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Clinical profile, epidemiologic and laboratory of tuberculosis between 2014 to 2019 in the state of the Bahia

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Perfil clínico, epidemiológico y de laboratorio de la tuberculosis entre 2014 y 2019 en el estado de Bahia

Perfil clínico, epidemiológico e laboratorial da tuberculose entre 2014 a 2019 no estado da Bahia

ABSTRACT

Objective: To analyze the clinical-epidemiological characteristics of tuberculosis cases with laboratory confirmation, showing the distribution of the disease in Bahia between 2014 to 2019. Method: To obtain the data, the Diseases and Notifications Information System (SINAN) was used to consultation in the database of the Department of Informatics of the Unified Health System (DATASUS), in addition to the use of epidemiological bulletins, websites and scientific articles indexed in the databases. Results: An increase in the incidence coefficient of tuberculosis was found in the last three years, in the state of Bahia. The characterization of tuberculosis patients in this region is a population aged 20 to 39 years, predominantly due to the pulmonary form and highlights that, regarding resources for laboratory diagnosis of tuberculosis, sputum smear microscopy showed greater representativeness. Conclusion: The results of this study are expected to strengthen health care, bringing the patient closer to tuberculosis control measures.

DESCRIPTORS: Epidemiology; Mycobacterium tuberculosis; Pulmonary Tuberculosis.

RESUMEN

Objetivo: Analizar las características clínico-epidemiológicas de los casos de tuberculosis con confirmación de laboratorio, mostrando la distribución de la enfermedad en Bahía entre 2014 y 2019. Método: Para obtener los datos, se utilizó el Sistema de Información de Enfermedades y Notificaciones (SINAN) para asistencia en la base de datos del Departamento de Informática del Sistema Único de Salud (DATASUS), además del uso de boletines epidemiológicos, websites y artículos científicos indexados en las bases de datos. Resultados: Hubo un aumento en el coeficiente de incidencia de tuberculosis en los últimos tres años, en el estado de Bahía. La caracterización de los pacientes tuberculosos en esta región es una población de 20 a 39 años, predominantemente por la forma pulmonar y destaca que, en relación a los recursos para el diagnóstico de laboratorio de la tuberculosis, la baciloscopia de esputo fue más representativa. Conclusión: Se espera que los resultados de este estudio fortalezcan la atención de salud, acercando al paciente a las medidas de control de la tuberculosis.

DESCRIPTORES: Epidemiología; Mycobacterium tuberculosis; Tuberculosis pulmonar.

RESUMO

Objetivo: Analisar as características clínicas-epidemiológicas dos casos de tuberculose com confirmações laboratoriais, evidenciando a distribuição da doença na Bahia entre 2014 a 2019. Método: Para obtenção dos dados utilizou-se o Sistema de Informação de Agravos e Notificações (SINAN) disponível para consulta no banco de dados Departamento de Informática do Sistema Único de Saúde (DATASUS), além da utilização de boletins epidemiológicos, websites e artigos científicos indexados nas bases de dados. Resultados: Constatou-se um aumento no coeficiente de incidência da tuberculose nos três últimos anos, no estado da Bahia. A caracterização dos portadores de tuberculose nessa região trata-se de uma população com faixa etária de 20 a 39 anos, predominância pela forma pulmonar e destaca que, quanto aos recursos para diagnóstico laboratorial da tuberculose, a baciloscopia do escarro demostrou maior representatividade. Conclusão: Espera-se que os resultados deste estudo fortaleçam a assistência em saúde, aproximando o paciente das medidas de controle da tuberculose.

DESCRITORES: Epidemiologia; Mycobacterium tuberculosis; Tuberculose Pulmonar.

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INTRODUCTION

Currently, tuberculosis continues to be relevant in public health because it is an infectious disease, whose occurrence predominates in developing countries and in conditions of poverty, due to the lack of prevention and care. [1] The World Health Organization [2], says that among the infectious diseases that affect man, tuberculosis is the most deadly worldwide. Approximately 4.500 people die each day as a result of this disease. In the same period, approximately 30.000 people are infected by this disease, which can be preventable and curable. [2]

Brazil is one of the few countries with a high number of people with tuberculosis and has received WHO recognition for having a good performance in the incidence indicators, whose notifications are almost 90% of all cases in the Brazilian territory. This reality is characterized by the existing control actions in the country, which enable an effective monitoring and control of the epidemiological situation of the disease. [3]

The Ministry of Health (MH) developed strategies through the National Plan for the End of Tuberculosis, whose execution was divided into four phases: 2017 to 2020, 2021 to 2025, 2026 to 2030 and 2031 to 2035. These steps aim to eradicate the disease, in the that addresses the issue of priority among government public health policies until 2035. However, some barriers such as the implementation of new diagnos-

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tic and treatment technologies must be faced in order to achieve the consolidation of strategies. [4]

Therefore, in order to contribute to public health strategies, through the identification of risk groups, the present study aimed to analyze the clinical-epidemiological characteristics of tuberculosis cases with laboratory confirmation, showing the distribution of the disease, according to annual cycles that were duly notified on the platform of the Information System for Notifiable Diseases (Sistema de Informação de Agravos de Notificação - SINAN) in the state of Bahia between the years 2014 to 2019.

METHOD

It is a systematic review of the literature with a descriptive approach to the characterization of tuberculosis, using the PRISMA method for the selection and synthesis of the study. [5] The analysis population was selected from the tuberculosis cases notified through laboratory confirmation, in the state of Bahia, from 2014 to 2019, based on secondary data, made available by the Diseases and Notifications Information System (SINAN).

Submission to the Human Research Ethics Committee (Comitê de Ética em Pesquisa com Seres Humanos - CEP) was waived, as it is a study using secondary data made available for free and through the online platform of the Informatics Department of the Unified Health System (DATASUS) via Information of Health (TABNET). The

data for the composition of the clinical-epidemiological profile were collected through the variables contained in the tuberculosis notification form, which are: sex, ethnicity, age group, forms of the disease, types of admission, closure situation and laboratory diagnosis. Data analysis was performed using basic descriptive statistics using Microsoft Excel® software, with data grouped in tables and graphs to facilitate understanding and visualization.
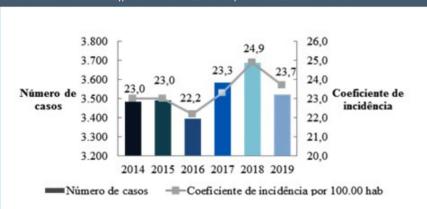
The survey of articles was carried out in databases such as Latin American and Caribbean Literature on Health Sciences (LILACS), Scientific Electronic Library Online (SciELO), Ministry of Health (MS) and Medical Literature Analysis and Retrieval System Online (MEDLINE), the descriptors used were Epidemiology, Mycobacterium tuberculosis and pulmonary tuberculosis were obtained from the health terminology consulted in the Health Sciences Descriptors (DeCS).

The following inclusion criteria were applied: all cases notified and with confirmed laboratory diagnosis of tuberculosis in Bahia from 2014 to 2019; in addition to the scientific articles that were indexed in the databases consulted, available in full and free text; that fit the time frame of the last six years; publications in languages: Portuguese and English. All cases of tuberculosis that, despite being notified, did not present laboratory confirmation, were excluded from the analysis, in addition to articles available electronically in which the reading of the title and abstract was not relevant to the study.

RESULTS

In the period from 2014 to 2019, 21164 notifications of tuberculosis cases were carried out with laboratory confirmation in the state of Bahia. Figure 1 shows the tuberculosis cases registered from laboratory confirmation, according to the year of notification, as well as the tuberculosis incidence coefficients per 100.000 inhabitants from 2014 to 2019. In Bahia, the tuberculosis incidence coefficient went from 23,0/100 thousand inhabitants in 2014 to 23,7/100 thousand inhabitants in 2019, representing an increase of 3% in new cases of the disease.

When analyzing the age group variable, young people and adults between 20 and 39 years old were the most affected population, with a total of 8.734 cases (41,3%). However, the lowest incidence was observed in the age group from 1 to 4 years with 12 cases (0,1%), in the years 2014 to 2019.

Table 1 shows the clinical-epidemiological profile of the study population (n = 21.164), it was found that the pulmonary form corresponds to 20.560 cases (97%), being the clinical form with the highest prevalence in all years. Another verified variable refers to the type of admission, in which the incidence of tuberculosis was highly present, 80% (16.832) of the entries were

Figure 1. Number of cases and coefficient of incidence of tuberculosis (per 100.000 inhabitants), from 2014 to 2019, in the state of Bahia.

Source: Data extracted from SINAN, 2020.

Table 1: Clinical-epidemiological profile of tuberculosis cases, including all forms and types of admission of the disease, in Bahia de 2014-2019.

Variáveis	2014	2015	2016	2017	2018	2019	Total	Total %
Formas Clínicas								
Pulmonar	3.420	3.375	3.292	3.456	3.580	3.437	30.560	97
Extrapulmonar	41	55	53	77	64	50	340	2
Pulmonar e Extrapulmonar	23	60	52	49	45	35	264	1
Tipos de Admissão								
Caso novo	2.872	2.816	2.691	2.815	2.855	2.783	16.832	80
Recidiva	235	229	225	210	220	195	1314	6,2
Reigresso após abandono	194	204	217	275	322	283	1495	7,1
Não sabe	10	12	21	16	13	16	88	0,4
Transferência	173	226	237	260	272	235	1403	6,6
Pós óbito	0	3	6	6	7	10	32	0,2

Source: Data extracted from SINAN, 2020.

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Table 2: Distribution of tuberculosis cases, according to laboratory diagnosis, in Bahia, in the period 2014–2019.

Variáveis	2014	2015	2016	2017	2018	2019	Total	Total %
1ª Baciloscopia do escarro								
Ignorado/ Branco	0	0	0	0	0	0		
Positivo	3.168	2.930	2.925	2.887	2.899	2810	17.619	83
Negativo	257	194	156	220	224	158	1.209	6
Não realizado	59	297	238	358	445	466	1.863	9
Não se aplica	0	69	78	117	121	88	473	2
2ª Baciloscopia do escarro								
Ignorado/ Branco	1.106	3.489	3.396	3.582	3.869	3.519	18.781	89
Positivo	1.491	1	1	0	0	1	1.494	7
Negativo	199	0	0	0	0	0	199	1
Não realizado	688	0	0	0	0	0	2	3
Cultura do escarro								
Ignorado/ Branco	0	0	0	0	0	0	0	0
Positivo	587	563	689	683	742	508	3.772	18
Negativo	154	265	224	171	192	115	1.121	5
Em andamento	199	157	109	206	192	512	13.75	6
Não realizado	2.544	2.505	2.375	2.522	2.563	2.387	14.896	70

Source: Data extracted from SINAN, 2020.

new cases referring to the cumulative in the years 2014 to 2019.

Table 2 summarizes the notification data from 2014 to 2019 with reference to laboratory confirmation, pointing out the high positivity for the 1st sputum smear microscopy, totaling 83% of the results. In the same period, the high rate of ignored and/or white cases for the 2nd sputum smear microscopy is evident, as well as the predominance in the number of cases in which sputum culture was not performed.

DISCUSSION

As recorded in Bahia, in Brazil between 2014 to 2018, the incidence coefficient of tuberculosis in the years 2017 and 2018 increased in relation to previous years, confirming the need to make greater efforts to control the disease. In 2018, the Ministry of Health distributed more than 70 Molecular Rapid Test for Tuberculosis devices, this action expanded the coverage to 135 cities that comprise the Tuberculosis Molecular Rapid Test Network (Rede de Teste Rápido Molecular da Tuberculose - RTR-TB) of the Unified Health System (SUS) counting , now with 249 pieces of equipment. 6 It is suggested that this process has contributed in relation to the increase in the number of notifications, and consequently, in the tuberculosis incidence coefficient in the state of Bahia. Although the active search for tuberculosis cases is not yet a priority action in health services, expanding access to diagnostic tools is a useful strategy in controlling the disease. [7]

In line with the WHO recommendations, the state of Bahia registered an annual reduction in the tuberculosis incidence rate of 4,8% in 2019 when compared to the previous year, possibly due to the implementation of public health policies aimed at controlling tuberculosis.

As for the age group, the population most affected in Bahia occurred between the ages of 20 to 39 years (41,3%) because it is one of the most active phases of life, similar to the predominance in the study by Rodrigues et al.[8], who showed a higher frequency of the disease in the same age group and Freitas et al.[1], which state that the data referring to the age group follow the national standard, with predominance of tuberculosis in productive age, stage of life whose individuals are economically active, that is, performing their work activities in order to guarantee family subsistence and end up for postponing demand for health services. [9]

However, in the present study, children aged 1 to 4 years express the disease with the lowest recorded occurrences. According to the Ministry of Health, this fact may be linked to the difficulty in diagnosing and to nonspecific symptoms, associated with factors that make the evaluation unfeasible, and may increase the risk of disease progression to the most severe forms and even death. [10] Another aspect is precisely the child's immunological maturity and the response induced to the vaccine factor, considering that the Unified Health System (SUS) has within the vaccination framework Bacillus Calmette-Guérin (BCG) whose effectiveness varies around 0% to 80% making it possible to reduce the incidence of tuberculosis in the most severe forms in vaccinated children. [11]

When analyzing clinical-epidemiological data, the most prevalent clinical manifestation of the disease in the state of Bahia between 2014 and 2019 was pulmonary tuberculosis. This clinical characteristic can be explained by the

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fact that the bacillus has a preference for the lungs, since it is considered a strict aerobic bacterium. [12] Similar results coincide with the study by Cardoso; Pitangueira[13] and Silva; Silveira; Silva[14], which describe the predominance of the pulmonary form over the other clinical presentations of tuberculosis.

As for the notified cases, according to the type of admission of tuberculosis, it was observed in the study that, in all years, the type of entry related to new cases prevailed over the other types, as indicated by several studies. [15, 16] This fact is justified due to the deficit of diagnosis favoring the perpetuation of the transmission chain, as well as, in the monitoring of the carrier of the disease. [17]

When investigating the variables for laboratory diagnosis of the disease, the first direct sputum smear microscopy is the most prevalent method used by public health, since it is the main diagnostic method because it is more accessible, in addition to having a lower cost than the others and quick result. [18] However, it has limitations regarding positivity, due to low sensitivity and specificity, which may compromise the interpretations of the exams. [1]

In the present study, the findings for the second smear microscopy, suggest that the high percentage of ignored and/or blank cases did not allow a diagnosis through laboratory confirmation, due to the absence of diagnostic information. Assis, Amaral, Mendonça[19], discuss the importance of filling in the fields regarding laboratory diagnostic information and points out that the omission of these data makes the insertion of the notification unfeasible, after

The data presented denote the need to carry out new research on the subject, in order to know the reality of tuberculosis in a given region, as well as the characterization of the carriers of the disease, in order to identify possible risks early and prevent the spread of the disease beyond increased mortality.

all there is no way to identify if the exam was not requested from the patient or if it was not performed, referring to a fragility of the Information system.

In this study, even regarding the diagnostic method, sputum culture was not performed in 70% of cases. Silva et al.[15], they justify that this fact can be due to the delay, the complexity and the high cost when compared with the bacilloscopy. Factors similar to those described are emphasized by the Ministry of Health, which states that although it is considered the gold standard laboratory diagnosis due to its high specificity and sensitivity, the time of detection of bacterial growth may be extended and, consequently, delay the diagnosis, favoring the transmission of the disease. However, this method of diagnosis remains relevant, as it increases the bacteriological diagnosis of the disease by up to 30%. [10]

CONCLUSION

The data presented denote the need to carry out new research on the subject, in order to know the reality of tuberculosis in a given region, as well as the characterization of the carriers of the disease, in order to identify possible risks early and prevent the spread of the disease beyond increased mortality.

The results of this study are expected to strengthen health care, bringing the patient closer to tuberculosis control measures, in addition to contributing to the improvement and implementation of health measures and strategies aimed at controlling the disease and even reducing incidence of tuberculosis in the region. ■

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