Clinical profile and physical disabilities in patients with leprosy

PERFIL CLÍNICO E INCAPACIDADES FÍSICAS EM PACIENTES COM HANSENÍASE

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ABSTRACT

Objective: to outline the clinical profile of the patients and the prevalence of leprosy cases with physical disabilities. Method: this is an epidemiological and descriptive study, time series, retrospective and documental based on cases of leprosy diagnosed with grade I or II of physical incapacity notified by the National system of notification aggravations in Paraíba from 2001 to 2011. A total of 3,408 cases from the construction of cross-tables with the chi-square test application were analyzed. Results: the results showed that for all variables studied, there were statistically significant differences between degrees I and II of disability. Conclusions: the study suggests the need for more effective actions to control leprosy and, consequently, its sequelae. Descriptors: Leprosy; Epidemiology; Epidemiologic Measurements; Statistics on Sequelae and Disability; Disabled Persons.

RESUMO

Objetivo: delinear o perfil clínico dos pacientes e a prevalência dos casos de Hanseníase com incapacidades físicas. Método: estudo epidemiológico, descritivo, série temporal, retrospectivo e base documental, a partir dos casos de Hanseníase diagnosticados com grau I ou II de incapacidade física notificados pelo Sistema Nacional de Agravos de Notificação na Paraíba no período de 2001 a 2011. Foram analisados 3.408 casos a partir da construção de tabelas cruzadas com aplicação de teste Qui-quadrado. Resultados: os resultados mostraram que para todas as variáveis estudadas houve diferenças estatísticas significativas entre os graus I e II de incapacidade. Conclusão: sugere-se o estudo a necessidade de ações mais efetivas no controle da Hanseníase e, consequentemente, de suas sequelas. Descriptores: Hanseníase; Epidemiologia; Medidas em Epidemiologia; Estatísticas de Sequelas e Incapacidade; Pessoas com Deficiência.

RESUMEN

Objetivo: delinear el perfil clínico de los pacientes y la prevalencia de los casos de lepra con incapacidad física. Método: estudio epidemiológico, descriptivo, serie temporal, retrospectivo y base documental, a partir de los casos de lepra diagnosticados con grado I o II de incapacidad física notificados por el Sistema Nacional de Agravos de Notificación en Paraíba en el período de 2001 a 2011. Fueron analizados 3,408 casos a partir de la construcción de tablas cruzadas con aplicación de test Chi-cuadrado. Resultados: los resultados mostraron que para todas las variables estudiadas hubo diferencias estadísticas significativas entre los grados I y II de incapacidad. Conclusión: se sugiere con el estudio la necesidad de acciones más efectivas en el control de la lepra y, consecuentemente, de sus secuelas. Descriptores: Leprosa; Epidemiologia; Mediciones Epidemiológicas; Estadísticas de Secuelas y Discapacidad; Personas con Discapacidad.
INTRODUCTION

Leprosy is the leading infectious cause of disability. It is an infectious-contagious disease caused by Mycobacterium leprae, a highly infectious bacillus, which has affinity for the peripheral system.1-3

Leprosy neuropathy is clinically mixed, compromising sensitive nerve fibers (altered pain, thermal and tactile sensitivity), motor and autonomic (decrease or loss of sweat and natural lubrication of the skin). When the disease is not detected and/or treated early, it results in physical deformities and permanent disabilities.4

Two to three million individuals worldwide have a motor sequel by leprosy.5 Of all new cases of leprosy, 20% on average have some degree of physical disability (GIF) at the time of diagnosis, and another 15% will develop them even all health actions are adequately developed.6

In the world of 2012, there were 232,857 new cases of leprosy, of which 14,409 were diagnosed with degree II of physical disability. There were 2,420 of them in the Americas, with 2,234 cases in Brazil.7 In the state of Paraíba, 253 new cases with disabilities were notified in 2012, 200 were GIF I and 53 were GIF II, making a total of 33.8% of the cases since this is considered high according to the epidemiological indicators of the World Health Organization8 and the Ministry of Health.8-9

A study on the changes in the life of people affected by leprosy shows that some individuals had improvement of symptoms at the beginning of treatment. However, others reported the onset or aggravation of unpleasant physical signs and symptoms, influencing their quality of life and causing feelings of impotence.10

Leprosy is not unnoticed in people’s lives because it leaves its mark either for a limited time, during treatment or for a longer period, as in the case of physical sequels. In this sense, it is essential the support of health professionals to these people paying them full attention.10

Given the challenge of the National Leprosy Control Program to monitor and minimize the deficiencies and disabilities generated by the disease, this study aimed to identify the proportion of cases of leprosy with physical disabilities in the state of Paraíba from 2001 to 2011 and to verify the association between clinical data and the degrees of physical disability of the diagnosed patients.

METHOD

This is an epidemiological, descriptive, retrospective and documental study, based on cases of leprosy reported by the Aging and Notification Information System (SINAN) in the state of Paraíba from 2001 to 2011.

It was decided to carry out this research based on data on the state of Paraíba as a priority area for the elimination of leprosy, since it is considered a region of average endemicity (1.4 cases per 10,000 inhabitants in 2012) and with a high GIF Index (33.8%), according to epidemiological indicators recommended by the Ministry of Health.8-9

The secondary character data were obtained from the State Secretariat of Health (SES) of Paraíba, originating from the Individual Notification Records (FIN), consolidated by SINAN of SES/PB.

All the reported leprosy cases that presented GIF I or II at the time of diagnosis were selected for the study, corresponding to a total of 3,408 cases.

The time from 2001 to 2011 was selected because it represents the beginning of the implementation of strategies for the elimination of leprosy and the first year of the most recent strategy launched for the same purpose.11

The following variables were defined: gender, bacilloscopy, clinical form, the number of lesions, the number of nerves affected and degree of physical disability assessed at the time of diagnosis. For the data treatment, the variables were selected and decoded according to the Sinan Net data dictionary (version 4.0), from which a new database was built in the Microsoft Excel application. After this stage, the data were recorded for statistical analysis in the software Statistical Package for Social Sciences (SPSS) version 18.0.

For the data analysis, absolute and percentage distributions (descriptive statistics techniques) and inferential statistics techniques were obtained through the Pearson Chi-square test to verify possible associations of the selected variables with the physical disability cases (GIF I and II) arising from the disease. It should be emphasized that the level of significance used in the statistical test decisions was 5% (p <0.05).

The epidemiological indicator recommended by the Ministry of Health was used to determine the proportion of cases with GIF I or II and to evaluate the effectiveness of the early detection of cases.8 According to the Ministry of Health, the indicator was adapted to...
consider not the year, but rather the period in which the information was analyzed (2001 to 2011).

The anonymity and confidentiality of the information obtained, as well as all other prerogatives, were guaranteed by Resolution 466/12, and the project was approved by the Research Ethics Committee of the Health Sciences Center of the Federal University of Paraíba n° 203,485, CAAE 11076312.1.0000.5188.

RESULTS

For the limited time (2001-2011), the total of 10,476 leprosy cases in Paraíba was notified through FIN and grouped in Sinan. Of them, only 5,222 had GIF assessed at the time of diagnosis with 3,408 having some GIF (I or II). Therefore, it can be stated that the general proportion of physical disabilities (I and II) was 65.2%. It is important to draw attention to the 5,254 cases neglected in the evaluation of GIF and for which it is not possible to determine the percentage of cases of physical disability.

The results of the bivariate analysis (Table 1) allowed to identify the clinical characteristics that were statistically different between the groups of cases detected with GIF I and II of disability.


<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Degree of disability</th>
<th>Significand (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Degree zero (n=1814)</td>
<td>Degree I (n=2969)</td>
</tr>
<tr>
<td></td>
<td>n* %</td>
<td>n* %</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>864 47.63</td>
<td>1372 46.21</td>
</tr>
<tr>
<td>Female</td>
<td>950 52.37</td>
<td>1597 53.79</td>
</tr>
<tr>
<td>Bacilloscopy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>194 32.39</td>
<td>353 31.49</td>
</tr>
<tr>
<td>Negative</td>
<td>405 67.61</td>
<td>786 68.51</td>
</tr>
<tr>
<td>Clinical form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undetermined</td>
<td>368 25.27</td>
<td>720 24.97</td>
</tr>
<tr>
<td>Tuberculoid</td>
<td>519 35.65</td>
<td>987 34.24</td>
</tr>
<tr>
<td>Dimorph</td>
<td>367 25.21</td>
<td>753 26.12</td>
</tr>
<tr>
<td>Virchowiana</td>
<td>202 13.87</td>
<td>423 14.67</td>
</tr>
<tr>
<td>Number of injuries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>30 1.71</td>
<td>705 25.64</td>
</tr>
<tr>
<td>An</td>
<td>726 41.37</td>
<td>843 30.65</td>
</tr>
<tr>
<td>Between 2 and 5</td>
<td>495 28.21</td>
<td>623 22.65</td>
</tr>
<tr>
<td>Between 6 and 9</td>
<td>216 12.31</td>
<td>212 7.71</td>
</tr>
<tr>
<td>10 or +</td>
<td>288 16.41</td>
<td>367 13.35</td>
</tr>
<tr>
<td>Number of nerves affected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>656 77.45</td>
<td>2046 80.71</td>
</tr>
<tr>
<td>One</td>
<td>93 10.98</td>
<td>238 9.39</td>
</tr>
<tr>
<td>Between 2 and 3</td>
<td>71 8.38</td>
<td>208 8.21</td>
</tr>
<tr>
<td>4 or +</td>
<td>27 3.19</td>
<td>43 1.70</td>
</tr>
</tbody>
</table>

Source: Sinan data, 2014.

(1) Chi-square association test
Analyzing the sample characterization (Table 1), all variables tested (gender, bacilloscopy, clinical form, the number of lesions and number of nerves affected) were associated (p <0.05) with the patients’ GIF.

Of the individuals evaluated, leprosy predominated in the female sex with 51.5% and the male sex with 48.5%. However, in the cases that presented physical disability, most patients with GIF I are women (53.7%); negative smear microscopy (68.5%); tuberculoid clinical form (34.2%); an injury (30.6%) and no affected nerves (80.7%). Cases with GIF II are associated with males (67.2%); (50.2%), dimorphic type classification (45.3%), and were associated with ten or more lesions (33%), although without any affected nerves (50.4%).

The association between the presence of affected nerves in the initial examination and


<table>
<thead>
<tr>
<th>Number of nerves affected</th>
<th>Degree zero (n=1814)</th>
<th>Degree I (n=2969)</th>
<th>Degree II (n=439)</th>
<th>Significance (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n⁰</td>
<td>%</td>
<td>n⁰</td>
<td>%</td>
</tr>
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<td>None</td>
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<td>36.16</td>
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<tr>
<td>One</td>
<td>93</td>
<td>5.13</td>
<td>238</td>
<td>8.02</td>
</tr>
<tr>
<td>Between 2 to 3</td>
<td>71</td>
<td>3.91</td>
<td>208</td>
<td>7.01</td>
</tr>
<tr>
<td>4 or +</td>
<td>27</td>
<td>1.49</td>
<td>43</td>
<td>1.45</td>
</tr>
<tr>
<td>NA/NR(2)</td>
<td>967</td>
<td>53.31</td>
<td>434</td>
<td>14.62</td>
</tr>
<tr>
<td>Total</td>
<td>1814</td>
<td>100.00</td>
<td>2969</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Sinan Data, 2014.
(1) Chi-square association test
(2) To obtain the p-value of the test, the cases in which the information was not applied or the cases of non-response were not considered (NA/NR)

Also, Table 2 showed that 1515 patients ( a sum equivalent to the NA/NR present in table 2) did not have a record of the number of nerves affected. It is also worth mentioning the existence of 191 patients with affected nerves and classified with GIF 0.

DISCUSSION

A specific form is used to detail the evaluations and results about GIFs in each patient to systematize the registry of the incapacities generated by leprosy. Three GIFs are initially considered, in ascending order, according to the involvement of the hands, feet, and eyes: The zero degree corresponds to the absence of disabilities; Grade I - is due to sensory changes in the hands and/or feet and, finally, grade II - is associated with the presence of motor alterations with physical deformities already in place.12

The search for physical disabilities in patients diagnosed with leprosy is one of the basic steps of the neurological evaluation of the patient recommended by the Ministry of Health. The focus is on the actions performed by the professionals that make up the health team, in particular, the physiotherapist, who must be attentive to any evidence of nerve involvement (sore or thickened nerves on palpation, changes in sensitivity, and deficit of muscle strength in the hands and feet).12

Health professionals responsible for the assessment process should be able to diagnose early disability acquired by patients by preventing the onset of deformities and lowering health costs.

One of the relevant information to know the health problems of a population and to subsidize the planning of health policies and programs is to determine the prevalence of the disease or situation of the population. In this sense, the proportion of cases with physical disabilities resulting from leprosy in the sample was investigated, identifying a high index for the period (65.2%), a finding compatible with those of other Brazilian studies in different periods.

In Brazil, it is estimated that 89.3% of patients with leprosy present some GIF already at the time of diagnosis.13 In Paraíba,
The lack of qualification of the professionals and the late diagnosis of the cases are reported as causes that justify the high rates of physical disabilities. Also, the diagnosis of disabilities already suggests a failure in the health services, which contributes to the permanence of cases (Hidden prevalence) that develop into deformities, disabilities and continuity of the transmission chain.²¹

Faced with the proportion of cases with a disability, the percentage of GIF II (8.4%) presents with a median index, according to parameters stipulated by the Ministry of Health (5-10%). Studies performed in the states of Mato Grosso and Minas Gerais showed GIF II percentages higher than in this study, presenting 18.8% and 10.1%, respectively.¹⁹

WHO data show that in 2012, 14409 cases of GIF II leprosy worldwide were diagnosed for every 100,000 inhabitants. Of them, 2,420 are in the American continent, with 2,234 cases only in Brazil.⁷

Although GIF was predominant in this study in females (1,741 cases diagnosed with GIF I or II) in relation to males (1,667 cases with GIF I or II), even in a small proportion, it could be justified by the fact that the population of Paraíba being composed mostly of women³³ or the lack of specific health policies for the male public, which would contribute to a failure in the early diagnosis of cases.²¹ It can be observed that there is a statistically significant difference in the proportion of men with GIF II, that is, men present more GIF II-related injuries than women for the period studied.

Similar findings have been found in other studies,⁸,¹⁷ pointing out that in addition to leprosy being more prevalent worldwide in men, men are also the ones with the most deficiencies and disabilities, either for the more dynamic lifestyle, increasing their risk of becoming ill, or by the cultural aspect in which they end up postponing health care.²⁶

Besides to sex, the clinical variables of leprosy presented statistical differences, prevailing for the GIF II characterizations of the most severe form of the disease.

With the endemic severity of leprosy and its high incapacitating potential, the proportion of GIF II cases is used to measure its morbidity strength, as well as the quality of health services through delayed diagnosis to evaluate the effectiveness of leprosy. Activities of early detection.¹²³

In this study, the high percentage of non-affected nerves for GIF II (50.4%) is...
It is necessary to present motor g and establish more predictive factors of the neural evaluation, applying J Nurs UFPE on line., Recife, 11(Suppl. 3):1464-72, Mar, 2017.

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characterized, since it is classified as GIF II, and it is necessary to present motor alterations with physical deformity installed because of the neural lesion. Attention is drawn to possible negligence regarding the performance of evaluations and data collection by health professionals, as discussed previously.

This fact leads to inferring that the data are being recorded incoherently, possibly due to assessments carried out in a fragmented way by several professionals, as well as their ignorance about the evaluation, and it is necessary to conduct training and establish protocols to avoid planning of actions based on inaccurate data.  

Although the difference of no affected nerve for the other categories is significant, when we compare them with the first one (Table 1), we obtain a greater percentage of nerves affected by the GIF II (49.55%) about GIF I (19.3%).

Neural involvement occurs in all forms of leprosy. In this study, there was a correlation of statistical significance between GIF I and II and the presence of affected nerves, showing that the severity of the degree of physical disability is directly associated with a greater number of affected nerves (Table 2).

Research on the factors related to the prevalence of physical disabilities in leprosy showed that patients with GIF I had an average of two affected nerves, and for those classified as GIF II, this average doubled, with four affected nerves.  

In another investigation, patients with peripheral nerve pain and/or thickening, already in the initial examination, presented more disabilities to directly relate the neural lesion to the occurrence of neurological sequelae. Therefore, such patients should be carefully followed Redoubled to prevent neural damage or worsening, which is, after all, the most important goal of treatment.

A study on the predictive factors of disability in patients with leprosy observed that GIF at admission was the main predictive factor for the evolution of deformities. Thus, patients with GIF I or II, with less than six nerves affected and who had specific medicaments and physiotherapies, had improvement of GIF. However, among those who had these same characteristics and more than six nerves, none improved, remaining with the same degree of disability they had at the start of treatment.

Therefore, the importance of the early diagnosis of both the disease and of the identified neuropathies is inferred. Equally relevant are disability prevention measures. Both have a clinical impact and are predictive of the good evolution of the patient’s neurological condition.

It is worth noting the occurrence of possible negligence also in the evaluation of the number of nerves affected, in which 29.0% of the patients evaluated for GIF had no record of the neural function. Hence, the irrefutable importance of the adequate neurological evaluation of the patient by the health team, allowing to reaffirm the severity of the absence of the evaluation of the GIF, as well as of the neural function in such a significant number of patients in the period investigated.

The importance of the multi-professional health team stands out at this moment. From this perspective, the physiotherapist is highly relevant in the evaluation process, as well as in the prevention and rehabilitation phases, with the purpose of monitoring nerve function through neurological evaluation, applying preventive and treatment techniques, indicating prosthetic devices and finally improvement in the patient’s quality of life.  

In general, it can be observed in this study that the characterization of cases of leprosy with a physical disability was expected by the pathophysiological characteristics of the disease. Thus, the key point is to prevent and promote strategies to avoid the spread of leprosy, so that if there is no contamination, that is, if the endemic disease is controlled, an increasing number of individuals tend to become ill and the lower the chance of developing disabilities.

CONCLUSION

The results indicate that the general proportion of physical disabilities due to leprosy in Paraíba for the period 2001-2011 was 65.2% with a median parameter for GIF II cases (8.4%) according to the Ministry of Health’s epidemiological index.

In general, leprosy predominated in females. However, in the cases that presented physical disability most of the patients with GIF I are women, with negative smear microscopy; with tuberculoid clinical form; presenting an injury and no affected nerves. For GIF II cases the male sex prevailed; with a predominance of the dimorphic classification, besides being associated with ten or more lesions, although the majority did not present affected nerves.

Regarding the high percentage of cases not evaluated in the diagnosis regarding GIF and neural function, it is pointed out to a possible
negligence by the professionals responsible for the process of evaluation and data collection, being necessary to invest in strategies of improvement for the multi professional team, in order to correctly direct health actions, paying particular attention to the early diagnosis and prevention of the diseases resulting from leprosy.

This study was not intended to finalize the discussion on the subject, but rather to demonstrate the importance of being attentive to the current health policies, in order to enable the multi professional team to plan and direct correctly the actions of prevention and health promotion, reducing physical disabilities and improving the quality of life of patients with leprosy.

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