Pathogenic Significance of Hyperkeratotic Cutaneous Tuberculosis

Significado etiopatogénico de una tuberculosis hiperqueratósica cutánea

To the Editor:

The incidence of cutaneous tuberculosis has fallen in parallel with systemic forms of the infection,[1] which, in Spain, is estimated at 35 new cases per year per 100 000 population.[2] In developed countries, this infection predominantly affects immunosuppressed subjects or those with human immunodeficiency virus (HIV) infection, whereas in developing countries it mainly affects the healthy population.[1] It is therefore a diagnosis to be considered in the immigrant population.[3]

We present the case of a 56-year-old man, a farmer with a history of alcoholism. He was seen for a lumbar pain that began 2 months previously. Plain x-ray studies and magnetic resonance imaging were performed, showing D12-L1 spondylodiscitis. Blood tests revealed anemia of chronic disease and serology for HIV and *Brucella* was negative. The Mantoux test result measured 10 mm. The chest radiograph showed tracts of fibrous scarring mainly in the left upper lobe and a nodular lesion compatible with a noncalcified granuloma in the right upper lobe (Figure 1).

The patient underwent surgical treatment, performing lumbar laminectomy and arthrodesis of the affected vertebrae. The material was sent for microbiological and histological study, observing granulomatous structures with necrotic centers. Culture in Lowenstein medium was positive for *Mycobacterium tuberculosis complex*.

A consultation request was sent to the dermatology department due to the presence of a unilateral, verrucous plaque on the left elbow that was growing slowly but progressively and had been present for a year (Figure 2). The lesion was not suppurative and there were no associated palpable lymph nodes. The patient did not report previous trauma in the area.

Skin biopsy was performed for histological study (Figure 3), revealing a hyperplastic epidermis with hyperkeratosis, focal hypergranulosis, acanthosis, and papillomatosis. There was chronic inflammatory infiltrate in the dermis with noncaseating granulomas formed of Langhans-type, multinucleated giant cells surrounded by lymphocytes. Periodic acid-Schiff staining was negative for fungi and the Ziehl-Nielsen method revealed no acid-alcohol-fast bacilli. No birefringent material was observed under polarized light.

These data enabled us to make a diagnosis of cutaneous tuberculosis associated with Pott disease.

The patient received tuberculostatic treatment for 12 months and the skin lesion resolved completely.

The diagnosis of cutaneous tuberculosis is established in the presence of clinically compatible lesions, in which histology reveals a granulomatous infiltrate with variable degrees of necrosis and vasculitis, and in which it is possible to demonstrate the presence of *M tuberculosis* by culture, Ziehl-Nielsen stain, or polymerase chain reaction.[1]

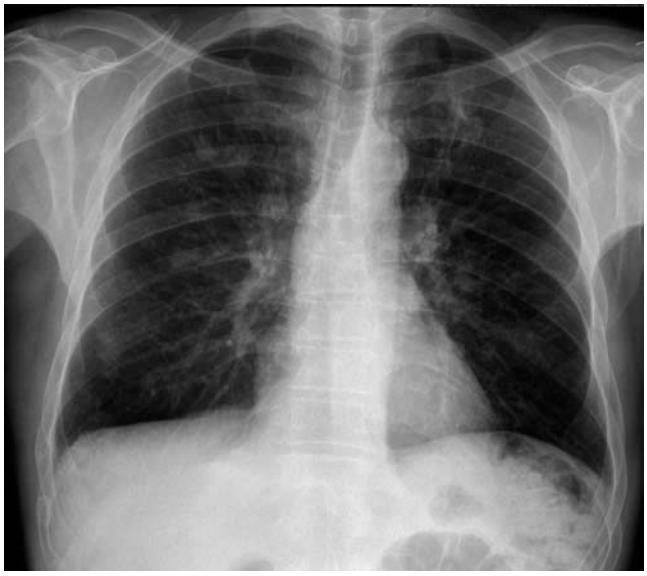

Figure 1 Chest radiograph showing tracts of fibrous scarring in the left upper lobe and a noncalcified granuloma in the right upper lobe, indicating past infection by *Mycobacterium tuberculosis*.

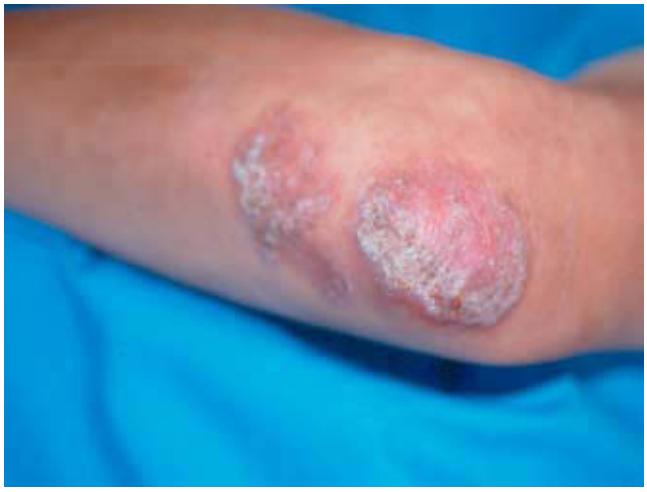

Figure 2 Unilateral, annular, hyperkeratotic lesion on the left elbow, with eccentric growth and central healing.

The response to treatment is considered to have significant diagnostic value,[4,5] particularly in the paucibacillary forms in subjects with good immunity in which it is difficult to visualize or isolate the microorganism.

Cutaneous tuberculosis can be classified into a number of clinical forms, defined according to the patient's immune status and the route of infection. This case serves to highlight the differences between 2 conditions that can be difficult to distinguish in clinical practice.

Tuberculosis verrucosa cutis (TVC) occurs in individuals with immunity to the bacillus (strongly positive reaction in the purified protein derivative [PPD] test) due to

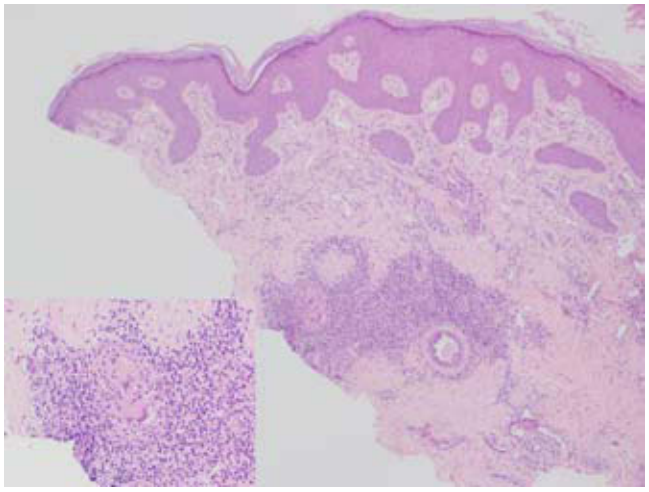

Figure 3 Epidermal hyperplasia and granulomatous structures in the dermis (hematoxylin-eosin, ×4). Inset at 20× magnification: granulomas formed of epithelioid cells, lymphocytes, and giant cells with no caseation.

previous contact or vaccination.[1] Clinically it presents as a spreading verrucous plaque. There may be associated lymphadenopathy, usually due to superinfection, although cases have also been reported with positive cultures of *M tuberculosis* from a node.[4] Histology reveals pseudoepitheliomatous hyperplasia and dermal granulomas; acid-alcohol-fast bacilli are not usually seen as these forms are associated with an appropriate immune response. For the same reason, culture is often negative.[1,6,7]

In lupus vulgaris, the PPD test is less positive than in TVC.[1] It is the form of cutaneous tuberculosis most commonly associated with involvement of other organs,[7] and the most common clinical form in Europe.[1] It starts as a maculopapule that displays eccentric growth over a period of years until it forms large plaques that can acquire an atrophic, ulcerated, hypertrophic, or verrucous appearance.[1] Its progression can give rise to deformities and squamous cell carcinoma.[6]

Histology shows an atrophic or hyperplastic epidermis. Tuberculoid granulomas with minimal caseation are seen in the dermis. Acid-alcohol-fast bacilli are observed less commonly than in TVC using the Ziehl Nielsen method.[1]

In our case, the patient presented a history of alcoholism and mild malnutrition, which contributed to a suboptimal immune response and which could have facilitated tuberculous reactivation and the hematogenous spread of *M tuberculosis* from an asymptomatic focus in the lung to the skin and to the vertebra; this would be compatible with a diagnosis of hyperkeratotic lupus vulgaris.

Another possibility would be the presence of an exogenous inoculation into the skin with hematogenous spread to the vertebra in a patient with previous pulmonary tuberculosis, making the diagnosis TVC. Other cases of TVC associated with the involvement of internal organs have been described in the literature,[3,8,9] although in those cases the disease developed over a course of years and there was no pulmonary involvement visible on the x-rays. The temporal correlation means that this was also a possibility, as the lesion appeared a year before of the symptoms of bone disease.

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