

Epidemiological Surveillance of the ocular impairments in Hansen's Disease

Vigilância epidemiológica das incapacidades oculares em hanseníase

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Abstract

An evaluation of data on ocular disabilities of leprosy registered cases in 1989, in São Paulo State, pointed that it was needed to change the criteria of diagnosis to improve sensibility at the time of detection. Since 1990, the Leprosy Program together with the Ophthalmology Service of São Paulo State, intensified training in detection, prevention and treatment of the ocular disabilities. A group of experts designed a new standardization of procedures and criteria for grading of the ocular disabilities in accordance with the WHO guidelines. The Leprosy notification forms were analyzed for the years 1989, 1993 and 1996 with the objective to evaluate the changes of criteria. In 1989, 3210 leprosy cases were notified, the frequency of ocular disabilities in those cases was 72 (2.2%). During 1993, of the 2927 leprosy cases notified, the frequency of ocular disabilities was 130 (5.3%). In 1996, 2915 cases were notified and the frequency of ocular disabilities was 164 (6.9%). The MB cases showed a greater proportion of ocular disabilities than the PB ($p < 0.05$). The changes in the forms for the

diagnosis of the ocular disabilities, detected at the time of the notification, and the training of personnel, contributed to the increase of the number of cases with ocular disabilities, mainly in grade 1 (corneal hypostesia) and grade 2 (lagophthalmos, trichiasis, corneal opacification). This increase does not indicate worsening of the endemic disease neither later diagnosis, just operational improvement.

Key words: leprosy; eye manifestations; epidemiology

Introduction

Hansen's disease is a chronic infectious disease caused by the *Mycobacterium leprae* that affects mainly the skin and the peripheral nerves, and from which may result deformities and disabilities of the eyes, hands and feet along the evolution of the disease. Visual impairment and blindness can occur in patients with Hansen's disease with ocular complications. These individuals belong to a group of people that can be seriously affected and have been suffering major difficulties in their daily life, mainly due to the association to other deformities and disabilities caused by the disease¹.

The prevalence of low vision in Hansen's disease patients varies from 6 to 10%, when the visual acuity (VA) in the best eye is defined as < 0.1 , or from 4 to 7%, if the VA in the best eye is defined as < 0.05 (does not count fingers at 3m distance)².

Hansen's disease can be a disabling disease with has a compulsory notification in Brazil. The epidemiological investigation form (EIF) had a chart for grading the impairments in eyes, hands and feet. At the moment of detecting the case, the health professional should carry out an evaluation of the impairments and deformities in eyes, hands and feet. The frequency of the physical impairment found at the notification is an indicator of early diagnosis, because the shorter is the disease duration, the lesser is the probability to develop disabling severe lesions³.

The prevention of the ocular lesions in Hansen's disease has a higher priority considering that the ocular alterations in the disease are chronic, have difficult

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recovering and often contribute to increased functional disorder and blindness.

By comparing the several documents of the Brazilian Ministry of Health, it was found that the evaluation criteria of ocular impairments were not standardized. There were also imprecise regarding their instructions as, for example: in the item "accentuated diminished vision", it was not defined what exact distance should be used for the examination; the criterion used for blindness was the absence of light perception, not including other blindness grades defined by WHO⁴⁻⁶. It is important to note that the Brazilian documentation on leprosy of 1984 were based on the Technical Report of the WHO Expert Committee on Leprosy of 1970⁷. The WHO Blindness Definitions were published in 1973⁵

In addition, there was a shortage of data on the prevalence of ocular complications, because the existing information generally referred to patients in leprosy, what does not display the real magnitude and transcendence of the problem at community level.

In 1990, by using the available 1989 data on ocular disability, an evaluation of the diagnosis of those impairments was carried out which outlined the need for changes in the criteria to raise the sensibility and specificity of the ocular evaluation at the moment of the detection. A group of experts was formed who discussed the improvement of the national criteria using the WHO standardization⁶. They had proposed new criteria with previous test of the record form in several places of the country, aiming at the evaluation of the reproducibility and the sensibility of the new classification. The changes suggested were adopted by the Brazil's Ministry of Health/CNDS (Hansen's disease Control Guide, 1994)⁸.

Since 1990, the São Paulo State Health Secretariat started several health personnel training to guarantee the improvement of the evaluation of ocular impairments at the detection and better quality of the treatment and control of the Hansen's disease ocular impairment cases. In 1993, The Epidemiological Surveillance Center "Prof. Alexandre Vranjac" (CVE), State Health Secretariat - São Paulo, Brazil, adopted the new standardization criteria for grading ocular impairment.

The present study was carried out aiming at the evaluation of the evolution of the Surveillance System of ocular impairments between 1989 and 1996.

Methods

Secondary data was collected from Hansen's disease record forms (EIF) from 1989, 1993 and 1996 in the Brazilian State of São Paulo. The following situations were considered for the analysis: grade of ocular impairment, clinical form and the types of ocular impairments.

It is important to note that trained non physician health personnel fill the epidemiological investigation forms. The ophthalmologist can sometimes do it when the patient is referred to the ophthalmologic reference center, but that is not the routine.

Chart 1 - Comparison of 1984 and 1994 epidemiological investigation forms in Hansen's Disease to Register Physical Disabilities in the eye - Ministry of Health, Brazil, 1984 and 1994.

	1984*	1994**
Grade 0	No Eye Disabilities	No problem in the eyes due to Hansen's Disease
Grade 1	Conjunctivitis	Corneal Sensibility .I- or Absent
Grade 2	Lagophthalmos	Lagophthalmos and/ or Ectropion
	Iritis or keratitis I. VA	Trichiasis Corneal opacification
Grade 3	Accentuated d- of the vision	V. A. < 0.1 or does not count
	Blindness	fingers at 6 m.

*Guide of leprosy control. Ministry of Health

**Guide of leprosy control. Ministry of Health/Epidemiological National Center.

Definitions used in the instructions to fill the forms to register physical disabilities, Item - eye (Brazil's Ministry of Health (MS/CNDS - 1984)⁴:

- Inflammation of the eye: distinguish between conjunctive redness (conjunctivitis, Grade I) from redness around the cornea, which indicates lesion of the iris (iritis, keratitis, Grade 2).
- Corneal opacity or ulceration should be considered as keratitis and also be classified as Grade 2.
- Lagophthalmos: impossibility of closing the eye due to paralysis of the eyelids.
- Vision: the presence of reduced vision can be an evident sign of reversible iritis: Visual Acuity (VA) "diminished "(Grade 2). To test the VA, use a card having in its center the figure of an open ring (Landolf C). The normal eye can see the open ring at a distance of 6m (20 feet). If the patient cannot see it from a distance of 3m (10 feet), it is considered that he/she has diminished vision (Grade 2). It shall be considered serious loss of vision (Grade 3), when the patient cannot see the open ring, even if the card is placed at a short distance. Blindness means that the eye has no light perception.

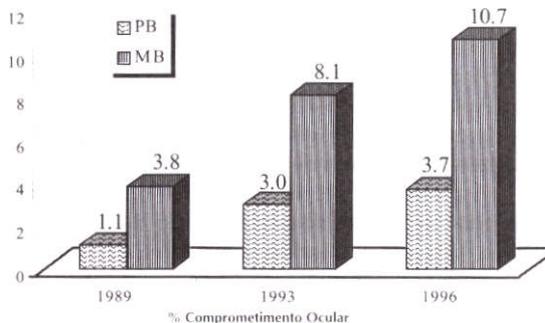
Definitions used in the instructions to fill the forms to register physical disabilities, Item - eye, Brazil's Ministry of Health - (MS) - National Health Foundation (FNS), National Center of Epidemiology (CENEPI), National Coordination of Sanitary Dermatology (CNDS), 1994⁸.

- Diminished or absent sensibility of the cornea: decrease or lack of response to a 5cm long piece of dental floss touching the lateral lower border of the cornea.
- Lagophthalmos: partial or total disability for closing the eyes.
- Ectropion: outward turns or falls away from the eyelid margin.

- Trichiasis: eyelashes not well implanted, turning inward, rubbing the cornea.
- Corneal opacity: loss of the cornea transparency in any location.
- Visual acuity < 0.1: if at the examination with the Snellen chart the patient does not see the larger optotype (0.1). In case the chart is not available, the patient cannot count fingers at 6m.

In 1989, 1,838 cases paucibacilar (PB) were diagnosed, 1,372 multibacilar (MB), and the frequency of ocular impairments among the PB patients was 1.1% and 3.8% among the MB. In the years 1993 and 1996 the frequency of ocular impairments was also greater among the MB (Figure 2).

Figure 2. Frequency of ocular impairment among the new cases of Hansen's disease by classification. State of São Paulo, Brazil 1989, 1993 and 1996.



It was observed that the proportion of ocular impairments in 1989 was 3.45 times greater in the MB cases than in the PB ones, while in 1993 it was 2.70 times greater, and in 1996 it was 2.89 times greater. These differences were statistically significant ($p < 0.05$).

From the new cases detected in 1993, 130 had one or more signs of ocular impairments, of those 66 (50.8%) had reduced corneal sensibility, 10 (7.7%) had lagophthalmos, 10 (7.7%) had trichiasis, 9 (6.9%) had corneal opacity and 35 (26.9%) with visual acuity less than 0.1. In 1996, there was an increase of number of cases with low corneal sensibility (grade 1) and lagophthalmos, trichiasis and corneal opacity (grade 2) and a reduction of V. A. < 0.1 (grade 3) (Table 1).

Results

Among the 3,210 new cases of Hansen's disease detected in 1989, in São Paulo State, 72 (2.2%) were classified as having grades 1,2 or 3 ocular impairment in the notification form, of those, 12 cases (16.7%) grade 1, 57 cases (79.1%) grade 2 and 3 cases (4.2%) grade 3. The number of new cases not evaluated for ocular impairment in 1989 is not available, because in the form it was not possible to conclude if the patient did not have any ocular impairment or the evaluation was missing.

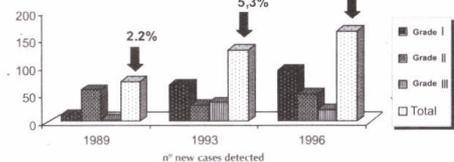
In 1993, from the 2,927 new cases notified, 130 (5.3%) showed some degree of ocular signs, and in 1996 from the 2,918 new cases notified, 164 (6.9%) had ocular impairment registered (Table 1). In these years, the percentage of new cases not examined to detect ocular impairments were 15.6% in 1993 and 18.6% in 1996.

Table 1. New cases of Hansen's disease according to maximum grade of ocular impairments. State of São Paulo, Brazil, 1993 and 1996.

Grade	Diagnosis	Year of detection			
		1993		1996	
		N°	%	N°	%
1	1. Corneal Sensibility	66	50.8	93	56.7
2	Lagophthalmos	10	7.7	20	12.2
	Trichiasis	10	7.7	13	7.9
	Corneal Opacity	9	6.9	17	10.4
3	VA < 0.1	35	26.9	21	12.8
Total		130	100.0	164	100.0

Statistical analyses showed that there was a significant increase in the diagnosis of the ocular impairments along the years ($p < 0.05$) (Figure 1).

Figure 1. New cases of Hansen's disease according to maximum grade of ocular impairments by year of detection, State of São Paulo - Brazil,



Source: CVE - Epidemiological Surveillance Center - Leprosy Epidemiological Surveillance Division.

Discussion

There was a significant increase in the diagnosis of ocular impairments, from 1989 to 1996, regarding the evaluation of the disabilities of Hansen's disease (Figure 1); from 2.2% to 6.9%.

This increase does not indicate worsening of the endemic disease neither later diagnosis, just operational improvement, that is, better diagnosis, brought out by the training programs and by the new standardization of the procedures and criteria in the ophthalmologic examination.

It is impossible to compare the grades of 1989 with 1993 and 1996 because different ocular impairments for the classification were used. But between 1993 and 1996 the comparison could be done using the grades, and the increase was mostly related to grade 1 (low corneal sensibility) and 2 (lagophthalmos, trichiasis and corneal opacity). This means that there was earlier detection of Hansen's disease, especially ocular problems, related to the improvement of the Control Program and the increase of the sensibility of the new ocular impairment form.

The multibacillary patients have presented significantly greater proportions of severe ocular impairments, in relation to the paucibacillary patients. This difference is statistically significant, agreeing with literature data in which it was found more ocular alterations in the Virchowian form^{1-2,9-10}.

The correct evaluation of the impairments, not only the ocular ones, can serve as a useful indicator to evaluate the quality of the diagnosis, especially in those areas that should present average to low detection.

The proportion of ocular impairments found could be useful in the diagnostic evaluation of the Hansen's disease cases, when associated to another indicator such as the proportion of polarized forms in relation to the total of cases detected. In this case, as demonstrated in the year of 1996, 10.7% of the multibacillary cases had some impairment grading, which indicates the need for ophthalmologic follow up during treatment and even after the patient's discharge upon cure. This could improve their ocular health.

Data still show the need to set up or implement Ophthalmology Services for clinical and surgical treatments in those areas where Hansen's disease is endemic. Once cured, these patients need periodic ophthalmologic follow up even after their discharge, as most lesions can progress further, like the trichiasis, that can injure the cornea producing ulcers, or the eye lesions due to reactions after cure, like iridocyclitis, lagophthalmos and episcleritis¹¹.

Other studies should be carried out in the future to compare eye impairments at the time of the detection and discharge to know the evolution of the disease.

Resumo

Após avaliação dos dados de incapacidades oculares disponíveis nas fichas epidemiológicas de hanseníase do ano de 1989, no Estado de São Paulo, constatou-se a necessidade de mudanças de critérios do grau de incapacidade ocular, para aumentar a sensibilidade. Desde 1990, o Programa de Controle da Hanseníase em conjunto com o Serviço de Oftalmologia Sanitária da Secretaria de Estado da Saúde de São Paulo intensificou os treinamentos na detecção, prevenção e tratamento das incapacidades oculares. Um grupo de técnicos foi designado para modificar a padronização dos procedimentos e os critérios para a classificação do grau de incapacidade, de acordo com as orientações da Organização Mundial da Saúde. Com o objetivo de avaliar as modificações da padronização dos critérios foram analisadas as fichas de notificação epidemiológica dos anos de 1989, 1993 e 1996. No ano de 1989, foram detectados 3210 casos de hanseníase, dos quais 72 (2,2%) apresentaram incapacidades oculares. Em 1993, 2927 casos de hanseníase foram notificados, sendo que 130 (5,3%) tinham incapacidades oculares. Em 1996, dos 2915 casos detectados, 164 (6,9%) apresentaram algum grau de incapacidade ocular. Os casos multibacilares mostraram uma proporção maior de incapacidades oculares do que os paucibacilares ($p < 0,05$). As modificações adotadas para o diagnóstico das alterações oculares e os treinamentos realizados contribuíram para um aumento significativo da notificação do número de casos com alterações oculares, principalmente grau I (hipoestesia corneana) e grau II (lagofalmo, triquíase e opacidade corneana). Este aumento não indica piora da epidemia ou mesmo diagnóstico mais tardio, e sim melhora operacional.

Palavras-chave: hanseníase; manifestações oculares; epidemiologia

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