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Age: not detected.
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Cutaneous tuberculosis an unusual localization: A case report

--Manuscript Draft--

Cutaneous tuberculosis an unusual localization: A case report

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Abstract:

Tuberculosis is a major public health concern. Morocco is a tuberculosis endemic country; nearly 30000 cases are recorded each year, pulmonary tuberculosis represents 57%, extrapulmonary tuberculosis 43%.

Cutaneous localization is exceptional; it represents 0.5 to 2% of cases of tuberculosis. It is very difficult to diagnose, given the variability of clinical presentation, and is based on combining clinical, radiological and biological arguments.

In this study we report a rare case of cutaneous tuberculosis occurring in a patient with history of pulmonary and cutaneous sarcoidosis, with personal history of pulmonary tuberculosis treated in 2017, presenting for a month a mass on the left thigh in the form of an abscess. The patient benefited from drainage of the skin abscess, the research of Koch's bacillus (BK) by conventional and molecular methods was positive. The diagnosis of cutaneous tuberculosis was posed, and the patient was placed on anti-bacillary.

Direct examination remains a very simple and rapid tool, it allows the search for Acid-Fast Bacilli (AFB) in the sample, its sensitivity is variable, it does not exceed 20% for extra-pulmonary samples, and the detection threshold is order of 10^4 AFB of pathological product.

Polymerase chain reaction (PCR) using the GeneXpert MTB/RIF method offers an early diagnosis that identifies *Mycobacterium tuberculosis* DNA and the main mutations that confer rifampicin resistance to the bacteria.

Cutaneous tuberculosis is a rare entity, the polymorphism of the anatomo-clinical presentation and the multiplicity of differential diagnoses make the diagnosis difficult.

The present case encourages us to think about it when faced with abscessed and recurrent skin lesions, especially in an endemic country like ours.

Key words: Cutaneous tuberculosis, Polymerase chain reaction, Morocco.

Data summary:

No data were reused or generated in this study.

Introduction:

Tuberculosis is a major public health problem. According to the World Health Organization (WHO), Morocco is a tuberculosis endemic country; nearly 30000 cases are recorded each year, of which pulmonary tuberculosis represents half.

Cutaneous localization is rare, it represents 0.5 to 2% of tuberculosis and it occupies the 5th place in extra-pulmonary localization [1]. Its diagnosis is very difficult given the variability of the clinical presentation.

In this study we report a rare case of cutaneous tuberculosis occurring in a patient with history of pulmonary and cutaneous sarcoidosis.

Case report:

A 42-year-old patient, living in Morocco, vaccinated at birth with Bacillus Calmette-Guerin (BCG) vaccine, with a history of pulmonary sarcoidosis type III since 2007 and cutaneous sarcoidosis since 2020 confirmed by a skin biopsy, under corticosteroid treatment, with personal history of pulmonary tuberculosis treated in 2017, presenting for a month a mass on the left thigh in the form of an abscess which led the patient to consult.

On clinical examination, the patient was haemodynamically stable, had neither fever nor chills, and he noted the presence of chronic dry cough and dyspnea on exertion, the biological assessment was unremarkable and human immunodeficiency virus (HIV) serology was negative.

X-ray of the chest revealed the presence of nodules predominantly of the middle lobe which is compatible with an old pulmonary sarcoidosis (Fig. 1).

Fig.1. The result of chest X-ray revealed the presence of nodules predominantly of the middle lobe.

The pulmonary tuberculosis was rejected in the face of the negativity of the research of Koch's bacillus (BK) by conventional and molecular methods.

The patient benefited from drainage of the skin abscess (Fig. 2), and the evacuated pus was sent as quickly as possible to the bacteriology laboratory.

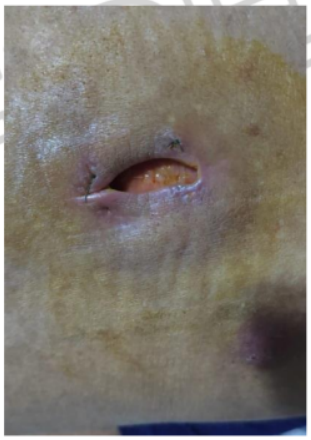

Fig. 2. After drainage: fistulized gumma on left thigh.

The cytobacteriological analysis of the pus showed on direct examination a significant cellular reaction made up of numerous polymorphonuclear neutrophils with an absence of bacterial flora.

Pus seeding was cultured on Columbia blood agar, on Polyvitex chocolate agar and incubated aerobically at 37°C for 18-24 hours. As well as Schaedler agar and Columbia blood agar supplemented with nalidixic acid-colistin incubated anaerobically at 37°C for 48 hours. All cultures were sterile, myco-bacteriological analysis of pus on direct examination after Ziehl Nelseen's staining found 1 to 10 Acid-Fast Bacilli (AFB) per field (Fig. 3).

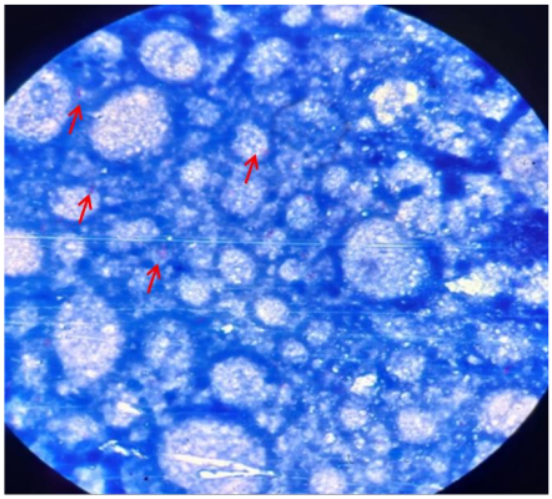

Fig. 3. Direct examination of pus by Ziehl Nelseen's staining shows the presence of AFB (Magnification 1000x).

A molecular study using GenExpert MTB/RIF method (Cepheid Sunnyvale, CA, United States) allow the detection of the *Mycobacterium tuberculosis* complex, without resistance to Rifampicin.

The culture on solid medium (Löwenstein Jensen (LJ)) was positive after 3 weeks. The diagnosis of cutaneous tuberculosis was posed, and the patient was placed on anti-bacillary quadruple therapy: Isoniazid, Rifampicin, Ethambutol and pyrazinamide for two months then dual therapy for 6 months, the treatment was successful, resulting in important clinical and biological evolution (Fig. 4).

Fig. 4. Lesion evolution after treatment.

Discussion:

Pulmonary tuberculosis represents 57% and extra-pulmonary tuberculosis represents 43% [1]. Cutaneous tuberculosis is a rare location, most often described in patients with disseminated tuberculosis, particularly during infection with the human immunodeficiency virus (HIV). It represents less than 2% of extra-pulmonary tuberculosis, and it occupies 5th place after pleuro-pulmonary, lymph node, urogenital and digestive disorders, women are the most affected by cutaneous tuberculosis with a sex ratio (0.89), the average age is 40.3 years, a personal history of tuberculosis was noted in 16% of cases [2]. The reported case matches these statistics, it is an immunocompromised man, aged 42 and with a history of pulmonary tuberculosis.

The cutaneous presentations of tuberculosis are very polymorphic, their clinical diversity depends on the physio pathological mechanism of contamination, and the most dominant clinical aspects are scrofuloderma and gumma, according to data from the Moroccan literature [2, 3].

The transmission of cutaneous tuberculosis can be acquired by haematogenous or lymphatic spread from a pulmonary source or by direct inoculation. Exogenous infection occurs by direct inoculation of bacillus into the skin of predisposed individuals (tuberculous chancre, warty tuberculosis) [4]. Endogenous infection is secondary to a pre-existing primary focus and can result from contiguous spread (orifacial tuberculosis, scrofuloderma), haematogenous (cutaneous miliary tuberculosis, tuberculous gumma and lupus vulgaris) or lymphatic (lupus vulgaris) dissemination [5]. According to Beyt's classification, tuberculous gumma is classified in haematogenous tuberculosis generally occurring in immunocompromised patients, the most common site of gumma is the limbs, particularly the thighs and buttocks. They present as painless nodules forming cold abscesses [6, 7], which is the case of our patient.

The subject's receptivity is essentially a function of their cellular immunity and the infectious quantum [8].

The diagnosis is difficult and is based on a combination of clinical, radiological and biological arguments. Biological diagnosis is difficult due to the paucibacillary nature of extrapulmonary samples on one hand, on the other hand, the difficulty of access to the site of infection [9]. Direct examination remains a very simple and rapid tool, it allows the search for AFB in the sample, its sensitivity is variable, it does not exceed 20% for extra-pulmonary samples, and the detection threshold is order of 10^4 AFB of pathological product [10].

However, mycobacterial culture remains the reference method, especially in paucibacillary forms negative on direct examination; it makes it possible to determine the presence of mycobacteria and their sensitivity. The growing medium of choice is Löwenstein Jensen, with a growth time of 3 to 8 weeks. The sensitivity of the culture is greatly increased for lung samples ranging from 80 to 85%, on the other hand it is variable for other pathological products (30% for osteoarticular samples) and its specificity is of the order of 98.5% [11]. In the case of our patient, direct examination of pus after Ziehl Nelseen's staining was positive, and culture on Lowenstein Jensen medium was positive after 3 weeks of incubation, with isolation of the *Mycobacterium tuberculosis* complex.

PCR using the GeneXpert MTB/RIF method offers an early diagnosis that identifies *Mycobacterium tuberculosis* DNA and the main mutations that confer rifampicin resistance to the bacteria [12, 13]. A study showed that the use of the GeneXpert method as a diagnostic tool has a specificity of 98.7% and a sensitivity of 83.1% compared to culture [14], with a high positive predictive value for the detection of resistance to rifampicin (98%) [15], the reduction in sensitivity is explained by the presence of polymerase inhibitors in the samples to be tested (biological fluids and biopsies) [16, 17]. This case illustrates the advantage of the GeneExpert MTB/RIF method for having a rapid diagnosis.

The treatment of cutaneous tuberculosis is similar to pulmonary tuberculosis; it is based on quadruple anti-tuberculosis therapy for 8 weeks then dual therapy for 16 weeks [18].

Conclusion:

Cutaneous tuberculosis is a rare entity, the polymorphism of the anatomo-clinical pictures and the multiplicity of differential diagnoses make the diagnosis difficult. The present case encourages us to think about it when faced with abscessed and recurrent skin lesions, especially in an endemic country like ours.

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Author contributions:

Z.F. contributed to the initial drafting of the manuscript, while B.E, B.Y, M.A and C.M. revised it. EL.M. provided final approval for the version to be published.

Conflicts of interest:

The authors declare that there are no conflicts of interest.

Consent for publication:

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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