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RESEARCH OF TUBERCULOSIS SUGGESTIVE SIGNS AND RESPIRATORY SYMPTOMS IN A PRISON OF BRAZIL

¹Edivânia Rolim Tavares, ²Horst Naconecy de Souza, ²Alano Roberto Rocha dos Santos, ²Francisca Priscila Duarte de Figueiredo, ¹Hérika Maria Filgueira Costa, ¹HelenMaria Filgueiras Costa, ³Bruno Frota Amora Silva, ⁴Gilberto Santos Cerqueira, ⁴Jonas Nogueira Ferreira Maciel Gusmão, ⁴Ariel Gustavo Scafuri, ^{*1}Ana Paula Fragoso de Freitas, ⁵Inez Cristhina Palitot Clementino Remígio Leite, ⁵Sussane dos Santos Rocha, ⁷Helder Bindá Pimenta, ⁶Iolanda Gonçalves de Alencar Figueiredo, ⁴Francisco Orlando Rafael Freitas, ²Antonio Jorge Santos Cerqueira, ⁸Edivaldo Xavier da Silva Júnior, Ianna Cristhina Palitot Remígio Leite and ⁹Luiz William Barreto Wanderley

¹Research Group on Education, Law and Health, Brazil

²Family Health Program, Family Medicine, Brazil

³Dentistry Course of the University of Fortaleza, Fortaleza, Ceará, Brazil

⁴Department of Morphology, Faculty of Medicine Federal University of Ceará, Fortaleza, Ceará, Brazil

⁵Post-graduate Program in Health of the Science, Faculty of Medicine of São Paulo, Brazil

⁷Federal University of Piauí, Piauí, Brazil

⁸Assistant Professor of Anatomy, University of Pernambuco, Petrolina, Brazil

⁹Hospital Universitário Lauro Wanderley, UFPB, João Pessoa, Brazil

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ABSTRACT

Tuberculosis is an infectious disease, which mainly affects the lungs caused by Mycobacterium tuberculosis, which can occur in other organs of the human body. Although it is more common in developing countries, it is difficult to eradicate it, being a very common disease in places of confinement like the prison, an environment quite conducive to its development. The present study aimed to investigate the presence of respiratory symptoms related to Tuberculosis in the prison system of Cajazeiras, Paraíba as well as to outline the Socio-demographic profile of prisoners, to identify new cases of TB. An exploratory descriptive study with a quantitative approach was carried out at the Prison of the city of Cajazeiras - PB. For this purpose, data collection was carried out through a structured questionnaire with 97 inmates who are mostly men of average age of 30 years, single, white, with little schooling and coming from low socioeconomic groups. It was noted that the main reason for the arrest was robbery and drug trafficking. The main symptoms identified were cough, fever and dyspnea and weight loss. It was noted that 27.83% had a history of respiratory disease. It was found that although there were several patients symptomatic for tuberculosis all the sputum samples tested were negative.

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INTRODUCTION

In Brazil, tuberculosis is a public health problem. The occurrence and transmission of tuberculosis are associated with the living conditions of the population: they are higher in places with high population density, poor sanitation and

housing infrastructures, food insecurity, drug abuse and difficulty accessing health services (Macedo *et al.*, 2017). Tuberculosis is the most common cause of death worldwide due to diseases with a single infectious agent, mainly and vulnerable population (ARROYO *et al.*, 2017). In the United States, it is estimated that in the United States, more than half of the cases reach the economically active age group of the society, with consequences for the economy, health systems and life of the individuals affected by this disease (Beiranvand

*Corresponding author: Ana Paula Fragoso de Freitas,
Research Group on Education, Law and Health, Brazil.

et al., 2014). Tuberculosis is a social problem derived from a set of elements such as low family income, precarious education, poor / non-existent housing, large families, community densities, food malnutrition, alcoholism, associated infectious diseases, as well as deterioration of the public health service, the lack of trained personnel for the diagnosis and the accumulation of people in prisons (MASCARANHAS; ARAÚJO; GOMES, 2005). Few studies on the health of the incarcerated population in Brazil show that the increasing rate of prison occupation, without the concomitant adequacy of physical structure and human resources, coupled with the precarious conditions of hygiene, ventilation and solar lighting in the cells, composes a frequent scenario in the prison system. This situation produces risks for the sickness of prisoners and creates conditions conducive to infection by *Mycobacterium tuberculosis*, in addition to the spread of tuberculosis (Diuana *et al.*, 2008; Souza *et al.*, 2012).

In Brazilian prisons, the incidence of tuberculosis reported in 2013 was 1,080 / 100,000, a rate 31 times higher than reported among the free population, 35 / 100,000 (BRAZIL, 2014). Active search, as an instrument to increase the passive detection of cases, adequate communication of laboratory results aimed at the immediate onset of treatment and increase in the number of diagnosed cases is an important tool for detection and control of the disease in a prison population (VALENCA *et al.*, 2016). Thus, considering that penitentiaries are important in the origin and transmission of Tuberculosis associated with poor hygiene and accumulation of people in confined spaces prisons are an important focus of transmission for tuberculosis. Brazilian prisons are very favorable places for the development of infectious diseases such as tuberculosis, because the prison population lives in inhuman conditions, in a cluster of people who may have contact with all kinds of people with different pathologies. The Public Prosecutor's Office, which has the law to supervise prisons, has turned its back on them because they are overcrowded, without food, without hygiene, without water, medicine, clothing (SILVEIRA, 2007). According to Oliveira and Cardoso (2004), the prevalence of TB is higher among inmates than in the general population due to overcrowding and poor ventilation, together with adverse health conditions, low socioeconomic status and drug use.

The impact of TB on prisons is not limited to the prisoners, also afflicted relatives and prison staff. In addition to the frequent transfers, the delay in the detection of prisoners suspected of having TB and the neglect in the control and therapy procedures has favored the spread of the disease in the prison population. Considering Tuberculosis as a public health problem and the prison a place that can facilitate its development mainly due to the great population density existing in the same and poor conditions of life, together with the precariousness regarding studies aimed at tuberculosis in the prison system, which motivated for developing this study in order to identify possible cases of respiratory symptoms suggestive of tuberculosis in Cajazeiras, Paraíba, Brazil, and thus contribute to the early detection of the disease in prisons, facilitating its eradication, preventing the spread of the disease in the prison population as well as in their communicators. Based on these premises, the objective of this study was to investigate the incidence of respiratory symptoms suggestive of tuberculosis in a prison population in the northeast of Brazil.

MATERIALS AND METHODS

This is a descriptive exploratory research with a quantitative approach, in which it emphasizes the meaning of social phenomena, understanding them as in the case of education, the process and the human experience involved, rather than by explaining eventual results (MINAYO, 1999). The study was carried out in the prison of the city of Cajazeiras - PB, where it is located in the upper Paraíba hinterland, 477 km far from the João Pessoa Capital. Volunteers will be selected according to the following Inclusion criteria: Being incarcerated, Not being in solitary and inclusion criteria: Has mental disorder. The sample consisted of 97 inmates. As a sample those who agreed to participate in the research. Signing the free and informed consent form. Data collection was carried out in the prison of the city of Cajazeiras - PB. Prior to the collection of data, a letter was prepared for those responsible for the prison, in order to obtain authorization for the study in question. Subsequently, the project was sent to the Ethics and Research Committee of the Lauro Wanderley University Hospital of the Federal University of Paraíba for the purposes of appraisal and opinion, after the approval of the Committee, data collection was started. The data were collected through a semi-structured questionnaire, divided into two blocks, the first one addressed the socio-demographic characterization of the interviewees, and the second questions related to the topic. To identify TB, smear microscopy was performed on participants suspected of tuberculosis. The normality of the data was evaluated through the Shapiro Wilk test. The data were analyzed based on a focus on the quantitative method, based on the primary data that were collected through the information contained in the instrument. The chi-square test was performed in Graph Pad Prism version 5.0, considering significant when $P < 0,05$.

RESULTS

Next, the results analyzed and discussed on the basis of the information provided by the inmates interviewed are presented, through the application of the data collection instrument. In the sample survey, there were 97 prisoners of which 87 (88.60%) of the participants were male and 10 (10.30%) of the participants were female. We can see how the male sex in prison is more prevalent. Among them, 39 (40.20%) were single, 36 (37.11%) lived in concubines, 16 (16.49%) married, 3 (3.09%) divorced and 3 (3.09%) widowed. As for the monthly income of participants 82 (84.53%) up to a minimum wage, 14 (14.43%) from 2 to 3 minimum wages and 1 (1.03%) more than 3 minimum wages.

Among the detainees, 65 (67.01%) were white, 28 (28.86%) brown and 4 (4.12%) were black, these data diverge from the survey conducted at the Lemos Brito Penitentiary in Bahia, where 33.8% were white and 66.2% of the 97 prisoners, 22 (22.68%) illiterate, 70 (72.16%) with elementary school, 4 (4.12%) high school and 1 (1.03%) higher education. 85 (87.62%) were employed, 10 (10.30%) were unemployed and 2 (2.06%) were students (Table 1). The mean age of this group was 30.2 years, where the maximum age was 58 years and the minimum age was 18 years. According to the survey, the prevalence causes for the detention were robbery (28.86%), drug trafficking (25.77%), assault (11.30%) and homicide with (10.30%).

Table 1. Demographic and demographic data of inmates of the city of Cajazeiras, Paraíba

Socio-demographic data	n	%
Sex		
Male	87	88.60
Female	10	10.30
Marital status		
Unmarried	39	40.20
Concubinagem	36	37.11
Married	16	16.49
Divorced	3	3.09
Widoer	3	3.09
Monthly income		
Unit salary	82	84.53
2 to 3 salaries	14	14.43
More than 3 salaries	1	1.03
Color		
White	65	67.01
Brown	28	28.86
Black	4	4.12
Schooling		
Not Literate	22	22.68
Elementary School	70	72.16
High school	4	4.12
Universiy	1	1.03
Occupational category		
Employee	85	87.62
Jobless	10	10.30
Student	2	2.06

Table 2. Descriptive statistical analysis of the age of prisoners of the city of Cajazeiras-Paraíba. Brazil

Data	Mean	SE	Median	Max	Min	CV
Age general	30.21	0.82	29	58	18	26.75%
Age of Man	30.33	0,82	29	58	18	25.49%
Women's age	29.10	3,51	25.50	56	19	38.21%

Table 3. Reason for the arrest of individuals in the public jail.

Reason for arrest	n	%
Theft	28	28.86
Drug trafficking	25	25.77
Assault	11	11.30
Murder	10	10.30
Attempted homicide	4	4.12
Bodily injury	4	4.12
Illegal weapon	3	3.09
Pedophilia	2	2.06
Kidnapping	1	1.03
Disorder	3	3.09
Squat	1	1.03
Dangerous driving	1	1.03
Verbal aggression	1	1.03
Alimony	1	1.03
Crime against public patrimony	1	1.03
Receipt of theft	1	1.03
Total	97	100

Of the 97 prisoners, 53 (54.63%) were drinking alcohol before entering the prison and 62 (63.91%) were smokers. Alcohol and tobacco are factors that favor the onset of various diseases including tuberculosis. In the past, 18 (18.55%) had pneumonia, 6 (6.18%) had depression, 4 (4.12%) tuberculosis, 3 (3.09%) asthma, 2 (2.06%) had chemical dependence, 2 (2.06%) bronchitis and 2 leprosy (Table 4). Among the interviewees, 53 (54.63%) took the 1st dose of BCG, 7 (7.21%) the second dose and 37 (38.14) no dose. Despite the high investment in tuberculosis campaigns and the importance of all being vaccinated, there is still a great deal of misinformation about the use of BCG. Already among the participants 27 (27.83%) had already been hospitalized for respiratory problems.

Table 4. History of prisoners' diseases

Habito of life	n	%
Alcoholism	53	54.63
Smoking	62	63.91
Diseases in the past	n	%
Pneumonia	18	18.55
Rheumatic fever	1	1.03
Neurological diseases	1	1.03
Chemical dependency	2	2.06
Tuberculosis	4	4.12
Hypertension	3	3.09
Leprosy	2	2.06
Depression	6	6.18
Bronchitis	2	2.06
Asthma	3	3.09
Herniated Disc	2	2.06
Hepatitis	1	1.03
Malaria	1	1.03
Gastritis	2	2.06
Ulcer gastric	1	1.03

As for symptomatology, 24 (24.74%) cough frequently, 3 (3.09%) have fever every day, 24 (24.74) dyspnea, 14 (14.43%) night sweats, 52 (53.60%) easily tire, 29 (29.89%) chest pain and 18 (18.55%) reported weight loss (Table 5).

Table 5. Data on respiratory signs and symptoms

Immunization (BCG)	n	%
1st dose	53	54.63
2nd dose	7	7.21
No dose	37	38.14
Respiratory problems hospitalization		
Yes	27	27.83
No	70	72.16
Cough		
Every day	24	24.74
Sometimes	34	35.05
Rarely	39	40.20
Fever		
Every day	3	3.09
Sometimes	23	23.71
Rarely	71	73.25
Dyspnea		
Yes	24	24.74
No	73	75.25
Night sweats		
Yes	14	14.43
No	83	85.56
Fatigue		
Yes	52	53.60
No	45	46.39
Chest pain		
Yes	29	29.89
No	68	70.10
Weight loss		
Yes	18	18.55
No	79	81.44

Table 6. Outcome of sputum smear microscopy

	Idade	1ª amostra	2ª amostra
1	19	Negative	Negative
2	26	Negative	Negative
3	29	Negative	Negative
4	58	Negative	Negative
5	29	Negative	Negative
6	44	Negative	Negative
7	39	Negative	Negative

Of the 97 participants, only 7 (7.21%) presented all symptoms for possible tuberculosis. In order to confirm this suspicion, a bacilloscopy was performed in which the 1st and 2nd sputum

samples to my surprise were negative. The average age of these detainees is 34.86 years (Table 6).

DISCUSSION

Tuberculosis is a major global public health problem, one of the leading causes of death among communicable diseases in adults. The high prevalence, associated with the potential for dissemination, made tuberculosis an emerging condition, with high levels of morbidity and mortality, especially in poor countries, which account for 95% of new cases and 98% of deaths (WHO, 2015; CECCON *et al.*, 2017). This disease is a compulsory notification. The main measures for the control of the disease and interruption of its transmission chain are the diagnosis and the correct and timely treatment of the cases of pulmonary tuberculosis (BRAZIL, 2016; MACIEL *et al.*, 2016; ABREU *et al.*, 2017). According to the WHO, in 2015, Brazil was one of the 22 countries that concentrated 80% of the world tuberculosis burden, ranking 18th in absolute number of new cases and 22nd in relation to the incidence coefficient (WHO, 2015). In our research we found that in the prison there were many detainees with respiratory symptoms suggestive of tuberculosis young adult men arrested for theft. Our data corroborate with the survey carried out in the Penitentiary System of Rio de Janeiro where 96% of men and the main reason for conviction among inmates is robbery (40%) followed by drug trafficking (32%), as shown in table 4 and below (11% illiterate, 84% attended 1st grade, 5% attended 2nd grade and 0% higher level), evident in Table 1 (SÁNCHEZ, 2007). These results are also in agreement with the survey carried out in the prison system of São Paulo, Brazil in which the detainees are mostly men in the age group of 20 to 49 years old, with little schooling and coming from low socioeconomic groups (NOGUEIRA; ABRAHÃO, 2009).

High unemployment and income concentration and low levels of education and labor income, coupled with the inefficiencies of the police and justice, contribute to the growth and aggravation of criminal activities (SANTO; FERNANDEZ, 2008). A study carried out at the Penitentiary of the city of Campinas-SP predominated between 25 and 34 years of age and with low level of schooling (OLIVEIRA, CARDOSO, 2004). The data corroborate with the survey carried out in the Penitentiary System of RJ, where the average age is 28 years, 96% men, and the main reason for condemnation among detainees is robbery (40%) followed by drug trafficking (32%). as shown in table 4 and low level of schooling (11% illiterate, 84% attended 1st grade, 5% attended 2nd grade and 0% higher level) (SÁNCHEZ, 2007). During the studies we detected a series of history of diseases among inmates, most of them being affected by pneumonia. In addition, half the participants possessed the habit of smoking and consuming alcohol in jail. In Brazil, prisoners have been idle for a long time, rarely participated in a rehabilitation program or sports practice, this lack of policy for the prisoner favors criminal organizations to articulate new crimes from within the prison and the non-return after the pardon of Christmas which favors the non-rehabilitation and return to the world of crime and the feeding of addictions like smoking, drinking and consuming drugs within the chain.

According to Ruffino-Neto (2002) environmental factors such as alcoholism, psychic trauma, tobacco use, stress situations and physiological or pathological states have been pointed out as factors that would negatively alter the organic resistance,

thus providing the endogenous pathogenesis of the disease. Capuano (2003) in his active search for TB cases in a health unit found that 77% of the individuals smoked and 56% used alcohol. Among those interviewed, 54.63% took the 1st dose of the Bacillus Calmette-Guérin (BCG) tuberculosis prevention vaccine despite the high investment in tuberculosis campaigns and the importance of all being vaccinated, there is still a great deal of misinformation regarding the use of BCG. According to the Ministry of Health (2006) the intradermal BCG vaccine is widely applied worldwide, indicated primarily to prevent severe forms of TB, in children under five years of age, most often in children under one year of age. Its impact on public health is undoubtedly reduced by the reduction of TB morbidity and mortality in these forms when applied close to birth. As far as respiratory and organic symptoms are concerned, cough, fever, dyspnea, nocturnal sweating, fatigue, chest pain and weight loss are the main ones detected, however, we observed that the cough referred by the prisoners is mostly due to the high rate of smoking in every cell, even those who do not smoke, but inhale the smoke passively. Taking into account Job *et al.* (1986), the researcher found that 44 (88%) patients reported cough, 43 (86%) fever, 37 (86%) in their study at Sorocaba health center.

Conclusion

It was reported that prisoners from the upper backwoods prison in the interior of the Brazilian Northeast had respiratory symptoms suggestive of tuberculosis, but the two samples tested were negative, which leads us to believe in the need for more detailed and detailed clinical examinations associated with the chest X-ray that were not available at the time because of the financial difficulties faced by the prison health system. We understand the need for early diagnosis of tuberculosis within prisons since it is a vulnerable population, in addition to the low quality of life within Brazilian chains. Thus, it becomes essential the health care in the prisons and articulation with other services of the health network, the carrying out of an active search for the early diagnosis of the disease as well as a visit of the family doctor in the presided ones belonging to the areas covered by the unit of family health. The lack of studies similar to this highlights the need to conduct research and development of public policies for the diagnosis and early treatment of the disease

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