



Epidemiological characterization of patients at a tuberculosis hospital in the state of São Paulo, Brazil

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ABSTRACT

The objective of this work was to characterize, from the epidemiological, demographic and social point of view, patients with tuberculosis hospitalized at a hospital in the state of São Paulo, Brazil. Data sources were obtained from the hospital records of 114 patients who were discharged from the hospital in 2010. Of the 114 patients, 82.5% were men and 80% were between 20 and 49 years old. Only 16.7% were married or cohabiting; the remaining lived alone. In terms of schooling, 85.2% had completed elementary school, 9.7% of patients were homeless, and only 3.5% were working before being hospitalized. Hospitalization between 1 and 6 months (61%) predominated, as well as the number of patients who were discharged because they were cured or discharged to continue their treatment on an outpatient basis. (69.4%) The mortality rate among the patients was 7.9% and the co-morbidity of TB/HIV was 9.7%. Only one case was not of pulmonary tuberculosis and 5.3% were multidrug resistant. In relation to co-prevalence, alcoholism (71.0%), drug addiction (15.8%), and hepatitis C (12.3%) predominate. The hospitalization of patients with tuberculosis has little to do with the disease; it is mainly associated with the lifestyles of the patients, such as the use of illicit drugs and alcohol, the absence of residency and other factors. Mortality was higher in this group of people compared to those who had received outpatient treatment. This situation can be addressed with an early diagnosis of the disease through the primary health care network.

Keywords: Tuberculosis. Hospitalization. Risk Factors. Epidemiology.

INTRODUCTION

More than a century after the discovery of the organism that has caused tuberculosis and sixty more years after the discovery of the first chemotherapy, the World Health Organization declared the disease as a global emergency in 1993 (Leite & Telarolli, 1997; Hijjar *et al.*, 2007).

With the advent of drug therapies capable of controlling AIDS and its subsequent adoption of the Brazilian public health system from the 1990s onwards, both the morbidity and mortality rate from AIDS and TB fell. In 1990, the national morbidity rate caused by TB was 51.8 new cases per 100,000 inhabitants, a rate that dropped to 38.4 in 2011, presenting a reduction of 25.9% in two decades (Ministério da Saúde, 2015a). Mortality of TB was lower in the same period, dropping from 3.6 to 2.4 per 100,000 inhabitants (Ministério da Saúde, 2015b), this reduction was seen for both men and women (Hino *et al.*, 2007).

Until the late 1970s, almost all the TB cases were treated by hospitalization, although official recommendation for outpatient treatment had already existed (Nogueira, 2001). In more developed countries, hospitalization for the treatment of TB occurs when there is a failure in its treatment or the presence of adverse side effects from drugs. In emerging countries, including Brazil, the leading causes of hospitalization are the poor health condition of the patient, cachexia due to an advanced clinical and pathological health condition and late diagnosis (Severo *et al.*, 2007; Basta, 2013). The repeated abandonments of outpatient treatment also lead to more severe forms of the disease, which increases the need for treatment through hospitalization (Galesi & Almeida, 2007; Oliveira *et al.*, 2009). In Brazil, it is estimated that 30% of TB cases are diagnosed late, when the patient arrives at the hospital already in a clinically poor condition. In two of the largest cities in Brazil, Rio de Janeiro and São Paulo, the rate of diagnosis in the hospitals reaches 33% and 42% respectively (Oliveira *et al.*, 2009).

Given these facts, two questions emerged that underlay the realization of this research: what are the

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epidemiological, demographic and social profiles of TB patients treated in the hospital? In the second decade of this century, what will be the characteristics of these patients 40 years after the emergence of the AIDS epidemic and a decade after the advent of DOTS (Directly Observed Treatment Short) (Ferreira *et al.*, 2011)? Is hospitalization still an alternative that is necessary for the treatment of TB in developing countries?

METHODS

An epidemiological, descriptive and retrospective study case was conducted. We studied 114 patients diagnosed with TB using smear microscopy. The subjects were admitted to a hospital in São Paulo, Brazil, 2010. We have included all patients admitted between January and December 2010. We used hospital records that excluded patients who did not have laboratory-confirmed TB.

The data were submitted to descriptive analysis, using spreadsheets in the Microsoft Excel format, with the study of the following variables: age, sex, marital status, household type (fixed or otherwise), employment status at the time of admission, educational background, length of stay in the hospital, types of hospital discharge, co-infection with the HIV virus, types of TB and co-prevalence of other diseases. The study was approved by the Ethics Committee in Research of the Faculty of Pharmaceutical Sciences, UNESP (Opinion No 185 604 of 21/12/2012).

RESULTS

Among the 114 patients who were discharged from the hospital in 2010, 82.5% were male. As for age, 80% of them were between 20 and 49 years, with an average age of 39 ± 12 years. In relation to the marital status of the patients, individuals living alone (single, widowed, divorced and separated) were predominant. From the Table 1, we can observe that 85.2% of the patients had low levels of schooling, defined as those who had studied up to elementary school while the illiterate accounted for 9.7%.

Overall, the education of TB patients admitted to the hospital is less than the education of the general population. Of the patients studied, 9.7% were illiterate, 41.3% had up to four years of study, 34.3% had completed elementary school, 10.5% had completed high school, 1.7% had superior education and the information was not available for 2.6% of the patients.

In relation to the provenance of the patients, all the patients were from the State of São Paulo, of which 90.3% had fixed residence and 9.7% were homeless. In relation to the employment status of the patients during their hospitalization, only four patients (3%) were working. In relation to the duration of hospitalization, there was a high variability, as it can be seen in Table 1.

Approximately 61% of the patients stayed from one to six months in the hospital. Other results for this variable must also be highlighted: In some cases the length of stay in

the hospital was very short, lasting less than one month, due to a high abandonment of treatment or death of the patients already in very poor health. On the other hand, there were three hospitalizations that lasted over 24 months. (Table 2).

It was found that 43% of the patients were discharged after being cured by hospital treatment and 26.4% were discharged to continue treatment at outpatient clinics. Of the nine patients who died in 2010 (7.9% lethality rate), 4 were also AIDS patients, demonstrating the high lethality promoted by co-infection of both diseases (44.4%).

The predominant clinical form of TB among patients in 2010 at the hospital was pulmonary, accounting for 99.1% of the total, with only one case of the disease in the renal form. Of the total cases of pulmonary TB in 2010, 6 (5.3%) were multidrug resistant. In relation to the co-prevalence of other diseases among patients who were discharged in 2010, the following was observed (Table 3).

Table 1 - Duration of hospitalization (in months) of patients who were discharged in 2010.

Duration of hospitalization (months)	%
< 1	10.5
>1 and < 3	26.4
>3 and < 6	35.1
> 6 and < 9	20.2
> 9 and < 12	2.6
> 12 and < 24	2.6
> 24	2.6

Table 2 - Types of discharge of patients in the hospital studied, Brazil, 2010.

Discharged Type	%
Outpatient treatment	26.4
Cured	43.0
Abandonment	18.4
Death	7.9
Transfer	1.7
No information	2.6

Table 3 - Co-prevalence of other diseases in patients who were discharged in 2010 from the hospital in SP.

Disease	%
Alcoholism	71.0
Drug addiction	15.8
Hepatitis C	12.3
Aids	9.7
Syphilis	7.9
Blastomycosis	5.3
Nutritional Disorders	4.4
Psychiatric diseases	4.4
Mellitus diabetes	2.6
Hypertension	1.7
Histoplasmosis	0.9

DISCUSSION

We found several similarities between the epidemiology profile of TB patients admitted to hospital to those treated as outpatients. There was a predominance of young men among TB patients who were hospitalized; this is similar to that observed for the group of TB patients hospitalized throughout the state of São Paulo in 2004 (Bierrenbach *et al.*, 2007) and in 2001 (Galesi, 2007). The results followed the national pattern, with the reduction of incidence in people under 20 years of age and the progressive increase in cases for people over 60 years of age. The majority of the cases continue to be concentrated in the age group of greater economic productivity, those from 20 to 59 years old, contributing to the detriment of the patients, their families and society.

The distribution of patients according to their marital status showed only 16.7% of married individuals, which is similar to the pattern observed in the literature. Living alone is a predictive factor for repeated treatment abandonment, increasing the chances of hospitalization (Rabahi *et al.*, 2002).

In relation to the schooling of TB patients of the hospital, their profile is similar to those who died from the disease in the municipality of São Paulo in 2002, with a predominance of individuals with little schooling: 51.9% had less than four years of schooling, much lower than the average level of schooling of the population of São Paulo in the same period (Lindoso *et al.*, 2008).

In a study conducted by the municipality of São Paulo, it was found that 4% of those who died from TB in 2002 were homeless. This is a social condition that increases the chance of suffering and dying from TB (Lindoso *et al.*, 2008). A 2001 study conducted also in São Paulo showed that the specific coefficient of mortality for TB was 80 times higher in homeless people than the population in general (Galesi & Almeida, 2007).

On the other hand, there are substantial differences in the characteristics of the patients treated in hospital and ambulatory. These differences demonstrated the importance of hospital treatment for a part of TB patients. While there were 82.5% of male patients in the study case hospital, only 68.1% were men among the general patients reported in Brazil in 2014. There is a high rate of homeless among patients treated in hospital: 9.7%. It is estimated that in Brazil in 2014 0.6% to 1% of the total population of the country was homeless.

Mortality of hospitalized TB patients (7.9%) was higher than the national average. In 2014, 2.3% of TB patients died in Brasil (Ministério da Saúde, 20015b). The proportion of patients with multidrug-resistant form was also higher in hospital; there were 5.3% in hospital against only 0.2% found in outpatient study of the state of Minas Gerais (Augusto, 2013). The co-prevalence of alcoholism in the community was only 7.2%, compared to 71% in the hospital (Augusto, 2013).

Other diseases appeared with high comorbidity:

hepatitis C (12.3%), AIDS (9.7%), syphilis (7.9%) and blastomycosis (5.3%). All these diseases have a higher prevalence among TB patients than in the general population. The first three diseases have a transmission profile in which predominates sexual transmission. Important actions to prevent sexual transmission of these diseases must take place. Blastomycosis appears with a high incidence due to the fact that it has a predilection for individuals in which the lungs are fragile. It is important when diagnosing someone with TB to remember to search for the simultaneous occurrence of blastomycosis.

CONCLUSIONS

Hospitalization remains essential for the treatment of serious and advanced cases of TB. It also provides supervised treatment of homeless patients or patients whose lives were made dysfunctional through the use of illicit drugs and alcohol. Without hospital treatment, these groups of patients take the chance of having their lives endangered.

Therefore, it is important that the public health system develops specific actions for early diagnosis among the most susceptible individuals. We highlight the active search for cases of TB among the homeless and among those individuals who drink alcohol immoderately. The hospital we studied is one of the few institutions in Brazil that is still specialized in the hospital treatment of TB. Hence, the results of this study suggest that specialized hospitals are important for the control of the disease, especially for patients living in precarious social and economic conditions.

It is true that TB remains a disease associated to poverty, social exclusion factors such as low income, low education, and habits and diseases that compromise one's health conditions such as alcoholism, drug addiction and AIDS. The results confirm that the permanence of the hospital alternative has little to do with the natural history of the disease. The health and social conditions already present in these patients predominate, such as the illicit use of drugs and alcohol, the absence of a fixed address and others.

As a result of the epidemiological model used in this research, a descriptive and retrospective study, that has inherent limitations, it is important to emphasize that the research results can not be extrapolated to the entire population of patients in Brazil.

RESUMO

Caracterização epidemiológica dos pacientes internados em um hospital de tuberculose do Estado de São Paulo, Brasil

Caracterizar do ponto de vista epidemiológico, demográfico e social os doentes de tuberculose internados em 2010, e um hospital do Estado de São

Paulo, Brasil. A fonte de dados utilizada foram os prontuários hospitalares dos 114 pacientes que tiveram alta do hospital em 2010. Do total de pacientes, 82,5% eram homens e 80% tinham entre 20 e 49 anos de idade. Apenas 16,7% eram casados ou amasiados, os demais vivendo sozinhos. Quanto à escolaridade, 85,2% tinham até ensino fundamental completo, 9,7% dos doentes eram moradores de rua e apenas 3,5% estavam trabalhando antes de serem internados. Predominaram internações de 1 a 6 meses de duração (61%), bem como as altas por cura ou para continuidade do tratamento em ambulatório (69,4%). A letalidade entre os doentes foi de 7,9% e a co-morbidade tuberculose/HIV foi de 9,7%. Do total de casos, apenas um não foi de tuberculose pulmonar e 5,3% eram multidroga-resistentes. Quanto à co-prevalência de patologias, predominaram o alcoolismo (71,0%), a drogadição (15,8%) e a hepatite C (12,3%). As internações de doentes de tuberculose no hospital em estudo pouco têm a ver com a doença, estando associadas a condições que desestruturam a vida das suas vítimas, como uso de drogas ilícitas e de álcool, a ausência de moradia fixa, entre outras. Entre os internados é maior a mortalidade que entre aqueles tratados em ambulatório, situação que pode ser revertida com o diagnóstico precoce da doença pela rede básica de saúde.

Palavras chave: Tuberculose. Internação hospitalar. Fatores de Risco. Epidemiologia.

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