

## Case Report

# Verrucose tuberculosis cutis associated with chronic monoarthritis of knee in a patient with HIV infection

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### ABSTRACT

Bone component involvement is an atypical form of extrapulmonary mycobacterium tuberculosis and it is rare that it previously affects the skin, its diagnosis is difficult. Lipoarabinomannan (LAM) is a component of the cell walls of mycobacteria, present in some people with active tuberculosis, the test is simple and shows results in twenty minutes, but is not validated in immunocompetent patients. We present the case of a 65 year old man, diagnosed with verrucous tuberculosis and subsequent tuberculous monoarthritis of the left knee with positive analysis of lipoarabinomannan in urine and ELISA for non-reactive HIV with a good clinical response to the treatment of tuberculosis.

**Keywords:** Tuberculosis verrucosa cutis, Mycobacterium tuberculosis, Monoarthritis, HIV, Lipoarabinomannan

### INTRODUCTION

Mycobacterium tuberculosis (TB) infection is very common in developing countries, every year about 10 million people become infected with M. tuberculosis and of these 1.4 million end in death.<sup>1</sup> Cutaneous tuberculosis and joint affects 1 to 3% of cases of Tuberculosis, the verrucous form represents 6% of the cutaneous forms, while the knee involvement is 8% of the articular forms.<sup>2,3</sup>

Detection of extrapulmonary tuberculosis infection is difficult; due to confusing clinical forms, weight loss and low specificity of diagnostic methods. Some methods such as urine lipoarabinomannan assay for the diagnosis and screening of active tuberculosis have been validated for people living with HIV. The lipoarabinomannan (LAM) is a component of the cell walls of mycobacteria, present in some people with tuberculosis, the test is simple and shows results in twenty minutes, but is not validated in immunocompetent patients.<sup>4,5</sup>

Skin lesion due to TB can occur as an extension of an underlying tuberculous focus, found in the bones, joints, tendons, lymph node; by lymphatic or hematogenous extension, as well as exogenously when the bacillus invades the skin from the outside in the form of skin reactivation or primoinfection by inoculation.<sup>6</sup>

We report the case of tuberculosis verrucosa cutis associated with chronic monoarthritis in an immunocompetent patient with urine positive lipoarabinomannan assay, who responded to tuberculosis treatment.

### CASE REPORT

A 65 years old man, a farmer from the Andes of Peru (Huancayo) with a history of having worked killing and cleaning chickens, has had a painless lesion on his left hand for 6 years, as well as pain in his right knee and night sweats since 2 months ago, he entered the emergency room due to an increase in volume and

inability to walk around 5 days ago. The clinical examination shows lesions of type erythematous plaque with a verrucous and hyperkeratotic surface infiltrating located on the back and palm of the left hand (Figure 1 and 2); erythematous right knee volume increase and painful to the touch, with decreased joint range.

The results of the laboratory tests were the following: Rose Bengal: negative; negative mercapto ethanol; Prothrombin time: 13.5; INR: 1.10; white blood cell count: 2 660/mm<sup>3</sup>; platelet count, 323,000/mm<sup>3</sup>; hemoglobin level 11.5 g/dl; erythrocyte sedimentation rate (ESR) 26 mm/hour; level of reactive protein C 68 mg/l; Alkaline phosphatase (ALP) 486 U/L. The synovial fluid from the affected knee showed 10,000 white blood cells/mm<sup>3</sup>, 45% were nuclear polymorphic leukocytes (PMN) and 55% were mononuclear cells, the adenosine deaminase was 48, Ziehl Neelsen staining: negative for BAAR and the cultures were negative for common bacteria and Mycobacteria, ELISA for HIV and HTLV I and II were negative. The chest radiograph was normal and the right knee radiograph showed concentric joint space narrowing with periarticular osteopenia and peripheral erosions (Figure 3).



**Figure 1: Lesions of type erythematous plaque with hyperkeratotic infiltrating located on the palm of the left hand.**



**Figure 2: Lesions of type verrucous and hyperkeratotic surface infiltrating located on the back of the left hand.**



**Figure 3: The right knee radiograph shows concentric joint space narrowing with periarticular osteopenia and peripheral erosions.**

In the pathological study of erythematous plaque evidenced pseudo epitheliomatous hyperplasia, granulomatous chronic infiltrate, multinucleated giant cells, Ziehl Nielsen stain positive for acid resistant bacillus, tissue culture were negative for fungi and mycobacteria, the lipoarabinomannan antigen test in urine was positive. The patient received anti-tuberculosis treatment with rifampicin, ethambutol, isoniazid and pyrazinamide for 2 months, then rifampicin and isoniazid daily for 10 months, in addition to prednisone for 4 weeks, with clinical improvement.

## DISCUSSION

Cutaneous TB is the rare form of tuberculosis infection and continues to be a challenge for the diagnosis due to the various clinical manifestations, which varies according to the patient's immune status.<sup>7</sup> Verrucous tuberculosis is the primary infection due to *M. tuberculosis*, which means that it is produced by the direct inoculation of mycobacterium on the cutaneous surface that predominantly affects the back of the hands, it is characterized by verrucous and painless plaques, they have variants such as psoriasiform, keloid, exudative, sporotricoides, complex, destructive and tumor-like.<sup>8,9</sup> It is common in farmers, butchers, bacilliferous patients and pathologists, however, there are some reports that support blood dissemination, the case presented is a male farmer and poultry farmer with chronic verrucous lesions on the back of the hand, which support the epidemiological and clinical antecedent for the diagnosis of verrucous tuberculosis in addition to the evidence of positive BAAR in the histological study and the positive lipoarabinoman antigen.<sup>10</sup>

It is a priority to consider as a differential diagnosis other granulomatous pathologies such as sarcoidosis, leprosy, leishmaniasis, fungal infections (*erysipelotheix rhusiopathiae*), Majocchi granuloma and carcinoma.<sup>11</sup> The presence of granulomatous infiltrates in the

histological study is a cardinal sign and the response to tuberculosis treatment confirmed the diagnosis of tuberculosis verrucosa cutis.

The presence of chronic monoarthritis with studies of synovial fluid compatible with tuberculous arthritis in the context of a patient with verrucous tuberculosis on the back of the hand reinforces the theory of hematic dissemination of mycobacteria from primary cutaneous infection to the joint of the knee.<sup>10,12</sup>

The appearance of new diagnostic methods such as the detection of lipoarabinomannan antigen from the tubercle bacillus removed by urine is a rapid method of great diagnostic support, which has been validated in patients with HIV infection, but with few studies in immunocompetent. In the case presented, this immunochromatographic test was performed, which showed a positive result supporting the diagnosis of tuberculosis disease.<sup>13</sup>

## CONCLUSION

The cutaneous tuberculosis continues having problems in the diagnosis due to the multiple clinical forms and to the systematic commitment, the diagnosis must be based on the pathological analysis and supported by new laboratory methods such as the lipoarabinomannan test. The sensitivity of this method in the diagnosis of cutaneous tuberculosis should be investigated in immunocompetent patients.

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