Retrospective Study of 668 Cultures for Mycobacteria in a Reference Hospital for AIDS in Southern Brazil

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Although AIDS patients in other countries are frequently diagnosed as having atypical mycobacterial infection, in Southern Brazil there is a clinical impression that *Mycobacterium tuberculosis* is the rule rather than the exception. We made a retrospective review of cultures for mycobacteria at our hospital in order to determine the frequency of atypical mycobacteria and *Mycobacterium tuberculosis* in hospitalised patients in Porto Alegre, Brazil. *Mycobacterium tuberculosis* was the most frequent isolate (79.9%), regardless of HIV serostatus. Only 1.5% of the cultures yielded atypical mycobacteria, all of which in AIDS patients. *Mycobacterium tuberculosis* was diagnosed in most of the HIV-infected patients (81.2%). We conclude that *Mycobacterium tuberculosis* is frequent in both HIV infected and non-HIV infected patients in this part of the country.

Key Words: *Mycobacterium tuberculosis*, AIDS, Southern Brazil.

Detection of acid fast bacilli (AFB) from a clinical specimen frequently poses a challenge for the initiation of treatment, before a culture is available. Among patients infected by Human Immunodeficiency Virus (HIV), the dilemma is even greater, due to a high possibility of atypical mycobacteria, as has been found in AIDS patients in the United States and Europe. The clinical impression in our region is that tuberculosis is the most prevalent mycobacteria after a report of AFB is provided by the laboratory, and accordingly, standard antituberculosis treatment directed towards *Mycobacterium tuberculosis* is initiated, with a good response as a rule. We performed this study in order to test these clinical observations.

The purpose of this study was to determine the incidence of *Mycobacterium tuberculosis* and of other mycobacteria in the Hospital Nossa Senhora da Conceição (HNSC), Porto Alegre, Brazil.

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Materials and Methods

We performed a retrospective transversal study of all AFB identified between May 1995 and April 2000 in HNSC, a large tertiary general public hospital, which provides medical assistance free of charge, located in Porto Alegre, Brazil.

All cultures derived from AFB isolates were analyzed and data on patient demographics and HIV serostatus were obtained from the medical records. These cultures were derived from all types of patients cared for in the hospital, and all clinics were represented. The HNSC is one of the largest public hospitals in the country and is responsible for a large number of AIDS patients' hospitalizations. About 7% to 10% of the patients are HIV positive or have AIDS (personal observation). The clinical samples were classified as respiratory (sputum, bronchoalveolar lavage or tracheal aspirate) or non-respiratory sources. Only one sample from each patient was included in the analysis. Culture for mycobacteria was performed on Lowenstein-Jensen media and biochemical identification was made at the central public laboratory (LACEN-RS). All mycobacteria that were not identified through the routine procedures were collectively put under the

denomination of Mycobacteria spp. Statistical analysis was made with the Epi Info 6.0 program.

Results

During the study, 1,241 smears showed AFB, among which 668 (53.8%) were positive in cultures for mycobacteria. The remaining 573 samples were negative and not considered for the purpose of this analysis.

Patients were mostly young (mean 40.8 years), male (71.7%), and white (79.5%). Among the 668 samples, 80.4% were from respiratory tract source, 7.2% from cerebrospinal fluid, and 5.4% from lymph nodes (Table 1).

Mycobacterium tuberculosis was the most frequently recovered species (79.9%). It was found in respiratory samples as frequently as in other sources (79.5% and 81.7%, respectively). In 18.6% of the cultures, it was not possible to determine the species of mycobacteria. These were grouped as *Mycobacterium* spp. Only 1.5% of the viable cultures showed atypical mycobacteria.

HIV serostatus was not possible to ascertain in 93 out of the 668 patients (13.9%) who had a positive culture, due to inconsistencies in registering data. In the remaining 575 patients with a positive culture for mycobacteria, the HIV test was positive in 51.0%, negative in 28.1%, and was not applied in 20.9%. Cultures yielded *M. tuberculosis* in most of the HIV-infected patients (81.2%). Only 3.1% of the cultures showed atypical mycobacteria; in 15.7% it was not possible to identify the species of mycobacteria (*Mycobacterium* spp.).

Table 1. Patient characteristics according to age, gender, ethnicity, sample source, culture diagnosis and HIV serostatus

Age (in years)	Mean	40.8
	Median	37
	SD ±	15.5
Sex	Male	71.7%
	Female	28.3%
Race	White	79.5%
	Non-white	20.5%
Sample source	Respiratory tract	80.4%
	Cerebrospinal fluid	7.2%
	Lymph nodes	5.4%
	Pleural effusion	2.1%
	Feces	1.2%
	Bone marrow biopsy	1.0%
	Others	2.3%
Culture	*Mycobacterium tuberculosis*	79.9%
	Mycobacterium spp.	18.6%
	Other than tuberculosis (not specified)	0.6%
	Mycobacterium avium	0.6%
	Mycobacterium kansassi	0.3%
HIV serostatus	Positive	51.0%
	Negative	28.1%
	Unknown	20.9%
Total number of patients		**668**

Discussion

We found a high prevalence of HIV infection among patients with mycobacteriosis. This finding can be partially explained by the fact that our hospital is a referral center for HIV treatment. Nevertheless, the HIV serostatus could not be ascertained in 20.9% of the patients, because the test was not applied. Due to the high prevalence of co-infection, an anti-HIV serology test should be offered to every patient with mycobacterial infection in this hospital.

There are an estimated 600,000 HIV-infected patients in Brazil and over 210,000 AIDS cases [1]. Tuberculosis is one of the leading causes of opportunistic infections (OI) among AIDS patients countrywide [2], accounting for 27.3% of all OI notified to the Ministry of Health as of 1999 [3]. During the same period, atypical mycobacteriosis accounted for just 2.4% of OI [3]. In other countries (e.g. United States of America) it is estimated that up to 40% of untreated HIV infected patients will eventually develop *Mycobacterium avium complex* (MAC) infection [4]. Brazilian surveys have shown varied frequencies of MAC in AIDS patients. These studies, most of them from the state of São Paulo, have found MAC in a higher proportion of cases [5-14].

It is possible that the frequency of MAC depends on an uneven geographical distribution of this organism; this hypothesis should be addressed by other studies. Another explanation would be under-reporting due to difficulties in making a reliable diagnosis. A major drawback of our study was the lack of blood cultures for mycobacteria, as more cases of atypical mycobacteria would be diagnosed from HIV febrile patients.

Conclusions

Our data are in line with the clinical impression that tuberculosis is the prevailing mycobaterial disease in our area, regardless of HIV infection status or source of the clinical sample (respiratory or not). Other studies are needed to address the reason for the relative rarity of atypical mycobacteria among Brazilian HIV-infected patients.

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