

HANSENIASIS COPREVALENCE IN CONTACTS WITH AGE BETWEEN 5 AND 15 YEARS IN THE NORTHEAST OF BRAZIL

COPREVALÊNCIA DE HANSENÍASE EM CONTATOS COM IDADE ENTRE 5 E 15 ANOS NO NORDESTE BRASILEIRO

COPREVALENCIA DE HANSENIASIS EN CONTACTOS CON EDAD ENTRE 5 Y 15 AÑOS EN EL NORDESTE BRASILEÑO

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Objective: to evaluate the co-prevalence of leprosy in contacts between the ages of 5 and 15 years. **Method:** this is a descriptive study, with a quantitative approach, carried out from November 2014 to July 2015. The study population was composed of intradomiliary and peridomiliary contacts of people affected by leprosy who were in the age range of 5 to 15 years. The sample consisted of 73 contacts. **Results:** of the total of evaluated, 30 (41.0%) were intradomiliary and 43 (59.0%), peridomiliary. Among the contacts, 27 (37.0%) were considered dermatological symptomatic; Of these, 17 (23.3%) suspected leprosy patients had one to eight lesions, most of them hypochromic spots (82,3%). **Conclusion:** among the contacts examined in this study, aged between 5 and 15 years, the co-prevalence of leprosy was not diagnosed, but the number of contacts classified as suspects was high, which is worrisome from the epidemiological point of view.

Descriptors: Leprosy. Nursing. Search for communicator. Anamnesis. Physical exam.

Objetivo: avaliar a coprevalência da hanseníase em contatos com idade compreendida entre 5 e 15 anos. Método: estudo descritivo, com abordagem quantitativa, realizado no período de novembro de 2014 a julho de 2015. A população do estudo foi composta por contatos intradomiciliares e peridomiciliares de pessoas atingidas pela hanseníase, que estivessem na faixa etária de 5 a 15 anos. A amostra estudada foi constituída de 73 contatos.

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Resultados: do total de avaliados, 30 (41,0%) foram intradomiciliares e 43 (59,0%), peridomiciliares. Entre os contatos, 27 (37,0%) foram considerados sintomáticos dermatológicos; destes, 17 (23,3%) suspeitos para hanseníase por apresentarem de uma a oito lesões, sendo a maioria mancha bipocrômica (82,3%). Conclusão: entre os contatos examinados neste estudo, com idades compreendidas entre 5 e 15 anos, a coprevalência da hanseníase não foi diagnosticada, mas o número de contatos classificados como suspeitos foi elevado, o que se torna preocupante do ponto de vista epidemiológico.

Descritores: Hanseníase. Enfermagem. Busca de comunicante. Anamnese. Exame físico.

Objetivo: evaluar la coprevalencia de la lepra en contactos con edad comprendida entre 5 y 15 años. Método: estudio descriptivo, con abordaje cuantitativo, de noviembre de 2014 a julio de 2015. Población del estudio compuesta por contactos intradomiciliares y peridomiciliares de personas afectadas por la lepra, que estuvieran en el grupo de edad de 5 a 15 años. Muestra estudiada de 73 contactos. Resultados: del total de evaluados, 30 (41,0%) fueron intradomiciliares y 43 (59,0%), peridomiciliares. Entre los contactos, 27 (37,0%) fueron considerados sintomáticos dermatológicos; de estos, 17 (23,3%) sospechosos de lepra por presentar de una a ocho lesiones, siendo la mayoría mancha bipocrômica (82,3%). Conclusión: entre los contactos examinados en este estudio, con edades entre 5 y 15 años, la coprevalencia de la lepra no fue diagnosticada, pero el número de contactos clasificados como sospechosos fue elevado, lo que se vuelve preocupante desde el punto de vista epidemiológico.

Descriptorios: Lepra. Enfermería. Trazado de contacto. Anamnesis. Examen físico.

Introduction

Leprosy is an age-old infectious disease of chronic evolution, with a broad spectrum of clinical manifestations, dermatological, and neurological, and its etiological agent *Mycobacterium leprae*. This is also known as Bacillus Hansen, a bacterium that has tropism for skin and peripheral nerves. When people are affected by this disease and are not diagnosed early, they tend to develop deformities and physical disabilities, which increases the social stigma and prejudice resulting from this disease⁽¹⁻²⁾.

The transmission of the disease occurs through the upper airways, requiring prolonged contact with a person affected by leprosy who presents the multibacillary form without treatment. The co-prevalence of the disease represents an increased risk up to 10 times of having more than one case in the same household. The transmission chain can be interrupted by the early diagnosis between the intradomiciliary and peridomiciliary contacts, in addition to treatment of the source of infection⁽³⁾.

According to official reports received from 138 countries from all WHO [World Health Organization] regions, the global registered prevalence of leprosy at the end of 2015 was 176 176 cases (0.2 cases per 10 000 people [1]). The number of new cases reported globally in 2015 was 211

973 (2.9 new cases per 100 000 people). In 2014, 213 899 new cases were reported, and in 2013, 215 656 new cases^(4,1).

In the world, in 2014, 213,875 new cases of leprosy were diagnosed, with 125,785 in India and 31,064 in Brazil. This country is in the second position in relation to the absolute number of cases of leprosy; the 1st place is India, considered the cradle of the disease⁽⁵⁾. As for the South American countries, it is known in all, except for continental Chile. Old reports of the 16th century report that the disease was first discovered in Colombia, which opened the first leprosarium in 1530 in Cartagena, a city located on the Atlantic coast of that country⁽⁶⁾.

In this scenario, in the year 2015, in Brazil, the coefficient of detection of new cases according to the region was 14.07 / 100 thousand inhabitants, corresponding to 35,131 new cases of the disease in the country. In the population under 15 years of age, there were 2,113 new cases, with a detection coefficient of 4.46 per 100,000 inhabitants⁽⁷⁾.

In Alagoas, epidemiological data point to a gradual decrease in the coefficient of detection of leprosy cases, but still showed a high detection rate in 2015, when a detection coefficient of

10.51 per 100,000 inhabitants was recorded. When treating this coefficient in children under 15 years of age in Alagoas, in 2015, the coefficient registered was 2.66 per 100,000 inhabitants, rate considered average according to the Ministry of Health (MOH) standards. In that year, only 69.59% of intradomiciliary contacts were examined, which is still below the country average (76,63%)⁽⁷⁾.

Data from the year 2015 reveal 14 new cases in the Municipality of Rio Largo, with a detection coefficient of 19.83 per 100,000 inhabitants⁽⁸⁾. Epidemiological data from this municipality indicate that 62.3% of the intradomiciliary contacts of people affected by leprosy were examined in 2013⁽⁹⁾.

Despite the introduction of multidrug therapy (MDT) in the treatment of leprosy, there are still technical and operational challenges to overcome, such as the low contact rates and the late diagnosis of the disease⁽¹⁰⁾. The contacts are those from the same family or non-family members living in the household (intradomiciliary) or living in the vicinity of the person who has leprosy (peridomiciliary) in the period of at least three months up to five years before diagnosis⁽¹¹⁾.

In this perspective, the detection of cases of leprosy in children under 15 generates an alarm signal, since it represents hyperendemicity in the community or region, since individuals in this age group have early contact and greater physical proximity to the index case, indicating that there is active and recent transmission cases of multibacillary patients, and they were not properly diagnosed and treated⁽²⁻³⁾. The risk of development of the disease inherent in this age group is still greater due to the difficulty to perform the early diagnosis, which increases the probability of evolution to complications and deformities⁽²⁾.

The systematization of nursing care, as established in the Program for the Elimination of Leprosy, includes the suspicion of the disease in early diagnosis, resulting from dermatological and neurological examinations, prevention of

disabilities, emotional support, follow-up of treatment, and consequent cure of the disease⁽¹²⁾.

Thus, the objective of the present study was to evaluate the co-prevalence of leprosy in contacts between the ages of 5 and 15 years.

Method

This is a descriptive study, with a quantitative approach, carried out in the Municipality of Rio Largo, Alagoas, Brazil.

The study population consisted of 148 intradomiciliary contacts, 52 multibacillary index cases, and 43 peridomiciliary cases, considered the individuals living in the 50 meter radius of a patient diagnosed in the multibacillary form. This data was elucidated in a study⁽¹¹⁾ conducted in the state of Mato Grosso, which observed the occurrence of 35.3% of new leprosy cases among individuals living close to people affected by this disease.

Inclusion criteria were: intra and peridomiciliary contacts between the ages of 5 and 15 residing at the registered address. The choice of the age group from 5 years of age to the study is justified due to the long incubation period of the bacillus⁽¹⁾, which represents, in most cases, the late manifestation of symptoms. In addition, the evaluation of the contacts was made through the dermatological and neurological examination; therefore, children from 5 years of age are able to respond to the examination with greater concentration, which facilitates the application of the sensitivity test⁽²⁾.

No exclusion criteria were established. However, the final population of the study was composed of 73 contacts, 30 of which were intradomiciliary and 43 were peridomiciliary, because the contacts that were not in the homes during the home visit and those that the parents did not authorize the participation in the research were not studied.

Data collection took place from November 2014 to July 2015. In the first stage, a quantitative survey of leprosy index cases (multibacillary form) and their respective contacts in the Notification of Injury Information System (*Sistema de*

Informação de Agravos de Notificação – SINAN) and in the State Epidemiological Bulletin were conducted in the period from 2009 to 2014. In the second stage, visits were made to the Basic Health Units (BHU), in which the patients diagnosed with leprosy were registered. It should be emphasized that the information about the intradomiciliary contacts in the registries of the Epidemiological Bulletin and in the SINAN did not contemplate data regarding the ages, which required the consultation to the medical records for the collection of this information. In the third stage, the addresses of the index cases were described, in order to carry out home visits. These visits were carried out with the presence of the Community Health Agents (CHA). It is relevant to mention that, at that time, the peridomiciliary contacts were identified and included in the research. During the visits, the parents/guardians of the contacts were invited and guided on the research. After it was accepted, all were asked to sign the Informed Consent Form and the Term of Assent, which was directed to the contacts that were between 5 and 15 years old. At that moment, the consultations that were to be held at the UBS were scheduled.

The nursing consultation of the contacts was performed by volunteer nurses and undergraduate Nursing students duly trained and supervised by the research coordinators. It was constituted by anamnesis, general physical examination, dermatological and neurological examination, neurofunctional evaluation and administration of the *Bacillus Calmette-Guérin* (BCG) vaccine, in the cases in which it was necessary, according to the MOH criteria. The objective of the researchers during the examinations was to carry out the suspected cases.

The contacts considered suspicious after the consultation were reexamined, in order to diagnose those that fit the definition of leprosy case proposed by the MOH. In case of doubts about the closure, the cases would be referred to the Reference Unit of Maceió for resolution,

with the File of the “Complementary Protocol for Diagnostic Investigation of cases of leprosy in children under 15 years” duly fulfilled.

Two instruments were used to collect data: the survey with sociodemographic and clinical information on the index case obtained in the Surveillance System of the Municipal Health Department of Rio Largo (AL) was the first; and the second contained data referring to the clinical part of the intra and peridomiciliary contact survey evaluated during the nursing visit. Data analysis was performed using the EpiInfo program and the results are presented in tables.

All participants of the research had their confidentiality of the data guaranteed. The present study was appraised and approved by the Ethics and Research Committee (CEP) of the Federal University of Ceará (UFC), with Consubstantiated Opinion No. 532,850.

Results

In the period from 2009 to 2014, 52 cases of leprosy were registered in SINAN in the municipality of Rio Largo (AL). From these, a sample of 73 contacts between 5 and 15 years of age was selected, of which 30 (41.0%) were intradomiciliary and 43 (59.0%) in the peridomiciliary. Of the 30 intradomiciliary contacts identified, only 16 (52.0%) were submitted to contact tests in the BHU, during the index case diagnosis year. Regarding peridomiciliary contacts, there is no registration in the SINAN and/or Epidemiological Bulletin, because they are not MOH priorities.

Of the 73 contacts that participated in the study, 27 (37.0%) were considered dermatologically symptomatic for leprosy. Of these, 20 (27.4%) had 1 to 5 skin lesions, most of which were hypochromic spots (30.1%). During the simplified neurofunctional evaluation, 1 (1.4%) contact showed thickening of the ulnar nerve (Table 1).

Table 1 – Distribution of the contacts, in the age group of 5 to 15 years, examined according to the dermatoneurological aspects. Rio Largo, Alagoas, Brazil – 2015 (n=73)

Variables	n	%
Dermatological symptomatic		
No	46	63,0
Yes	27	37,0
Number of dermatological lesions		
0	46	63,1
1 to 5	20	27,4
6 to 8	7	9,5
Aspect of injuries		
Hyperchromic stain	1	1,4
Hypochromic spot	22	30,1
Hypochromic spot and hyperchromic spot	3	4,1
Hypochromic spot and Hyperchromic plaque	1	1,4
Affected nerves		
No	72	98,6
Yes	1	1,4

Source: Created by the authors.

Of the 27 contacts considered to be symptomatic dermatological, 17 presented alterations in the thermal sensitivity (hyperesthesia or hypoesthesia), thus considered suspect (23.3%), according to the case definition established by WHO and the MOH. Of these suspicious contacts, 2 were confirmed with the diagnosis of leprosy.

Still in relation to these 17 contacts, 8 (47.0%) were intradomiciliary and 9 (53.0%)

peridomiciliary. Among the index cases of these contacts, 11 (64.7%) were classified as multibacillary and 6 (35.3%) were paucibacillary. There is a predominance among suspicious contacts between the ages of 5 and 8 years (47.06%), of males (76.4%).

As observed in Table 2, 11 (64.7%) suspect contacts had a family income of approximately 1 to 2 minimum wages and 6 (35.3%) survived with less than 1 minimum wage.

Table 2 – Distribution of suspected leprosy contacts aged 5 to 15 years according to socioeconomic characteristics. Rio Largo, Alagoas, Brazil – 2015 (n=17) (continued)

Variables	n	%
Family income		
From 1 to 2 Minimum Wages	11	64,7
Less than 1 Minimum Wage	6	35,3
Residence		
Rented	3	17,6
Own home	14	82,3
Piped water		
No	5	29,4
Yes	12	70,5
Basic sanitation		
Open pit	13	76,4
Cesspool	3	17,6
Public sewage system	1	5,8

Table 2 – Distribution of suspected leprosy contacts aged 5 to 15 years according to socioeconomic characteristics. Rio Largo, Alagoas, Brazil – 2015 (n=17) (conclusion)

Variables	n	%
Number of rooms		
2 to 3	2	11,7
4 to 5	8	47,0
6 to 8	2	11,7
Did not answer	5	29,4

Source: Created by the authors.

With regard to geographic specialisation, it is observed that most of the suspected contacts used to live in their own house (82.3%), with 4 to 5 rooms (47.0%), running water (70.5%) and they disposed of waste in the open (76,4%). Regarding the proximity of suspicious contacts to the index case, 8 (47.0%) are neighbors. Among

the intradomiciliary ones, 5 (29.0%) are children and 2 (12.0%) are nephews.

Table 3 shows that, during the dermatological and neurological exam at the nursing clinic, suspicious contacts had between 1 and 8 suggestive lesions, most of which were hypochromic spots (82.3%). It is also highlighted that the 17 (100.0%) suspect contacts had BCG scar.

Table 3 – Distribution of suspected leprosy contacts in the age group 5 to 15 years, according to the clinical aspects of leprosy. Rio Largo, Alagoas, Brazil – 2015 (n=17)

Variables	n	%
Number of suggestive lesions		
1	3	17,6
2	2	11,7
3	1	5,8
4	3	17,6
5	3	17,6
7	2	11,7
8	3	17,6
Aspect of injuries		
Hypochromic spot	14	82,3
Hypochromic spot and hyperchromic spot	2	11,7
Hypochromic spot and Hyperchromic plaque	1	5,9
Affected nerves		
No	16	94,1
Yes	1	5,8
BCG Scar		
No	-	-
Yes	17	100,0
Number of BCG scars		
1	15	88,2
2	2	11,7

Source: Created by the authors.

Note: Conventional signal used:

- Numerical data equal to zero not resulting from rounding up.

Discussion

With the development of this study, it was possible to identify that the minority of the contacts of people with leprosy was evaluated. Of the 30 intradomiciliary contacts found, only 17 were submitted to the contact examination in the BHU, after the diagnosis of the index case. Thus, a number below the average of Brazil (77.0%) and Alagoas (72.0%) was observed in the years from 2012 to 2016⁽¹³⁾.

In a cross-sectional and descriptive study conducted in the city of Cacoal (RO), it was pointed out that 58.3% of the contacts were not oriented to the dermatological and neurological exam, an important finding, since this evaluation is indispensable⁽¹⁴⁾. This fact reflects the precariousness of health surveillance actions, since this is one of the priorities for the elimination of leprosy⁽¹⁵⁾.

The surveillance of communicators is one of the essential pillars for the control of leprosy. The strategy used for evaluating the co-prevalence of leprosy in intra- and peridomiciliar contacts emerges as a fundamental action that needs to be implanted and incorporated by health professionals, with the objective of detecting the disease early, especially when dealing with children and prehospital adolescent⁽¹⁴⁾.

Children and adolescents affected by leprosy may suffer serious social, physical and emotional impacts on their lives, given the likelihood of deformities and disabilities occurring. The presence of the disease in the child population will lead to changes in the domestic and school activities, as well as in the relations of friendship⁽¹⁶⁾.

It should be taken into account that the performance of the examination in children and adolescents is essential; however, it requires scientific knowledge of the professionals, in order to understand the responses of the sensitivity tests, examinations considered judicious and meticulous⁽¹⁷⁾.

It was observed in this study that the majority of the evaluated individuals were pre-adolescents, between 9 and 12 years old, able to

respond to the dermatological and neurological examination with greater concentration, which facilitated the application of the sensitivity test. However, this higher number of children and adolescents examined can still be seen as low.

Noncompliance with the exam may be related to factors such as absence of scheduling and information about their importance, distance from the contact residence to a BHU, difficulty in transportation and finding a schedule compatible with the work and the operation of the BHU, among others⁽¹⁴⁾.

Among the children and adolescents evaluated, about 1 to 8 suggestive lesions were identified, most of which had hypochromic spots, similar to those found in other studies, which identified children in the age range of 2 to 9 years presenting the paucibacillary forms, and multibacillary forms in the age group of 10 to 14 years. These findings are due to the longer incubation period of the disease^(10,17-19).

Regarding gender, the majority of contacts were male (56.1%), which is similar to the study conducted in Cuba⁽⁷⁾, which identified the greater presence of boys. On the other hand, a retrospective case series study in the description of the epidemiological profile of leprosy in children under 15 years of age in a reference center in the Southeast region of Brazil found a predominance of females (56,0%)⁽²⁰⁾. Despite the distinctions between the countries of Central and South America, when the Latin American countries are evaluated, there are no significant differences⁽⁶⁾.

Regarding the data referring to socioeconomic characteristics, they are in agreement with the literature, which relates the epidemiological conditions of leprosy and consequently of its contacts with the conditions related to poverty⁽²¹⁾. In addition, it is worth noting that the predominant area of residence for most contacts was urban, evidencing leprosy as an urbanized disease, in view of the fact that these contacts resided or were neighbors of index cases⁽¹⁹⁾.

Regarding vaccination, The MOH determines the application of the BCG-ID vaccine only in intradomiciliary contacts at the time of the

evaluation. It is worth mentioning that the peridomiciliary contacts have not yet been recommended in the MOH guidelines⁽¹⁰⁾. However, in this study, it was possible to observe the co-prevalence between index case and neighbors.

The number of suspected intradomiciliary contacts with two BCG-ID scars may be considered below-expected (only one), given that this vaccine has its recommended administration at birth. Considering that all or at least the majority were vaccinated after birth, they were expected to have two scars, since cases of absence would have to be referred for vaccination at the contact examination. Accordingly, research conducted in Colombia⁽¹⁶⁾ also found low adherence to the BCG-ID vaccine in schoolchildren.

Regarding the operational classification of the index case, 11 (64.7%) were multibacillary. The contacts of multibacillary patients should be monitored for five years due to the characteristics of the etiological agent and consequently the long incubation period⁽²²⁾. That is, the clinical examination of the communicants as an epidemiological conduct should always be performed, especially in children and young people under 15 years of age, considered indicators of endemic disease⁽²²⁾.

An untreated or inadequately treated multibacillary patient produces about five new patients per year. Therefore, the systematic search and follow-up of household contacts is an effective method for the early diagnosis of leprosy, especially in children under 15 years of age, since there is a greater possibility of detecting the source of contagion, as this disease may be closer physically and temporarily^(2,14).

When the simplified neurofunctional evaluation was analyzed, a suspicious contact 1 (5.8%) was identified, showing thickening of the ulnar nerve. The predilection of the Hansen Bacillus for peripheral nerves causes leprosy to be characterized by the appearance of physical disabilities. Therefore, in order to prevent them, early diagnosis is necessary⁽²⁾.

During the examination of the contacts, suspects for leprosy were found. These suspects

were referred to a Reference Center, with the purpose of closing or dismissing the diagnosis. Moreover, in the impossibility of completing/closing the case, these children would need to be followed up in a more systematized way by the health team. Most of the suspects were male. According to WHO, men are affected by leprosy more often than women, usually in the proportion of 2: 1, in much of the world. This preponderance of men is observed in several geographical situations, such as India, the Philippines, Hawaii, Venezuela, and Cameroon⁽⁶⁾.

There was also a predominance of suspicious contacts between the ages of 5 and 8 years (47.0%), which differs from another study⁽²³⁾, in which most of the children were diagnosed between 10 and 14 years of age. The public of this study is similar to another research⁽²¹⁾ on leprosy in Brazil, which is composed of people with low income and concentrated in less privileged neighborhoods, once again proving the persistent social exclusion that accompanies leprosy sufferers and consequently their contacts.

One of the limitations of this study was the reduction of the sample due to the difficulties in conducting the research, motivated by changes of address of contacts, duplication of data in SINAN, incomplete medical records, and difficulty scheduling appointments for nursing appointments. In this case, because they were minors, they could only go to consultations accompanied by their parents and/or guardians, and because of the double working hours and the hours of classes of children and adolescents, these guardians could not schedule consultations.

Conclusion

This study allowed us to conclude that, although no leprosy diagnosis was made between the contacts examined, aged between 5 and 15 years, the high number of suspects (37.0%), considering the small sample size, becomes worrisome from the epidemiological point of view. Thus, since those who performed contact examination at the health unit were not considered suspect at the time of diagnosis of

the index case, the probability of achieving the diagnosis is lower if there is no suspicion.

In this study, it was found that measures aimed at detecting the disease early and avoiding the consequences of late diagnosis and social stigmas, such as the monitoring of endemic areas, systematic monitoring of intradomiciliary and peridomiciliary contacts, are not systematically adopted.

Those responsible for this study recognize that the adequate targeting of the Leprosy Program is intrinsically related to the commitment of government, managers, professionals, and society to guarantee the population's access to health services, with the aim of enabling prevention, early diagnosis, and appropriate treatment for the disease.

In this sense, it is evident the importance of the nurses' performance in the control of leprosy, since, mainly in the scope of basic care, the nursing consultation is carried out both to the patient and ex-patient of the disease and to their contacts, with the dermatological and neurological examination, neurofunctional evaluation and their follow-up over the years, with the purpose of making the suspicion of the disease possible and making possible the early diagnosis and situations of co-prevalence.

It is necessary to emphasize the importance of practice in the attention and study of leprosy in graduation, especially in nursing and medicine, occupations that deal with the theme with greater proximity.

Therefore, the need for more in-depth studies, especially related to contacts in this age group (5 to 15 years), which, when diagnosed, are important markers of leprosy transmission. Although leprosy presents low mortality, the involvement of children, when not diagnosed early and treated, can affect the future of these people due to the physical, social and psychological problems caused by the disease.

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Collaborations:

1. conception, design, analysis, and interpretation of data: Fernanda da Silva Goes, Clodis Maria Tavares and Jovânia Marques de Oliveira e Silva;

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3. final approval of the version to be published: Fernanda da Silva Goes, Clodis Maria Tavares, Jovânia Marques de Oliveira e Silva, Tâmyssa Simões dos Santos, Nataly Mayara Cavalcante Gomes and Karen da Silva Santos.

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