

Brief Communication

Prevalence of HIV infection in tuberculosis patients treated at primary health care clinics in the city of Fortaleza, Brazil*

Prevalência da infecção pelo HIV em pacientes com tuberculose na atenção básica em Fortaleza, Ceará

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Abstract

The objective of this study was to determine the prevalence of HIV infection among individuals ≥ 15 years of age with a confirmed diagnosis of tuberculosis and treated at family health care clinics in the city of Fortaleza, Brazil. We evaluated a random sample of 110 patients with tuberculosis, treated at a total of 26 family health care clinics between January and May of 2009. All of the participants completed a questionnaire regarding sociodemographic and clinical data, and all underwent HIV testing. In this sample, the prevalence of tuberculosis/HIV co-infection was 3.6% (95% CI: 0.2-7.0).

Keywords: Tuberculosis; HIV seroprevalence; Primary health care.

Resumo

O objetivo deste trabalho foi determinar a prevalência da infecção pelo HIV em indivíduos com ≥ 15 anos de idade e diagnóstico confirmado de tuberculose, acompanhados em Centros de Saúde da Família de Fortaleza (CE). Uma amostra aleatória de 110 pacientes com diagnóstico de tuberculose de 26 Centros de Saúde da Família foi incluída no estudo, realizado entre os meses de janeiro e maio de 2009. Todos os participantes responderam a um questionário com dados sociodemográficos e clínicos e realizaram sorologia para o HIV. Nesta amostra, a prevalência de coinfeção tuberculose/HIV foi de 3,6% (IC95%: 0,2-7,0).

Descritores: Tuberculose; Soroprevalência de HIV; Atenção primária à saúde.

Tuberculosis is a disease that still has a major impact on morbidity and mortality in Brazil. It is more common in large urban areas, mainly affecting individuals who are more socially vulnerable. The advent of HIV, in the early 1980s, changed the clinical and epidemiological profile of tuberculosis.⁽¹⁾ Infection with HIV became an important risk factor for the development of tuberculosis.^(1,2) In the presence of co-infection, progression to disease has been estimated at 10% per year.⁽³⁾

Worldwide, it has been estimated that 9% of the patients diagnosed with tuberculosis are infected with HIV⁽⁴⁾ and that the number of co-infected patients is as high as six million.⁽⁵⁾ Brazil reports, on average, 85,000 tuberculosis

cases per year, and approximately 8% of the tuberculosis patients are also infected with HIV.⁽⁶⁾

The Brazilian National Ministry of Health recommends that all tuberculosis patients undergo HIV testing.⁽⁷⁾ This procedure allows early diagnosis of HIV infection and, when appropriate, initiation of antiretroviral therapy, which reduces HIV infection-related morbidity and mortality and represents an important tool for the development and implementation of public policies.

The objective of the present cross-sectional study was to determine the prevalence of HIV infection among tuberculosis patients treated at *Centros de Saúde da Família* (CSF, family health care clinics) in the city of Fortaleza,

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Brazil. The CSF provide primary health care in the city. In 2008, approximately 81% of the tuberculosis cases in Fortaleza were reported by primary health care clinics.⁽⁸⁾ The city has 114 neighborhoods, grouped into six administrative regions. From among the 90 CSF that existed at the time of the study, 30 were selected by random sampling, which occurred in a stratified way, the number of health care facilities in each of the six administrative regions being taken into consideration.

The Epi Info software, version 3.5.1, was used for sample size calculation. For a total of 2,038 tuberculosis cases reported in 2008, an expected prevalence of 8.0% of tuberculosis/HIV co-infection being taken into consideration,⁽⁶⁾ with a precision of 5.0%, the minimum sample size required to calculate the proportion of patients with tuberculosis/HIV co-infection, with a confidence level of 95%, was 107 patients.

The researchers personally contacted the nurses responsible for the tuberculosis control programs of the CSF selected for the study and explained the study procedures to them. The nurses recruited the patients and completed the data collection instrument. The data collection at the CSF occurred between January and May of 2009. Consecutive tuberculosis patients treated at the CSF and meeting the inclusion criteria were invited to participate in the study, until the minimum sample size was reached. The inclusion criteria were as follows: living in the city of Fortaleza; being ≥ 15 years of age; having entered tuberculosis care via a primary health care clinic in September of 2008 or later; and having been diagnosed with tuberculosis in accordance with the criteria established by the Brazilian National Ministry of Health,⁽⁷⁾ i.e., two positive sputum smears or one positive sputum smear and chest X-ray findings suggestive of tuberculosis; one positive culture for *Mycobacterium tuberculosis*; or one biopsy result consistent with tuberculosis.

Data were collected by means of a questionnaire assessing the following variables: gender; age; marital status; level of education (number of years of schooling); clinical form of tuberculosis; and HIV status. Testing for HIV was performed at the municipal referral laboratory, following the regular test scheduling of the CSF. The data were analyzed with the Statistical Package for the Social Sciences, version 11.5 (SPSS Inc., Chicago, IL, USA). For the variable HIV status, we used

a 95% CI. The present study was approved by the Research Ethics Committee of the University of Fortaleza (Ruling no. 356/2008). All of the patients who agreed to participate in the study gave written informed consent.

Of the 30 randomly selected CSF that were contacted, 26 returned fully completed questionnaires. All of the patients with a confirmed diagnosis of tuberculosis and treated consecutively at any of those 26 CSF were invited to participate in the study. Of the 114 patients invited to participate, 4 (3.5%) declined. All of the 110 patients included in the study had been started on tuberculosis treatment between September of 2008 and May of 2009. The mean age of the patients was 40.3 ± 16.7 years (range, 16-90 years). Table 1 shows the sociodemographic profile of the 110 patients included in the study.

The prevalence of HIV infection among the tuberculosis patients evaluated was 3.6% (95% CI: 0.2-7.0). Of the 106 tuberculosis patients who were HIV-negative, 98 (92.5%) had pulmonary tuberculosis. Of those 98 patients, 93 (94.9%) had positive sputum smears. Of the 4 HIV-positive patients, 2 (50.0%) had pulmonary tuberculosis, and both had positive sputum smears.

In the patients with extrapulmonary tuberculosis, the diagnosis was confirmed at secondary health care clinics, those patients being subsequently referred to primary health care clinics for treatment. There was no record of culture for mycobacteria being performed in the patients with extrapulmonary tuberculosis. In those patients, the diagnosis was confirmed by histopathology. In recent decades, there has been an increase in the incidence of extrapulmonary forms of tuberculosis, especially because of the increase in the number of AIDS cases. Extrapulmonary forms are more common in immunodeficient individuals than in immunocompetent individuals.⁽⁹⁾

The prevalence of HIV infection in individuals with tuberculosis in Brazil has been estimated at 8% by the Brazilian National Ministry of Health. Studies conducted in various regions of the country have shown that the prevalence of HIV infection in individuals with tuberculosis in Brazil varies widely, i.e., from 0.8% to 30%, depending on the place studied and the method used.⁽¹⁰⁻¹³⁾

Antibody testing for detection of HIV infection in patients with tuberculosis remains uncommon in Brazil. In approximately 50% of patients, HIV test results are known in a timely manner.⁽¹⁴⁾

Tabela 1 – Sociodemographic profile of the patients with tuberculosis and known HIV status treated at family health care clinics in the city of Fortaleza, Brazil, 2009.^a

Variable	HIV-negative (n = 106)	HIV-positive (n = 4)	Total (n =110)
Gender			
Male	69 (65.1)	3 (75.0)	72 (65.5)
Female	37 (34.9)	1 (25.0)	38 (34.5)
Age group (in years)			
< 20	11 (10.4)		11 (10.0)
20-29	20 (18.9)		20 (18.2)
30-39	26 (24.5)	2 (50.0)	28 (25.5)
40-49	18 (16.9)	2 (50.0)	20 (18.2)
50-59	16 (15.1)		16 (14.5)
≥ 60	15 (14.2)		15 (13.6)
Marital status			
Married	54 (50.9)	2 (50.0)	56 (50.9)
Single	43 (40.6)	2 (50.0)	45 (40.9)
Divorced	4 (3.8)		4 (3.7)
Widowed	5 (4.7)		5 (4.5)
Level of education, years			
0	12 (11.3)	1 (25.0)	13 (11.8)
1-3	19 (17.9)		19 (17.3)
4-7	40 (37.7)	2 (50.0)	42 (38.2)
8-11	27 (25.5)	1 (25.0)	28 (25.5)
≥ 12	8 (7.6)		8 (7.2)

^aValues expressed as n (%).

Early detection of tuberculosis/HIV co-infection allows the adoption of appropriate therapeutic measures, such as prophylaxis of opportunistic infections and initiation of antiretroviral therapy, reducing hospitalization costs and improving the quality of life of patients. In order to improve the coverage of HIV testing in patients diagnosed with tuberculosis, a viable and easy-to-operationalize strategy is to use rapid tests at primary health care clinics.

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