculosis cases, followed by VCTB (13%), which mainly attacks children and young adults, while other forms are less common.[3,5]

VCTB tends to attack more men than women, with a male to female ratio of 2:1. Asymptomatic lesions often occur at the site of trauma and are often reported on the hands in European countries and on the lower extremities in Eastern countries, whereas in Asia, lesions are more often found on the ankles and buttocks.[5] In Indonesia, walking barefoot and spitting habit are considered as predisposing factors. Children from low socioeconomic backgrounds are more likely to be malnourished and contract infections through playing or sitting on soil contaminated with tuberculous phlegm. In the case of children, lesions are often seen on the legs, whereas in adults, the arms are more frequently affected.[6]

Dermatological examination reveals skin lesions that are often hard or dense, with areas of tenderness, crusting, and exudation. Diagnosis of cutaneous tuberculosis usually requires additional examination, including histopathological examination which often shows tuberculoid granulomas with lymphocytes.[4] Findings can vary depending on the severity of the disease and the patient's immune response. Cutaneous tuberculosis may be associated with co-infections in other organs, but usually responds well to anti-tuberculosis drugs. Treatment for VCTB is the same as pulmonary tuberculosis, namely with oral antituberculosis drugs (OAT) such as rifampicin, isoniazid, pyrazinamide, ethambutol, and streptomycin.[6] In this case report, we present a case of an adult man with verrucous lesions on his thigh.

The purpose of this case report is to emphasize that without a high level of awareness and careful use of all available diagnostic facilities, cutaneous tuberculosis can remain undiagnosed and untreated for a long time, even in high prevalence areas such as Indonesia.

CASE REPORT

A 32-year-old man, who lives in Jagakarsa, South Jakarta, came to the outpatient service of the dermatology division, Jagakarsa regional hospital with complaints of a painful, reddish rough rash on the half of his left thigh. On the back of the left thigh was a rash producing a yellowish liquid that had a slight foul stench. There were no other complaints such as fever, joint pain, chronic cough, shortness of breath, nausea, vomiting, weakness and drastic weight loss.

The patient said that the lesion began forming 20 years ago, started with a small trauma to the thigh due to falling from a bicycle but was not treated. The skin lesions increased in size and thickness slowly over time, accompanied by pain when exposed to pressure but complaints of itching were not too dominant. During previous medical services, the patient was treated with topical and oral drug therapy such as corticosteroids, antifungals, antibiotics and anti-allergies but there was no improvement. Family history of suffering from the same complaint was denied.

The patient lives with his wife and 1 child, works as a security guard and often wears thick trousers. The patient lives in a permanent home and in a densely populated area. On general physical examination, it was found that the patient appeared mildly ill, blood pressure 126/87 mmHg, heart rate 78×/minute, respiratory rate 19×/minute, temperature 36.6 C and weighs 69 kg. Lung and heart examination were within normal limits, there was no enlargement of the neck, axillary and inguinal lymph nodes.

Dermatological examination of the left femoral region revealed verrucous erythema plaque, polymorphic, well defined, irregular edges, and tenderness (+) on the inner half of the left thigh accompanied by a fistulous area with yellowish fluid, especially on the back of the left thigh. Laboratory examination results found hemoglobin 13.2 g/dl, hematocrit 42%, leukocytes 9,300/µl, platelets 383,000/µl, and an increase in ESR of 64 mm. Other blood tests such as blood sugar, PT, APTT, SGOT, SGPT are within normal limits. A 20% KOH examination was also carried out and results showed no hyphae or spores.

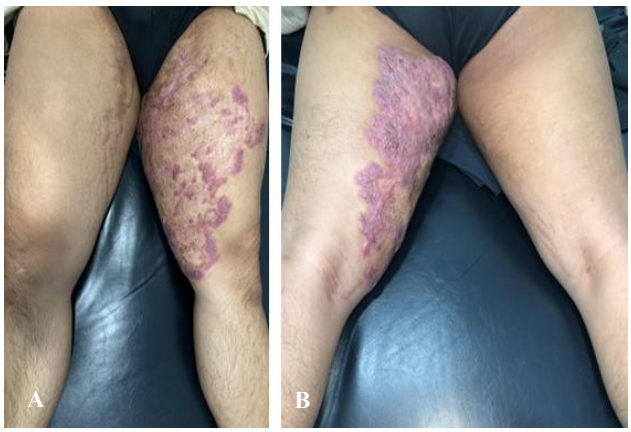

Figure 1 (A and B): Clinical condition of the left femoral region.

To establish a definite diagnosis, a skin biopsy is performed. The examination was carried out at Fatmawati General Hospital by sending a tissue sample and staining with hematoxylin-eosin (HE) and the Ziehl-Neelsen technique to prove the bacilli were acid-alcohol resistant. The results showed tissue lined with epidermis with ulcerative foci and in dermis layer epithelioid granulomas

with caseous necrotic debris, including lymphocytes and macrophages accompanied by Langhans datia cells. There were no visible signs of malignancy.

The patient was then diagnosed with VCTB and given therapy with rifampicin 150 mg, isoniazid 75 mg, pyrazinamide 400 mg and ethambutol 275 mg for 6 months in FDC (Fixed drug combination) 1×4 tablets, according to the recommendations of the Indonesian ministry of health. This patient has been followed for one month, and there was clinical improvement during routine treatment with FDC.

Figure 2 (A and B): Clinical condition after first month of FDC treatment.

DISCUSSION

Patients are diagnosed with VCTB based on history, physical examination, dermatological status examination, laboratory examination, and skin biopsy.

Symptoms of cutaneous tuberculosis vary depending on how the *Mycobacterium tuberculosis* bacteria enter the body and the body's immunity. In children, cutaneous tuberculosis usually appears on the lower legs (knees, thighs and buttocks), while in adults it is more often on the hands.[4] VCTB is a skin disease caused by tuberculosis bacteria (*M. tuberculosis*).[7] These bacteria enters the body through small wounds or abrasions, and then develops into hard, scaly lumps (papules or nodes), similar to warts. These lumps usually appear one by one (solitary), but can also appear multiplely. This lump is red (erythematous) and painless, and there are no other symptoms in the body (systemic symptoms).[3,8] In accordance with this case, the skin lesion was on the thigh, and was preceded by a wound resulting from trauma as a child.

VCTB patients usually have good immune systems and/or have been infected with tuberculosis bacteria before. A strong immune system plays an important role in fighting these bacteria in VCTB patients. This is because the body already recognizes the bacteria and is able to clear most of the infection. In VCTB patients, the skin reaction to isolate the bacteria is to form a lump containing a collection of immune cells (tuberculoid granuloma).[9] Research by Niki et al found that from 13 cases of multifocal VCTB, 11 cases were found in immunocompetent patients (healthy immune system). Included in the study, the main risk factor for VCTB was thought to be a history of minor skin injury (microtrauma) which occurred in 10 of 14 cases (71.4%).[8]

At first, VCTB appears as small lesions (papules) that are hard and scaly, similar to warts. These lesions grow slowly and the edges widen irregularly, the center of the lesion can become concave and leave an atrophic scar, or conversely become a large papillary lesion with indentations (fissures).[10] These lesions get bigger over time and can reach a diameter of several centimeters or more. These lumps can burst (fissure) and produce pus (exudate), but rarely open wounds (ulcerative) occur and can heal on their own. Nearby lymph nodes usually do not enlarge, unless there is another bacterial infection. VCTB can attack the surrounding tissue, but generally does not cause defects or functional disorders in the affected part of the body.[4,7] In this case, patient's complaints had been going on for 20 years, the skin lesions were getting bigger and there was no enlargement of the lymph nodes.

A study by Eun et al reported a case of VCTB in a 43 year old Asian woman. The VCTB lump on her buttocks had been there for more than 20 years. Misdiagnosed and not treated in a timely manner, VCTB can develop into skin cancer (squamous cell carcinoma) and elephantiasis (chronic lymphedema).[7] In this case the manifestations are more similar to dermatophytosis or deep mycosis (chromoblastomycosis) thus diagnosis and therapy are delayed for years. The patient has a history of repeated therapy but has not recovered. So, we suspected a VCTB.

Because many other skin diseases have symptoms similar to VCTB, a histopathological examination is necessary. However, the results of this examination do not always show the actual results. On histopathological examination, VCTB shows several abnormalities in the epidermis layer, such as hyperkeratosis, acanthosis and papillomatosis. In addition, tuberculosis bacteria can be found in the dermis of the skin which appears as a typical collection of inflammatory cells with granuloma caseous necrosis.[3,11] The biopsy results of this case showed tissue covered by the epidermis with ulcerative foci and in the dermis layer epithelioid granulomas with necrotic debris were seen, such as lymphocytes and macrophages accompanied by Langhans datia cells.

Several studies show that polymerase chain reaction (PCR) examination is more sensitive than microscopic examination and is as good as bacterial culture.[3] However, PCR tests are often falsely negative in VCTB patients, possibly due to the low bacterial load in the

samples. Therefore, to increase the sensitivity of the PCR test, it is necessary to select samples of good quality and suitability.[11] In the case of VCTB, it is necessary to carry out an examination to confirm the diagnosis and exclude the possibility of other similar diseases, such as verrucous porokeratosis, discoid lupus, lichen planus, chromoblastomycosis, and atypical mycobacterial infections.[12]

Treatment for VCTB is the same as treatment for pulmonary tuberculosis.[8] The main therapy is with standard anti-TBC drugs.[12] Usually the lump will disappear in 4-5 months, unless there is resistance to the drugs isoniazid and rifampicin (rare in skin TB).[13] In accordance with the latest guidelines from the Indonesian ministry of health, a daily fixed dose combination of anti-TBC will be given according to the patient's body weight. Apart from medication, surgical removal (excision), cold freezing (cryotherapy), burning with electricity (electrocautery), and scraping (curettage) can also be performed to reduce the size of the lesion and.[14] This patient recovered well after being treated with OAT for six months and the condition improved in the first month of treatment.[15]

CONCLUSION

Cuticle tuberculosis needs to be considered in the diagnosis because many verrucous skin lesions resemble this disease, especially in patients with a history of trauma and inadequate response to therapy.

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