

Analysis of the clinical characteristics of leprosy in the elderly population

Análise das características clínicas da hanseníase na população idosa

Análisis de las características clínicas de la lepra en la población de edad avanzada

RESUMO

Objetivo: Analisar as características clínicas da hanseníase em idosos. **Método:** Trata-se de uma pesquisa epidemiológico de caráter quantitativo e descritivo, realizado no município de Augustinópolis no período de 2010 a 2020, sendo que a população alvo foram os idosos e a coleta de dados ocorreu por meio da disponibilização das fichas do Sistema de Informação de Agravos de Notificação (SINAN) pela Secretária Municipal de Saúde. **Resultado:** Foram notificados 76 casos e a característica clínica prevaleceu com a classificação multibacilar (75%), forma clínica dimorfa (60,5%), com mais de 5 lesões cutâneas (39,5%), zero nervos afetados (67,1%), GIF no diagnóstico com grau zero (44,7%) e GIF na cura com grau zero (53,9%). **Conclusão:** A pesquisa fez-se necessário para colaborar como fonte de informações epidemiológicas locais, para que assim, possa ocorrer maiores investimentos na capacitação e educação permanente das equipes gestoras e multiprofissionais ligadas à saúde para realizar o diagnóstico e tratamento precoce.

DESCRIPTORES: Perfil Epidemiológico; Hanseníase; Idoso.

ABSTRACT

Objective: To analyze the clinical characteristics of leprosy in the elderly. **Method:** This is an epidemiological research of quantitative and descriptive character, conducted in the municipality of Augustinópolis in the period from 2010 to 2020, and the target population were the elderly and data collection occurred through the availability of the forms of the Sistema de Informação de Agravos de Notificação (SINAN) by the Municipal Health Secretary. **Results:** 76 cases were reported and the clinical characteristic prevailed with multibacillary classification (75%), dimorphic clinical form (60.5%), with more than 5 skin lesions (39.5%), zero nerves affected (67.1%), GIF in the diagnosis with zero degree (44.7%) and GIF in the cure with zero degree (53.9%). **Conclusion:** The research was necessary to collaborate as a source of local epidemiological information, so that greater investments can be made in the training and continuing education of management and multidisciplinary teams linked to health to perform early diagnosis and treatment.

DESCRIPTORS: Epidemiological Profile; Leprosy; Aged.

RESUMEN

Objetivo: Analizar las características clínicas de la lepra en los ancianos. **Método:** Se trata de una investigación epidemiológica de carácter cuantitativo y descriptivo, realizada en el municipio de Augustinópolis en el período de 2010 a 2020, y la población objetivo fueron los ancianos y la recolección de datos ocurrió a través de la disponibilidad de los formularios del Sistema de Informação de Agravos de Notificação (SINAN) por la Secretaría Municipal de Salud. **Resultados:** Se notificaron 76 casos y predominó la característica clínica con clasificación multibacilar (75%), forma clínica dimórfica (60,5%), con más de 5 lesiones cutáneas (39,5%), cero nervios afectados (67,1%), GIF en el diagnóstico con grado cero (44,7%) y GIF en la curación con grado cero (53,9%). **Conclusión:** La investigación se hace necesaria para colaborar como fuente de información epidemiológica local, para que así, puedan producirse mayores inversiones en la capacitación y educación permanente de los equipos gestores y multiprofesionales ligados a la salud para realizar el diagnóstico y tratamiento precoz.

DESCRIPTORES: Perfil epidemiológico; Lepra; Ancianos.

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INTRODUÇÃO

Leprosy is an infectious disease caused by the etiological agent *Mycobacterium leprae* (*M. leprae*) 1 and affects people of any gender or age group, and may present a slow and progressive evolution. Thus, this pathology is neglected and is associated with poverty and precarious access to housing, food, health care and education, since although curable, it still remains endemic in several regions of the world, mainly in India, Brazil and

Indonesia, since in Brazil it is still considered an important challenge in public health.^{2,3}

The mode of transmission occurs directly when a person with the undiagnosed pathology is an active carrier of Hansen's bacillus, in which he eliminates the bacteria through the upper airways.⁴ The clinical manifestations of the disease depend on the immunogenicity of the bacillus and the host's immune system, as it may manifest with skin lesions and peripheral nerve involvement, mainly in

the eyes, hands and feet, with the potential to cause deformities and disabilities when untreated or treated late.^{5,6,7}

When leprosy affects the elderly population, it brings as a consequence the physical disability that is already altered due to the physiological change of aging, as an illness with more impact takes place, since Hansen's bacillus has impactful aspects that compromise the dynamics of the individual's life and this group presents more severe cases of the disease.⁸

In this way, the diagnosis is made by

clinical evaluation, through anamnesis and detailed dermato-neurological examination where the clinical signs of the disease and the possible epidemiological links are evaluated, and in addition, also performs laboratory tests, with skin bacilloscopy and histopathology.^{9,4} The treatment is offered by the Unified Health System (SUS) and is known as single multidrug therapy (MDT), as it aims to cure, eliminate the source of infection and thus interrupt the chain of transmission, being a strategy for disease control.^{9,10}

The World Health Organization (WHO) showed 155,359 new cases of leprosy in Brazil between 2016 and 2020, which still persists as a public health problem. Therefore, between the years 2011 to 2020, 284,723 new cases of leprosy were diagnosed, since the general detection rate of new cases, in this period, showed a reduction of 51.9%, from 17.65 in 2011 to 8.49 cases per 100,000 inhabitants in 2020. In this regard, the country's endemicity parameter changed from high to medium, since all regions showed a reduction in the general detection rate of new leprosy cases between 2011 and 2020.¹¹ Thus, in 2019 the state of Tocantins ranked second with an incidence of 96.44 per 100,000 inhabitants and in 2020 it still ranked second with 53.95 new cases per 100,000 inhabitants, and as a result, Tocantins is an endemic region for *M. leprae*.^{12,11}

Therefore, it is extremely important to obtain knowledge and understanding of the possible determinants and conditions of the disease in the region, to add to the prevention and control actions of leprosy, in view of the knowledge of its hyperendemicity, because the present study aims to analyze the clinical characteristics of leprosy in the elderly, so that, in this way, it can improve the planning of actions and the conduction of the treatment of diagnosed cases, in addition to adapting care plans for the elderly with sequelae of the disease.

METHOD

Quantitative and descriptive epidemiological study, therefore, the epidemiological methodology is defined as the study of the distribution and determinants of diseases, as it allows examining the incidence and/or prevalence of the health condition related to certain characteristics of specified populations.^{13,14} Quantitative research is characterized by the use of quantification, both in the collection and in the treatment of information, using statistical techniques, quantitative approach seeks to report meanings that are considered peculiar to objects, has the particularity of allowing an objective and structured approach through quantitative data.^{15,16} Thus, aims to determine the distribution of diseases or health-related conditions, according to time, place and/or characteristics of the specific population, and, in addition, to discover associations between variables.¹³

The research in question was developed with the favorable opinion of the Research Ethics Committee of the State Unit of Tocantins, under number CAAE:48144321.6.0000.8023, as it sought to protect the dignity and integrity of the human person participating in the research. In this bias, the availability of data occurred only after the appreciation of the Ethics and Research Committee (CEP), and its approval.

Thus, the research was carried out in the municipality of Augustinópolis, state of Tocantins, with the time series corresponding to the period from 2010 to 2020, as it has data records from the Notifiable Diseases Information System (SINAN). The population consisted of all cases of leprosy in the elderly population that were notified by the Health Department of the city of Augustinópolis-TO and the sample was 100% of the data available in the period from 2010 to 2020.

Thus, elderly people with leprosy who live in the city of Augustinópolis and were notified in the period from 2010 to 2020 were included in the study. Carriers of the disease below 60 years of age, who do not live in the municipality and were

notified outside the analyzed period of the research, were not included in the study, and moreover, the ethical guarantees to the research participants involved not disclosing personal data (name, sex, address) and keeping all personal information in the cases confidential. Thus, the study offered lower risks compared to other studies, since all information was acquired through secondary databases and all information was acquired ethically and in accordance with Resolution No. 466/12 of the National Health Council and Resolution No. 510 of April 7th, 2016.

For the execution of this study, data on leprosy cases in the elderly were obtained through the SINAN notification forms that were made available by the Municipal Health Department of the researched municipality, since the operational classification, clinical form, number of skin lesions, number of affected nerves, degree of inability to diagnose and degree of inability to cure.

Finally, the results were analyzed through statistical analysis, since the characterization of the sample profile was performed through the absolute frequency (n) and relative frequency (%), and in addition, the assessment of prevalence over the period from 2010 to 2020 was tested by applying Pearson's chi-square tests followed by analysis of standardized residuals by the Posthoc test. Social Science) version 26.0 and the adopted significance level was 5% ($p < 0.05$) and the results were presented in the form of tables and graphs, in addition to descriptions that will favor visualization and understanding.

RESULTS

According to the clinical characteristics of leprosy in the elderly in the city of Augustinópolis-TO, Table 1 shows prevalence in the multibacillary operational classification (75%), in the borderline clinical form (60.5%), with >5 skin lesions (39.5%) and zero affected nerves (67.1%).

In Table 2, the highest frequency in relation to the Degree of Physical Disability (DPD) in the diagnosis was the

Degree Zero with 44.7% and the Degree of Physical Disability (DPD) in the cure, there is a predominance in the Degree

Zero with the percentage value of 53.9% of cases. (67.1%).

In Table 2, the highest frequency in

Table 1. Clinical characteristics of leprosy in the elderly in the city of Augustinópolis-TO, in the period 2010-2020.

	Year n (%)												Total	p*
	2010 9 (5,9)	2011 6 (3,9)	2012 6 (3,9)	2013 9 (5,9)	2014 7 (4,6)	2015 8 (5,3)	2016 7 (4,6)	2017 8 (5,3)	2018 5 (3,3)	2019 7 (4,6)	2020 4 (2,6)			
Operational classification														
Multibacillary	7 (77,8)	1 (16,7)	4 (66,7)	5 (55,6)	5 (71,4)	8 (100,0)‡	5 (71,4)	8 (100,0)‡	4 (80,0)	6 (85,7)	4 (100,0)	57 (75,0)	0,04	
Paucibacillary	2 (22,2)	5 (83,3)‡	2 (33,3)	4 (44,4)	2 (28,6)	0 (0,0)	2 (28,6)	0 (0,0)	1 (20,0)	1 (14,3)	0 (0,0)	19 (25,0)		
Clinical Form														
Dimorphous	7 (77,8)	0 (0,0)	4 (66,7)	2 (22,2)	2 (28,6)	5 (62,5)	4 (57,1)	8 (100,0)	4 (80,0)	6 (85,7)	4 (100,0)	46 (60,5)	0,39	
Ignored	0 (0,0)	0 (0,0)	0 (0,0)	1 (11,1)	0 (0,0)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	2 (2,6)		
Undetermined	0 (0,0)	3 (50,0)	1 (16,7)	2 (22,2)	1 (14,3)	0 (0,0)	0 (0,0)	0 (0,0)	1 (20,0)	1 (14,3)	0 (0,0)	9 (11,8)		
Not Classified	1 (11,1)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	2 (2,6)		
Tuberculoid	1 (11,1)	2 (33,3)	1 (16,7)	2 (22,2)	1 (14,3)	0 (0,0)	2 (28,6)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	9 (11,8)		
Virchowiana	0 (0,0)	1 (16,7)	0 (0,0)	2 (22,2)	2 (28,6)	2 (25,0)	1 (14,3)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	8 (10,5)		
Skin lesions														
Reported 0 or 99	1 (11,1)	2 (33,3)	1 (16,7)	4 (44,4)	1 (14,3)	0 (0,0)	1 (14,3)	1 (12,5)	0 (0,0)	1 (14,3)	1 (25,0)	13 (17,1)	0,90	
2-5 injuries	1 (11,1)	2 (33,3)	1 (16,7)	2 (22,2)	2 (28,6)	3 (37,5)	1 (14,3)	2 (25,0)	1 (20,0)	1 (14,3)	0 (0,0)	16 (21,1)		
Single lesion	3 (33,3)	2 (33,3)	2 (33,3)	2 (22,2)	1 (14,3)	1 (12,5)	1 (14,3)	1 (12,5)	1 (20,0)	3 (42,9)	0 (0,0)	17 (22,4)		
>5 injuries	4 (44,4)	0 (0,0)	2 (33,3)	1 (11,1)	3 (42,9)	4 (50,0)	4 (57,1)	4 (50,0)	3 (60,0)	2 (28,6)	3 (75,0)	30 (39,5)		
Affected nerves														
0 Nerves	8 (88,9)‡	5 (83,3)	5 (83,3)	8 (88,9)‡	5 (71,4)	8 (100,0)‡	7 (100,0)‡	2 (25,0)	1 (20,0)	1 (14,3)	1 (25,0)	51 (67,1)	0,02	
1 to 3	1 (11,1)	1 (16,7)	1 (16,7)	1 (11,1)	2 (28,6)	0 (0,0)	0 (0,0)	4 (50,0)	4 (80,0)‡	4 (57,1)	1 (25,0)	19 (25,0)		
4 to 6 Nerves	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	2 (25,0)	0 (0,0)	2 (28,6)	1 (25,0)	5 (6,6)		
7 to 9 Nerves	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (25,0)	1 (1,3)		

*Chi-square; ‡Postoc; n = absolute frequency; % = relative frequency
 Source: Survey data, 2022.

Table 2. To describe the cases of leprosy in the elderly in the city of Augustinópolis-TO in the period 2010-2020, according to the Degree of Physical Disability (DPD) in the diagnosis and the Degree of Physical Disability (DPD) in the cure.

	Year n (%)												Total	p*
	2010 9 (5,9)	2011 6 (3,9)	2012 6 (3,9)	2013 9 (5,9)	2014 7 (4,6)	2015 8 (5,3)	2016 7 (4,6)	2017 8 (5,3)	2018 5 (3,3)	2019 7 (4,6)	2020 4 (2,6)			
Inability to diagnose														
Grade I	2 (22,2)	4 (66,7)	3 (50,0)	2 (22,2)	0 (0,0)	0 (0,0)	0 (0,0)	5 (62,5)	4 (80,0)‡	5 (71,4)‡	3 (75,0)	28 (36,8)	0,04	
Grade II	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	2 (28,6)‡	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	3 (3,9)		
Grade Zero	1 (11,1)	2 (33,3)	3 (50,0)	6 (66,7)	3 (42,9)	8 (100,0)‡	6 (85,7)‡	2 (25,0)	1 (20,0)	1 (14,3)	1 (25,0)	34 (44,7)		
Not Assessed	6 (66,7)	0 (0,0)	0 (0,0)	1 (11,1)	2 (28,6)	0 (0,0)	1 (14,3)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	11 (14,5)	0,39	
Inability to heal														
Grade I	1 (11,1)	3 (50,0)	2 (33,3)	0 (0,0)	0 (0,0)	1 (12,5)	0 (0,0)	1 (12,5)	3 (60,0)	1 (14,3)	1 (25,0)	13 (17,1)		
Grade II	1 (11,1)	1 (16,7)	0 (0,0)	2 (22,2)	0 (0,0)	0 (0,0)	0 (0,0)	3 (37,5)	0 (0,0)	1 (14,3)	1 (25,0)	9 (11,8)		
Grade Zero	1 (11,1)	2 (33,3)	3 (50,0)	6 (66,7)‡	6 (85,7)‡	6 (75,0)‡	7 (100,0)‡	3 (37,5)	2 (40,0)	4 (57,1)	1 (25,0)	41 (53,9)		
Ignored	0 (0,0)	0 (0,0)	1 (16,7)	1 (11,1)	1 (14,3)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	4 (5,3)		
Not Assessed	6 (66,7)‡	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (12,5)	0 (0,0)	1 (14,3)	1 (25,0)	9 (11,8)		

*Chi-square; ‡Postoc; n = absolute frequency; % = relative frequency
 Source: Survey data, 2022.

relation to the Degree of Physical Disability (DPD) in the diagnosis was the Degree Zero with 44.7% and the Degree of Physical Disability (DPD) in the cure, there is a predominance in the Degree Zero with the percentage value of 53.9% of cases.

DISCUSSION

The results on leprosy in the elderly population from 2010 to 2020 in the city of Augustinópolis, state of Tocantins, was developed after data were made available by the Municipal Health Department of the municipality of Augustinópolis from the notification forms in the Notifiable Diseases Information System - SINAN and the data indicated that 76 cases of leprosy were diagnosed in the elderly in the period established by the research. The results were correlated with data from studies carried out whose theme is related to the present research, with the purpose of answering the objective in the search to solve the studied problem.

In the total number of notified cases of leprosy in the elderly, the multibacillary operational classification (75%) had a higher frequency of cases than the paucibacillary one (25%), a fact that was also evidenced in the study carried out in the northeast region of Brazil in the period from 2016 to 2019, since the epidemiological data indicated that 67,070 cases of the pathology were diagnosed, in which the most common operational classification was multibacillary (73.9%)⁴ and this result was also similar to the study carried out in the state of Tocantins, in the period of 2014 and 2016 with a record of 4,855 cases of leprosy, and according to the operational classification, the multibacillary form was predominant (73%) in relation to the paucibacillary form.⁷ The prevalence in the multibacillary classification occurs due to the immunological instability against *M. leprae* in individuals who have lower cellular immunity against the bacillus¹⁷, but it can also mean that the majority of the population has a late diagnosis or has little knowledge about the disease,

and because of this, it contributes to the transmission of multibacillary cases.¹⁸

The study identified that the predominant clinical form of the elderly with leprosy was borderline with a percentage value of 60.5% of the reported cases of the disease in the municipality studied, a similar finding to this research was found in the study carried out in the state of Rondônia and had a total of 575 leprosy records in the period of 2017, and the borderline clinical form had the highest percentage of incidence with a value of 57.2%¹⁹, in fact, the finding of the present research is in line with the studies that analyzed the epidemiological characteristics of leprosy.^(20,9,21,17,10) The two dimorphic and Virchowian clinical forms are recognized for their great power of transmissibility and also fit into the greater severity of the disease⁴ and deformities leading to physical disability may occur, in addition to continuing with the transmission cycle of Hansen's bacillus, as this may reflect on late diagnosis²² or this predominance also suggests flaws in the performance of the exam³, since these data should be notably discussed among health professionals as a strategy to raise awareness for early diagnosis and approach.¹⁹

Therefore, there is a predominance of cases of leprosy in the elderly who have more than five (5) skin lesions, and this finding corroborates the study carried out in Bahia in the period from 2010 to 2020, in which a total of 30,426 patients diagnosed with the disease were observed and that 39% (11,868) had five or more numbers of skin lesions.²³ Therefore, the World Health Organization (WHO) proposes a simplified and operational classification based on the number of skin lesions and this system organizes patients into two groups, as cases with up to five lesions are considered Paucibacillary (PB) and those with more than five lesions are identified as Multibacillary.^{2,24}

The study identified that the elderly affected by leprosy in the period from 2010 to 2020 in the city of Augustinópolis-TO, predominated in cases with zero

affected nerves (67.1%) and this finding was not in agreement with the study carried out in the state of Tocantins, since all confirmed cases of the disease between 2014 and 2016 totaled 265 cases, given that 35.48% were cases with 2 or more nerves affected.²⁵ The result found in the present research does not agree with the study carried out in the state of Mato Grosso, since 11,388 cases of leprosy were reported in the period from 2014 to 2017, in which 47% had five or fewer nerves affected.¹⁰ Neural involvement arises due to the predilection of Hansen's bacillus for peripheral nerves 6, and because of this, it can reach the nerve receptors responsible for tactile sensitivity, pain and vision, giving the disease a high incapacitating power²⁰, since this makes the individual susceptible to accidents, burns, wounds, infections and amputations.¹⁷ Thus, it is essential to carry out a neurofunctional assessment both at the time of diagnosis, during treatment and at discharge, in order to investigate possible motor and neurological alterations, thus helping in the treatment of the same with agility and reduction of injuries through the accomplishment of sessions of physiotherapy and practice of physical exercises as preventive measures.⁶

There is a predominance of leprosy cases in elderly people with the Degree of Physical Disability (DPD) in the diagnosis of Grade Zero (44.7%), a result that was also found in the study carried out in the state of Rondônia in 2017, as it had a total of 575 leprosy records and in relation to the assessment of the degree of physical disability at the time of diagnosis, it showed a higher prevalence in degree zero (59.8%, n=344).¹⁹

In this way, it was found that among the reported cases of leprosy in the elderly that presented the highest frequency in relation to the Degree of Physical Disability (DPD) in the cure, it was the Zero Degree (53.9%), this result was similar to the study that aimed to evaluate the epidemiological profile of leprosy in the northeast region of Brazil from 2016 to 2020, in which 67,070 cases were diag-

nosed, with the majority of the degree of disability after cure being blank (48.5%), followed by degree zero (32.2%).⁴ Thus, this data from the present research is in line with the study carried out in the state of Tocantins, in the period between 2014 and 2016 with a record of 4,855 cases of leprosy, in which the filled cases, it was observed that 61% had degree 0 of disability.⁷

Therefore, the Degree of Physical Disability in diagnosis and cure predominated in Degree Zero, even with the high rate of late diagnosis. However, the absence of disability does not mean the absence of symptoms, since patients may complain of pain and thickening of the peripheral nerves, in fact, in relation to late diagnoses, attention must be paid to possible negligence regarding the performance of assessments and data collection by health professionals.³

CONCLUSION

Through the presented and discussed results of the analyzes of the clinical characteristics of leprosy cases in the elderly population in the city of Augustinópolis, state of Tocantins in the period 2010-2020, it is concluded that the predominant clinical characteristic was the multi-bacillary operational classification, of the borderline clinical form, with more than 5 cutaneous lesions, zero nerves affected and when the GIF was evaluated in the diagnosis and in the cure, they presented a greater number of cases with Grade Zero.

The analysis of the clinical characteristics of cases of leprosy in the elderly becomes essential to obtain knowledge and understanding of the possible determinants and conditions of the disease in the city of Augustinópolis-TO, so that greater investments can be made in the training and permanent education of management and multidisciplinary teams linked to health, leaving them able to expand and qualify the promotion and

prevention actions through continuous education planning with the objective of informing, clarify and educate the elderly population about the pathology, as the lack of knowledge hinders acceptance, causes abandonment and refusal of treatment.

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