Acta Scientiarum

http://periodicos.uem.br/ojs/acta
ISSN on-line: 1807-8648
Doi: 10.4025/actascihealthsci.v40i1.38173

ENFERMAGEM / NURSING

Aspects of tuberculosis in the elderly

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ABSTRACT. Tuberculosis is an infectious-contagious disease, whose etiological agent is *Mycobacterium tuberculosis*, and currently stands as the second leading cause of death from infectious diseases in the world. This study aims to describe its clinical, diagnostic and therapeutic aspects in the elderly. This is an exploratory-descriptive cross-sectional study with a quantitative approach, developed in a Sanitary District in Natal/RN, from January 2010 to December 2015. Among the 94 participants, the majority were males (51.1%) aged between 60 and 69. The pulmonary form of the disease was predominant (86.2%) in the studied group and most of the cases were new (59.6%). The treatment was self-administered (52.1%) and completed within the appropriate period (57.4%). The tuberculin test was not undergone by the majority of the elderly (76.6%), neither was histopathology (86.2%), while chest X-ray was suggestive of tuberculosis (72.3%). It was observed that the elderly did not undergo the first bacilloscopy (59.5%) and, out of those who were subjected to the second, it was positive for most (54.2%). It is worth mentioning that the Human Immunodeficiency Virus serology was not carried out in 54.2% of the senior patients with tuberculosis. Older individuals make up a risk population group and should be given special attention from health professionals.

Keywords: elderly people; tuberculosis; drug treatment compliance.

Aspectos da tuberculose no idoso

RESUMO. A tuberculose é uma doença infectocontagiosa que tem como agente etiológico o *Mycobacterium tuberculosis*. Atualmente, representa a segunda causa de morte por doenças infecciosas no mundo. Este estudo objetiva descrever os aspectos clínicos, diagnósticos e terapêuticos da tuberculose em idosos. Trata-se de estudo exploratório-descritivo, transversal, com abordagem quantitativa, desenvolvido em um Distrito Sanitário, na Cidade de Natal/RN, no período de janeiro de 2010 a dezembro de 2015. Dos 94 participantes, a maioria era do sexo masculino (51,1%), na faixa etária entre 60 e 69 anos. A forma pulmonar da doença foi predominante (86,2%) no grupo estudado e a maioria envolvia casos novos (59,6%). O tratamento foi auto administrado (52,1%) e concluído no período adequado (57,4%). A prova tuberculínica não foi realizada pela maioria dos idosos (76,6%) nem a histopatologia (86,2%); já a radiologia de tórax foi sugestiva de tuberculose (72,3%). Observou-se que os idosos não realizaram a primeira baciloscopia (59,5%) e, dentre os que realizaram a segunda, ela foi positiva para a maioria (54,2%). Vale salientar que a sorologia para o Vírus da Imunodeficiência Humana não foi realizada em 54,2% dos idosos com tuberculose. Os idosos constituem um grupo populacional de risco, o que merece abordagem especial dos profissionais de saúde.

Palavras-chave: idosos; tuberculose; adesão ao tratamento medicamentoso.

Introduction

Tuberculosis (TB) is an infectious disease whose etiological agent is *Mycobacterium tuberculosis*, known as Koch's Bacillus (KB). Although there are records of this disease dating back from more than 6,000 years, only in the last 50 years science has been able to help people with TB with adequate treatment. However, even after the cure was found, this pathology still kills millions of people every year (Brasil, 2011).

TB is the second leading cause of death from infectious diseases in the world, after the Human Immunodeficiency Virus (HIV). Brazil is one of the 22 countries prioritized by the World Health Organization (WHO) that concentrate 80% of the world load of TB. In 2009, 72,000 new cases were reported, accounting for an incidence rate of 38/100,000 inhabitants, of which 41,000 were bacilliferous. These indicators rank Brazil in the 19th position in relation to number of cases and in the 104th position in relation to incidence rate.

Additionally, about 3 million people are affected by TB each year and are not diagnosed and treated in accordance with international recommendations. Most of them belong to more vulnerable groups such as children, migrant workers, prisoners and ethnic minorities living in remote rural areas or urban slums, as well as older people (World Health Organization, 2009; Brasil, 2011).

The elderly who have survived to this day were born at a time when the exposure to the bacillus was greater during their childhood because of the prevalence of the disease, which was high, and the less effective therapies. Given this fact, it is estimated that 20 to 50% of these people harbor Koch's Bacillus and, with the deficiencies deriving from aging, may develop the disease (Sá et al., 2015).

Thus, the senior population is more prone to developing TB, either through endogenous reactivation, which is the most frequent one and the focus of maintenance of the disease in the community, or through exogenous reinfection. Because of its preferential airborne transmission, the disease finds in the elderly a senescent respiratory system, with a reduction of their defense mechanisms, which further increases the risk of infection and illness from the reactivation of latent foci (Oliveira et al., 2013).

With regard to the disease in the state of Rio Grande do Norte (RN), a coverage of 39% of health units with the Tuberculosis Control Program [*Programa de Controle de Tuberculose*] (PCT) has been implemented, of which 40% have been using the Supervised Treatment Strategy [*Estratégia de Tratamento Supervisionado*] (TS/DOTS). The decentralization of treatment in primary care is one of the goals for the control of the disease in RN in view of the greater proximity of the patient to health services (Secretaria Estadual de Saúde do Rio Grande do Norte, 2010).

According to the State Department of Health of RN, in 2009 the state reported 1,229 cases of TB with an incidence of 32.8/100,000 inhabitants and a mortality rate of 1.5 deaths/100,000 inhabitants. The completion of the treatment for TB cases due to cure stood at 69% and the anti-HIV testing among new cases was 45.1%, but treatment non-compliance remains high in RN, reaching 31% in the state (Brasil, 2003, Secretaria Estadual de Saúde do Rio Grande do Norte, 2010). It is believed that lack of support from a multidisciplinary team coupled with lack of information to patients and the social problems of more vulnerable populations are important factors that increase this data, still above what is considered tolerable by the WHO, 5% (Oliveira et al., 2013).

In view of the scenario presented, the question is: what are the clinical, diagnostic and therapeutic aspects of tuberculosis in the elderly who are being treated in a Sanitary District of the city of Natal/RN?

The thematic interest of this research is justified by considering that tuberculosis in seniors is an emerging and complex health problem due to the pathology itself and the presence of other characteristics or factors that favor the severity of the disease. Supported by these considerations, the objective is to describe the clinical, diagnostic and therapeutic aspects of tuberculosis in older people who are being treated in the West Sanitary District of Natal/RN.

Material and methods

This is an exploratory-descriptive study with a cross-sectional design and quantitative approach, developed in the Municipality of Natal/RN, located in the Northeast of Brazil.

According to the demographic census of the Brazilian Institute of Geography and Statistics, Natal/RN has 803,739 inhabitants (Instituto Brasileiro de Geografia e Estatística, 2010). The city's health structure is administratively organized into sanitary districts, corresponding to each geographic area, such as East, West, North and South Districts, with the North District being subdivided into I and II due to the large area of the place. The health services responsible for tuberculosis control in Natal count on the structure of Basic Health Units [*Unidades Básicas de Saúde*] (UBS) and Family Health Units [*Unidades de Saúde da Família*] (USF), besides a tertiary reference hospital for infectious diseases.

The West Sanitary District, the space of this study, covers the following neighborhoods: Nordeste, Bom Pastor, Nova Cidade, Cidade Nova, Felipe Camarão, Cidade da Esperança, Dix-Sept Rosado, Monte Líbano, Nossa Senhora de Nazaré, Quintas, Novo Horizonte and Guarapes, which comprise populations in areas of great social vulnerability and concentrate approximately 27% of Natal's population. The health service network in charge of tuberculosis control has 14 health units, including UBS, Health Units of the Community Health Agents Program [*Programa de Agentes Comunitários de Saúde*] (PACS) and USF, with a total of 32 Family Health teams distributed in the several units. It is in this district that Giselda Trigueiro Hospital is located, which is the reference for tuberculosis and other infectious diseases in the municipality (Secretaria Municipal de Saúde de Natal, 2011).

This study was conducted in a UBS belonging to Natal's West Sanitary District, where there is a higher incidence in the reports of tuberculosis cases in this specific region, considering the others separately, since out of the 517 new cases in the municipality in question, 182 were registered in the West District in 2010; in the following year, this number decreased to 126 registered cases of the disease, which is still worrisome for the health professionals of said District (Secretaria Municipal de Saúde de Natal, 2011).

Tuberculosis control in the West Sanitary District is preferably carried out in primary care, with activities of active search for respiratory symptoms, diagnosis and treatment of people affected by the disease, notification of these pieces of information to the Information System for Notifiable Diseases [*Sistema de Informação de Agravos de Notificação*] (SINAN), in addition to an interface with the Central Laboratory of Public Health [*Laboratório Central de Saúde Pública*] (LACEN) and Giselda Trigueiro Hospital, seeking the referral and counter-referral of the patients assisted there.

The population of this study was made up of all the elderly people who were cared for in the West Sanitary District of Natal between January 2010 and December 2015. A person aged 60 years or older was considered elderly, in accordance with the Statute of the Elderly (Brasil, 2003).

The research was developed through secondary data found in a records book of the West Sanitary District, requiring only a letter of consent from the manager of the Municipal Department of Health [*Secretaria Municipal de Saúde*] (SMS) of the City of Natal/RN and authorization from the School of Health of the Federal University of Rio Grande do Norte (UFRN).

Data were collected from January to March 2016 after authorization from the municipal manager of Natal's SMS, where a survey was carried out in the records book of the patients who were subjected to tuberculosis treatment in the West Sanitary District of Natal; the relevance of the recorded data was observed and data collection was then performed by the researchers. Subsequently, the collected data were organized in a Microsoft Excel 2013® spreadsheet, and descriptive statistics were used afterwards to analyze the data in order to provide a summarized and intelligible view. The result was presented in the form of charts and tables.

Results and discussion

Between January 2010 and December 2015, 745 people were being treated for tuberculosis in the West Sanitary District of Natal/RN, of which 94 (12.8%) were elderly.

It can be seen in Figure1 that, from 2010 to 2015, 94 seniors started treatment for TB, with a higher percentage in the years of 2013 (23.4%) and 2014 (23.4%), followed by 2011 (21.3%).

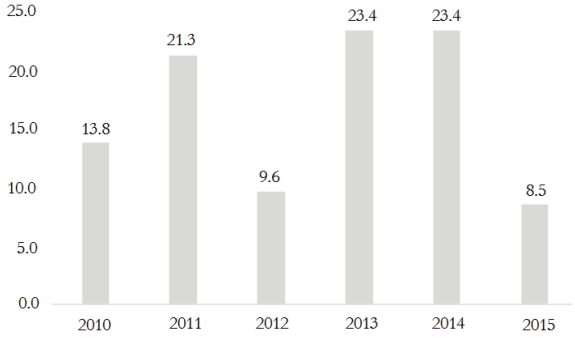

Figure 1. Tuberculosis in the elderly by year of treatment initiation. Natal, Rio Grande do Norte, 2016.

Table 1 shows that the elderly were mostly males (51.1%) aged 60-69 years (64.9%), with average age of 68.6 years. The pulmonary form of the disease was predominant (86.2%) and, with respect to the type of treatment entry, most of them were new cases (59.6%). The most commonly used type of treatment was self-administration (52.1%) and case closed by treatment completion (57.4%).

Table 1. Elderly individuals subjected to tuberculosis treatment in the West Sanitary District of Natal from 2010 to 2015, according to epidemiological and clinical data. Natal, Rio Grande do Norte, 2016.

Epidemiological and clinical profile of the elderly		N	%
Sex	Male	48	51.1
	Female	46	48.9
Age	60-69	61	64.9
	70-79	27	28.7
	80-89	5	5.3
	99-100	1	1.1
Tuberculosis form	Pulmonary	81	86.2
	Extra-pulmonary	12	12.8
	Pulmonary and extra-pulmonary	1	1.1
Entry type	New case	56	59.6
	Transferred	31	33.0
	Re-entry after relapse	6	6,4
	Re-entry after abandonment	1	1.1
Form of treatment	Self-administered	49	52.1
	Directly observed	45	47.9
Closure	Treatment concluded	55	58.5
	Cure	27	28.7
	Transferred	6	6.4
	Abandonment	5	5.3
	Death	1	1.1

About diagnostic tests for tuberculosis, Table 2 shows that the tuberculin test was not undergone by

most of the elderly (76.6%), neither was histopathology (86.2%), while chest X-ray was suggestive of tuberculosis in most cases (72.3%). The senior patients did not undergo the first bacilloscopy (59.5%) and, of those who were subjected to the second, it was positive for the majority (54.2%). It is worth highlighting that the Human Immunodeficiency Virus serology was not performed in 54.2% of the patients with tuberculosis. The most common diagnostic test for TB was chest X-ray (81.9%).

Table 2. Senior patients undergoing tuberculosis treatment in the West Sanitary District of Natal from 2010 to 2015, according to the diagnostic tests performed. Natal, Rio Grande do Norte, 2016.

Diagnostic tests performed		N	%
Tuberculin test	Not performed	72	76.6
	Strong reactor	16	17.0
	Strong reactor	3	3.2
	Non-reactor	3	3.2
Histopathology	Not performed	81	86.2
	Suggestive	8	8.5
	AARB+	1	1.1
	AARB++	1	1.1
	AARB+++	2	2.1
	EA	1	1.1
Chest x-Ray	Suspicion	68	72.3
	Not performed	17	18.1
	Normal	9	9.6
1st sputum bacilloscopy	Not performed	56	59.5
	Positive	15	16.0
	Negative	15	16.0
	Ignored	5	5.3
	Does not apply	3	3.2
2nd sputum bacilloscopy	Positive	51	54.2
	Not performed	30	31.9
	Negative	5	5.3
	Ignored	4	4.3
	Does not apply	4	4.3
HIV serology	Not performed	51	54.2
	Negative	42	44.7
	Positive	1	1.1

In this research, the characteristics of the elderly with respect to sex and age reinforce other researches conducted in Brazil, showing a predominance of males aged from 60 to 69. The difference as to TB between the sexes can be justified by economic, cultural and social factors related to the greater exposure of men to risk factors for the disease (Silva, Andrade, & Cardoso, 2013; Coêlho, Moita Neto, & Campelo, 2014).

The presentation of TB in its pulmonary form is the most frequent, which is confirmed by the present study. This form is also the most relevant one for public health, especially the bacilliferous, as it is responsible for maintaining the chain of transmission of the disease, which in the general population occurs in about 80.0% of the cases (Brasil, 2011; Silva et al., 2013).

Regarding the type of entry, the most frequent one in this study was new cases or treatment virgins – TV, who are those patients who have never undergone anti-TB treatment or have done it for up to 30 days, results corroborated by other studies (Brasil, 2011; Silva et al., 2013).

For TB treatment, the self-administered and directly-observed treatment (DOT) forms are used. Most of the elderly surveyed used the self-administered form, results that contradict those of other studies. DOT constitutes a change in the way of administering drugs, but without changes in the therapeutic scheme. In this type of TB treatment, trained professionals follow the patient's medicine taking from the beginning of the treatment until the cure. It should be emphasized that for any case of tuberculosis (new or retreatment), DOT must be performed, because it is not possible to predict the cases that will comply with the treatment. (Brasil, 2011).

Regarding the closure of the case, the percentage of cure (28.7%) falls short of the goal proposed by the Brazilian Ministry of Health [*Ministério da Saúde*] (MS), which is 85% of the cases. It should be noted that cure criteria are based on three negative sputum cultures from the 12th month of treatment (12, 15 and 18th) or positive culture in the 12th month of treatment, followed by four negative cultures, with no clinical and radiological signs of the disease in activity, until the 24th month of treatment (15th, 18th, 21st and 24th) (Brasil, 2011; Barbosa & Henrique, 2014).

Regarding the type of test for diagnostic clarification, this study evidenced that the most commonly performed was chest X-ray. However, many tests necessary for the diagnosis and control of TB were not performed in the elderly, showing one of the weaknesses in the health system. Researches that have assessed the delay of health services have found values between two and sixty days, with the time interval being greater for seniors than for other age groups. This delay or the failure to perform the tests, from the point of view of the health system, is attributable to a delay in the suspicion of the disease and its control. The delay in detecting TB cases can be considered as an index of the capacity to diagnose the disease and to initiate treatment, and this should be systematically assessed mainly for its negative consequences, due to the worsening of the patient's clinical condition, higher mortality and sustained dissemination in the community, since untreated people continue to transmit the infection to others (Sá et al., 2015).

According to recommendations of the III Guidelines for Tuberculosis of the Brazilian Society of Pulmonology and Phthisiology, delays in the identification of pulmonary TB cases occur due to an inadequate evaluation of symptomatic respiratory cases

or to late search for health services, with active search being a multi-professional activity that aims to diagnose TB early, especially in groups with higher risk for diseases, as it is the case of seniors (Conde et al., 2009).

Because it is a simple and safe method, bacilloscopy should be performed by every public health laboratory as well as by technically-qualified private laboratories. The study of alcohol-acid resistant bacilli (AARB), by the Ziehl-Nielsen method, is the most commonly used technique in Brazil. A significant percentage of non-performed bacilloscopies was observed, however, especially the first one, which is done when the case is identified (Brasil, 2011).

The high frequency of patients diagnosed as HIV positive during the diagnosis of tuberculosis is highlighted. It is estimated that in Brazil, although the supply of tests is high, reaching 70%, approximately 50% only have access to their results in a timely manner, which slows the treatment, with an overall prevalence of 15%. In addition, tuberculosis is the leading cause of death among people living with HIV, with a 20% death rate. Fifty percent of the elderly studied did not undergo HIV serology, which agrees with other studies on the subject (Brasil, 2011).

The limitations of the study include lack of information about socio-demographic data of the elderly such as education, occupation, income and those related to access to treatment. However, it is known that these are limitations of researches that use a secondary data source, in which there is usually incompleteness of some variables considered important.

Conclusion

Most of the elderly were males aged between 60 and 69, with pulmonary tuberculosis as main form. New cases were the majority, involving self-administered treatment, with completion of treatment but with low percentage of cure.

Thus, there is an urgent need to adopt measures to increase the cure rate of seniors with tuberculosis in the Sanitary District studied, since the findings of this research fall short of the goal proposed by the Brazilian Ministry of Health, which is 85% of the cases.

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Received on July 13, 2017.
Accepted on October 19, 2017.