

Short Communication

Analysis of cutaneous tuberculosis cases reported from 2000 to 2013 at a university hospital in Rio de Janeiro

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Abstract

Introduction: Tuberculosis (TB) is a serious public health problem; however, the cutaneous form remains rare. **Methods:** A retrospective analysis examined notified cutaneous tuberculosis (CTB) cases from 2000 to 2013 at the University Hospital Clementino Fraga Filho. **Results:** Twenty-six CTB cases were documented during this period. Erythema induratum of Bazin was the most common form, and 86.7% of such cases occurred in women ($p=0.068$). Only one patient was HIV positive. **Conclusions:** This study confirms the rarity of CTB and highlights the need for multicenter studies in order to obtain an adequate number of cases for analysis.

Keywords: Cutaneous tuberculosis. Erythema induratum of Bazin. Nodular vasculitis.

According to the World Health Organization (WHO), 22 countries, including Brazil, account for 80% of the global burden of tuberculosis (TB). For example, in 2013, there were 73,692 new TB cases reported in Brazil. This corresponds to an incidence rate of 36.7/100,000 inhabitants, placing Brazil 17th regarding the number of TB cases and 104th regarding the TB incidence rate⁽¹⁾⁽²⁾. As such, TB is a serious public health problem in Brazil with 14% of the patients presenting an extra-pulmonary form while the cutaneous form remains relatively rare (1-2% of cases overall)⁽¹⁾⁽³⁾. Indeed, estimates show that approximately 100 to 200 new cases of cutaneous tuberculosis (CTB) occur in Brazil each year⁽²⁾. These cases result from chronic infection by *Mycobacterium tuberculosis*, *Mycobacterium bovis*, or occasionally the bacillus Calmette-Guerin⁽¹⁾. However, even though cutaneous TB is rare, it can mimic various other dermatological conditions making diagnosis a challenge⁽⁴⁾; therefore, the study of skin TB continues to be relevant. In light of this, the objective of this study was to illustrate our experience with CTB in a university hospital over the last 14 years.

A retrospective analysis examined CTB cases diagnosed from 2000 to 2013 at the Federal University of Rio de Janeiro [Universidade Federal do Rio de Janeiro (UFRJ)], University Hospital Clementino Fraga Filho [Hospital Universitário Clementino Fraga Filho (HUCFF)]. Information regarding notified extrapulmonary TB cases was traced using data of the

epidemiological session of HUCFF and data from the Hospital Tuberculosis Control Program. Inconsistencies were verified and carefully analyzed using patient records. It is worth noting that only patients aged 14 years and over are treated in our hospital.

From 2000 to 2013, 2185 cases of TB were notified, 839 of which were extrapulmonary. Twenty-six of these cases were CTB (mean age: 40.5), and 18 of these occurred among women while 8 occurred among men (**Table 1**). Erythema induratum of bazin (EIB)/nodular vasculitis (NV) was the most common form (15 cases), followed by scrofuloderma (8 cases), papulonecrotic tuberculid (PT) (2 cases), and lupus vulgaris (2 cases). One patient simultaneously presented with EIB and PT. A histopathological diagnosis was possible for 16 cases, while positive cultures were found for 9 (**Table 2**). Still, the purified protein derivative (PPD) test was positive in 25 patients, and negative in 1 patient with scrofuloderma. Only

TABLE 1 - Number of cases of cutaneous tuberculosis divided by sex.

Form	Cases of men (n)	Cases of women (n)	Total cases
Erythema induratum	2	13	15
Scrofuloderma	5	3	8
Papulonecrotic tuberculid	0	2	2
Lupus vulgaris	1	1	2
Total	8	18*	26*

*One patient simultaneously presented with erythema induratum and papulonecrotic tuberculid.

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TABLE 2 - Type of diagnosis for each form of cutaneous tuberculosis.

Form	Histopathological appearance	Positive culture	Positive PPD
Erythema induratum	12	0	15
Scrofuloderma*	2**	7	7
Papulonecrotic tuberculid	2	1¶	2
Lupus vulgaris	1	1	2
Total	16†	9	25†

PPD: purified protein derivative. *One patient was diagnosed with scrofuloderma using both histopathological appearance and cultures. **Most patients with scrofuloderma were not submitted to a skin biopsy. ¶This patient had positive culture for ganglionic tuberculosis. †One patient simultaneously presented with erythema induratum and papulonecrotic tuberculid.

one patient was diagnosed with human immunodeficiency virus (HIV) infection. Two scrofuloderma patients also had pulmonary TB, and one patient with PT also had ganglionic TB. Three patients with a positive PPD and erythema nodosum were treated empirically with RHZ (rifampicin, isoniazid, and pyrazinamide) for 6 months and showed improvement. The mean duration of post-treatment follow-up was 23.2 months, but this differed greatly between cases, and 11 patients received no follow-up after treatment. All cases received specific TB treatment, and 5 relapses were observed with an average time to relapse of 5 years.

The data analysis showed that 1.2% of the TB cases in the HUCFF were cutaneous and most were diagnosed among women (69.2%). Furthermore, 86.7% of EIB cases occurred among women, results that are consistent with previous studies^{(4) (5) (6) (7)}. However, an analysis examining EIB cases by sex showed only a borderline significant difference ($p=0.068$; **Table 3**); however, this may be because of an insufficient number of cases. No focus of active TB was found among the EIB patients during this time, results that are also consistent with previous data^{(4) (5) (6) (7)}. Meanwhile, almost all of the patients (87.5%) with scrofuloderma had a positive culture, which is a higher result than previously reported⁽⁸⁾. Given that lupus vulgaris is a paucibacillary form of TB infection and cultures are often negative, the diagnosis is mainly based on the Mantoux test, the histopathological appearance, and the response to chemotherapy⁽⁹⁾. In addition, three patients with CTB also had other forms of TB; in other words, the cutaneous lesion led to the TB diagnosis and thus the interruption of transmission. Interestingly, only one patient was HIV positive (3.8%), even though WHO data show that 15% of TB cases usually occur in HIV positive

patients⁽²⁾. This discrepancy may be because cutaneous TB most often manifests itself in HIV positive patients on highly active antiretroviral therapy who have recovered their cluster of differentiation 4 (CD4) cell count, as in this patient's case.

Moreover, 96% of patients had a positive PPD highlighting the importance of requesting this test upon suspicion of TB. However, the difference in the length of post-treatment follow-up shows that the appropriate follow-up length is not well established. Indeed, the median time to relapse was 5 years; therefore, in order to capture such a relapse, the follow-up period would have to be very long. Thus, perhaps the best option is to inform the patient to return if new lesions appear.

Furthermore, NV is often used as a synonym of EIB; however, historically they were considered different entities. For example, EIB was regarded as a manifestation of tuberculin hypersensitivity while NV represented the nontuberculous counter part^{(6) (7)}. Therefore, we believe that the EIB relapse patients identified in this study may actually represent NV patients. In addition, the 3 patients whose conditions improved with treatment remind us that TB should be considered in patients who have a positive PPD but a doubtful histopathologic appearance and a negative culture. This also illustrates that a therapeutic trial is sometimes valid in endemic regions.

Finally, it is worth mentioning that the treatment recommended since 1979 (RHZ) was modified in 2009 after the preliminary results of the Second National Survey on Antituberculosis Drug Resistance reported an increase in primary isoniazid resistance (from 4.4 to 6.0%). This led to the addition of ethambutol (E) as a fourth drug in the intensive phase of treatment (the first 2 months). Thus, the basic treatment regimen for TB now

TABLE 3 - Cases of erythema induratum of Bazin (EIB) by sex.

EIB	Men	Women	Total
Yes	2	13	15
No	6	5	11
Total	8	18	26

EIB: Erythema induratum of Bazin. Fisher's exact test (5% of significance); p -value=0.06865 (OpenEpi version 3).

mandates four drugs (RHZE)⁽¹⁰⁾. It is also important to highlight that Brazil's Ministry of Health requires only the classification of pulmonary and extrapulmonary TB⁽²⁾, making it difficult to obtain precise data on CTB. However, this study confirms the scarcity of CTB and highlights the need for multicenter studies in order to obtain an adequate number of cases for analysis.

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Conflict of interest

The authors declare that there is no conflict of interest.

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