

PROPHYLAXIS OF LEPROSY THROUGH PERIODIC INSPECTION OF RESIDENTIAL FOCI DURING THE INCUBATION CYCLE OF THE DISEASE

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The basic measure of any leprosy control system is the periodic inspection of residential foci, so as to come upon the disease in its initial stages, which is a good time to prevent evolution of cases of the indeterminate group into the lepromatous type. Cases of the indeterminate form, besides being relatively easily cured by sulfone therapy, are the dominant type among initial cases.

Walter Büngeler (¹), with his great authority and large experience in leprosy pathology, emphasizes the importance of the nonspecific infiltrate as the dominant feature in initial leprosy. "El infiltrado inespecífico representa, probablemente, una lesión precoz de la lepra, la manifestación del primer foco de la enfermedad (el aún no demostrado complejo primario), o es la consecuencia de una generalización primária que sigue a la primo-infección. . ."¹

The following statistics pertain to 400 cases observed in my private practice (¹³), between 1938 and 1948, the majority of recent evolution: indeterminate leprosy, 173 cases (43.2%); tuberculoid leprosy, 144 cases (36.0%); lepromatous leprosy, 64 cases (16.0%); atypical cases (primary erythema multiforme), 19 cases (4.7%).

Duarte do Pateo (¹²), of the São Paulo Leprosy Department, in his follow-up of contacts between 1924-1945, found 796 persons with lepra incipiens among 72,079 contacts, with a contagion index of 1.1 per cent. These cases were of the following clinical forms: indeterminate, 639 cases (80.3%); lepromatous, 96 cases (12.1%); tuberculoid, 61 cases (7.7%).

Gonzaga *et al.* (⁸), following up contacts at the Preventório de Jacareí (State of São Paulo), found the following clinical forms among 175 initial cases aged 0-15 years: lepromatous, 17 cases (9.7%); tuberculoid, 29 cases (16.6%); indeterminate, 129 cases (73.7%).

As an expression of the seriousness of the leprosy endemic when not influenced by the Scandinavian system of leprosy prophylaxis through compulsory isolation, we cite some figures obtained through censuses in the following countries:

Argentina (1950-1959).—According to Rinaldi and Capurro (¹⁵): lepromatous, 48.5%; tuberculoid, 33.7%; indeterminate, 10.5%; "dimorphous," 1.7%.

¹ "The indeterminate infiltrate probably constitutes an *early lesion* of leprosy, the manifestation of the primary localization of the disease (the *primary complex* as yet undemonstrated), or it may be the consequence of a primary generalization following initial infection. . ."

San Salvador (Central America).—According to Carranza Amaya (2-3): lepromatous, 53.5%; tuberculoid, 16.7%; indeterminate, 27.6%; "dimorphous," 2.2%.

Brazil (1955).—According to Joir Fonte (7): lepromatous, 60.7%; tuberculoid, 18.9%; indeterminate, 20.4%.

Spain (1950).—According to Cordero Soroa (5): lepromatous, 68.1%; tuberculoid, 17.4%; indeterminate, 14.2%.

Considering these statistics, the plan of prophylaxis here proposed is based on the following facts:

(a) Follow-up of contacts in residential foci allows the detection of leprosy in its initial stage, with greater possibility of an abortive cure, avoiding evolution towards infective stages with open lesions, thus interrupting the contagious cycle. In initial cases the lepromatous rate is low, and thus conditions are favorable for chemical prophylaxis through sulfone therapy. Lauro de Souza Lima reported at the Havana Congress (18) that among a total of 145 indeterminate cases (15 from the Padre Bento Sanatorium and 130 from the Lapa Dispensary), all treated with sulfone, none had been observed to undergo lepromatous transformation.

(b) Control of leprosy in homes allows a more accurate verification of the annual incidence of the disease (morbidity index), and the calculation of the five-year prevalence index gets nearer to reality. According to Rogers and Muir (16), home contagion in leprosy varies between 2.7 per cent and 5.6 per cent. (See final comment on control indexes and efficiency of prophylaxis services.)

(c) Inspection of contacts in home foci covers a majority of children from infancy to puberty and adolescence (ages varying from 0 to 20 years), the age group most susceptible to leprosy who generally account for 50 per cent of contaminations.

(d) Surveys previously carried out have been made by dispensaries, which are static organizations in which the diseased and their contacts are examined through the patient's initiative. This accounts for the large numbers of lepromatous cases in these statistics, and is an expressive indication of the uncontrolled state of the endemy. Massive campaigns carried out by inspecting total populations, besides being expensive and demanding a great number of dermatoleprologists, give low case yields, the incidence varying between 1 and 5 per 1,000. Control of home foci constitutes a continuing and essential sanitary activity, giving a yield of 2 to 5 per cent—20 to 50 times greater than by massive campaigns.

(e) Home control insures the control of infective patients, lowering their infectivity through specific treatment, better standards of nutrition, and sanitary education. These cases include those leaving sanatoria, and their care includes their physical rehabilitation and social readaptation.

(f) Home control allows a study of preventive BCG immunization of Mitsuda-negative contacts, clarifying the value of cross immunity

claimed by Chaussinand (⁴). Rosemberg *et al.* (¹⁷) recorded a fall in the contagion index after positivization of the Mitsuda reaction following BCG administration.

Comments.—Medico-sanitary activity maintains residential control through semestral visits throughout 5 years, which corresponds to the incubation period of leprosy. In that period foci are saturated to the receptivity of 5 per cent of contacts exposed to the high infectivity of lepromatous patients (epidemiologic concept established by Lauro de Souza Lima).

Fernando Latapí (⁹⁻¹⁰), directing the National Leprosy Department of Mexico, has organized the antileprosy campaign on a new plan of prophylaxis, based on intensive control of home foci. The campaign relies upon the Dermatologic Centers as the central regional authorities, in charge of prophylaxis in big urban areas, and of the dynamic mobile brigades which are sanitary units carrying out prophylaxis through epidemiologic investigations and specialized medical assistance in homes and small townships. Furthermore, the dermatologic centers have the important function of training personnel in dermatoleprology, within university patterns.

The Mexican campaign consists of the triple prophylactic system (sanatorium, preventorium and dispensary), starting new action through medical and social activities of their dermatologic centers and mobile brigades, subordinated to the Departments of Dermatology of the Universities of Mexico, Guadalajara and Morelia. This campaign is supported by the World Health Organization; and the well-known leprologist, Dr. Joir Fonte, head of the Section of Epidemiology of the National Leprosy Service of Brazil, collaborates with it as a consultant.

These are new trends which, following the decisions reached by the Pan-American Seminar on the Control of Leprosy (¹¹), meeting under WHO auspices in Belo Horizonte in 1958, awoke the humanitarian and scientific conscience of those toiling in this difficult mission, representing a decisive step in contemporary leprology.

In Brazil, Orestes Diniz (⁶), enlightened exponent of the new prophylactic system, instituted while director of the National Leprosy Service of Brazil a modern organization under new legislation passed in 1959. This system is based upon the ecologic concept, to orientate prophylaxis of infections according to ideas of Preventive Home Medicine, fundaments of modern medical ideas.

PERSONAL VIEWS

Inspired by the arguments of the present study we present our personal views, which consist of the following measures designed to contain the expansion of leprosy:

1. *Periodic inspection of home foci.*—This is to be done by Mobile

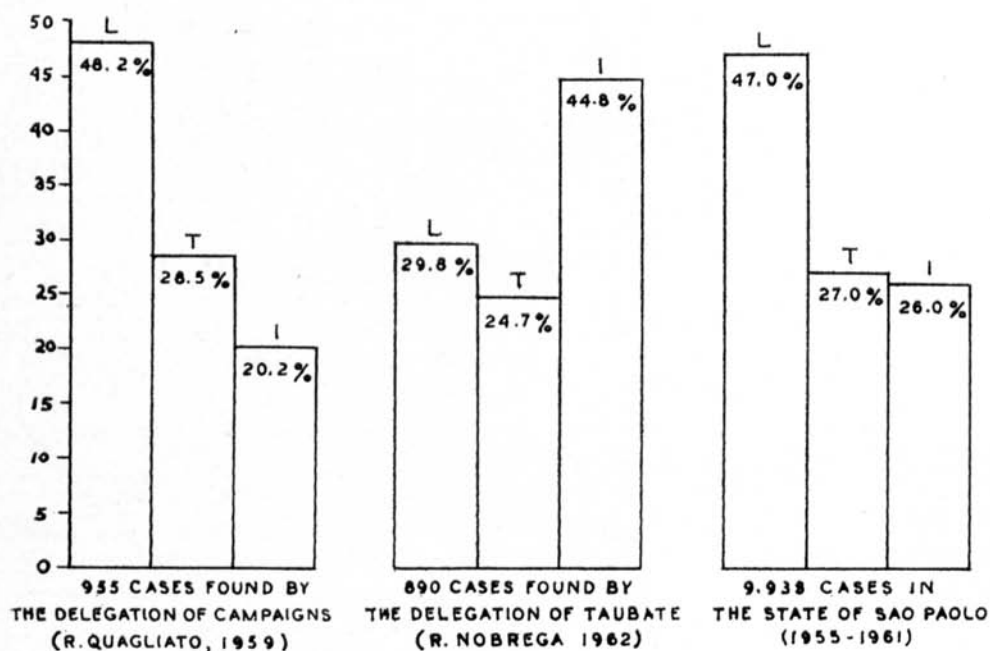


FIG. 1.—Census by dispensaries in São Paulo. The deficiency of this system (sanitaria-dispensaries-preventoria) is attested by the relatively large proportions of lepromatous cases.

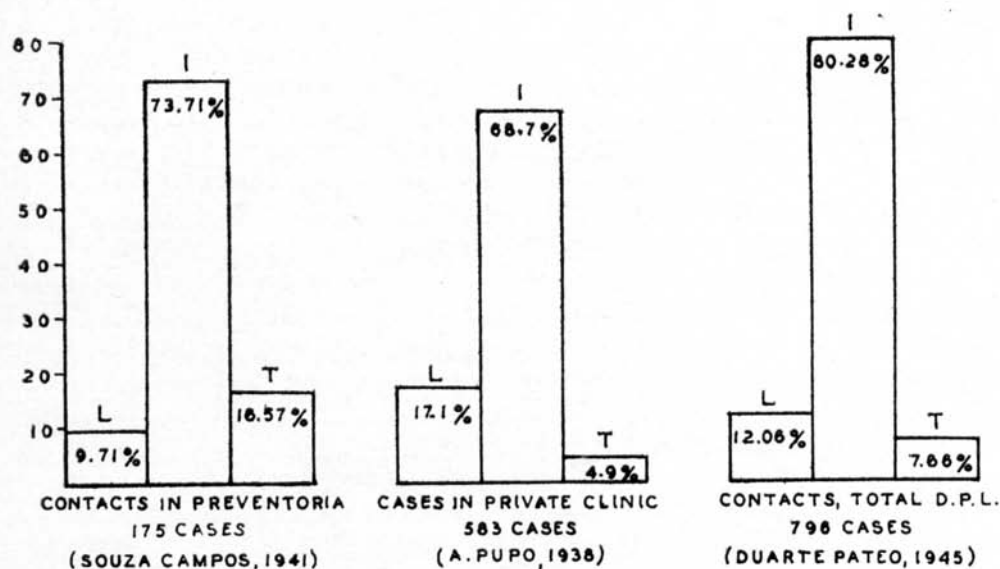


FIG. 2.—The predominance of indeterminate cases in the initial phase of leprosy. Justifying the system proposed.

Sanitary Units, consisting of dermatoleprologists and technicians acting hand in hand with health centers (polyvalent dispensaries of clinico-sanitary activity), which will control the disease through semi-annual examination of patients and their contacts.

The mobile sanitary units should have the following activities in mind when carrying out the prophylaxis of infected homes:

(a) Abortive cure of patients of the indeterminate group, preventing the development of the lepromatous form of the disease;

(b) Treatment of the incipient lepromatous cases, preventing development towards multi-infective stages through open lesions;

(c) Control of the evolution of leprosy in the reactive state, by means of antiallergic medication;

(d) BCG vaccination of Mitsuda-negative contacts, investigating any subsequent change in their receptivity towards leprosy;

(e) Control of cured cases, including those leaving sanatoria, caring for their physical recuperation and social readaptation through the direct activity of social assistants;

(f) Sanitary education in homes, disciplining contagious patients, persuading lepromatous patients resistant to antibacillary biostatic treatment to be interned in sanatoria, for which work a group of sanitary educators should be available.

2. *Selective sanatorium assistance.*—This comprises an open-door system for the highly contagious cases of the advanced lepromatous form, in which invalids and destitute patients will find a shelter.

Comments: The existing sanatoria are a complement of prophylactic activity within the community, fulfilling prophylactic assistance and social needs, corresponding to the high incidence of lepromatous leprosy. Such cases represent an average of 50 per cent of the total found by extensive surveys, which is an evidence of the failure of the Scandinavian system of compulsory isolation.

These are patients of more than 10 years' duration, whose skin, upper respiratory mucosa, and peripheral nerves and lymphatics are blocked by the invading lepromatous process in view of the anergic condition of the organism characteristic of that type.

In a recent visit to the Sanatorio de Santo Angelo, walking through the Invalids' Building, I came upon two patients from the time I was a physician at the Hospital dos Lázaros de Guapira (São Paulo, 1926). These patients were invalidated by the long evolution of lepromatous leprosy. One of them, blind and paralytic, had acquired the disease in 1910 (52 years previously); the other, blinded by a panus lepromatosus of the cornea, had acquired the disease in 1917 (45 years before).

3. *Transformation of the preventoria into polyvalent institutions.*—The purpose of these institutions should be changed to help and educate minors without specific objectives as to leprosy or any other particular social ills, so as to protect the offspring of leprosy patients from the stigma of millenary traditions.

4. *Production of specific leprosy drugs.*—This should be done by official institutions which should aim toward high quality and low cost, with the capacity to supply the public health services and society in general.

5. *Integration of the services.*—The specific Leprosy Prophylaxis Service should be integrated into the general Public Health Service in order to further administrative cooperation through mutual understanding of the epidemiologic point of view, clinical investigations, and sanitary methods of medicosocial interest.

6. *Organization of a rehabilitation bureau.*—A Rehabilitation Bureau should be established to deal with physical recuperation and social readaptation problems of the patients, in cooperation with private institutions and government organizations.

7. *Scientific investigations in leprology.*—Such work should be developed with the direct collaboration of the state scientific institutions and the university.

8. *Organization of dermatoleprology courses.*—Courses designed to train specialized sanitarians should be organized, with the active cooperation of the university departments concerned.

The present study is an eclectic expression of the attitude suggested by the transition of old concepts into the perspective of a new leprosy prophylaxis system, more scientific and more humane than that previously employed.

Sanitarians have to call the attention of epidemiologists to the need of watching home foci, supporting homes disorganized by the mystic and sad anathema of leprosy, with the certainty that among the contacts is the true field where the cursed seed germinates, watered by misery and misfortune (¹⁴).

ADDENDUM

MEANS OF EVALUATION OF THE ENDEMIC AND OF THE CONTROL OF SANITARY CAMPAIGNS

1.—Number of cases registered in the last five years and calculation of prevalence index;

2.—Number of cases registered in the last year and calculation of morbidity index;

3.—Percentage of lepromatous cases during the last five-year period (index of infectivity of the disease and expression of efficiency of the prophylactic system);

4.—Percentage of tuberculoid leprosy, index of specific defense of the population;

5.—Evaluation of clinical treatment as per rules *a*, *b*, and *c* laid down by the VIIth International Leprosy Congress (Tokyo, 1958);

6.—Index of annual control of the inspection of home foci by mobile sanitary units, the efficiency of which is evidenced by the following:

(*a*) Increasing the prevalence in the first five-year period, through better statistics;

(*b*) Increasing the percentage of indeterminate cases, and decreasing that of lepromatous cases;

(*c*) Increasing the number of contacts maintained under medicosanitary control.

The following original evaluation of the *contact vigilance index* is proposed:

A. Standard index of maximum activity of mobile sanitary units =

$$\frac{\text{Nu (number of mobile units} \times 20 \text{ work days per month} \times 12 \text{ months)}}{5c \text{ (average number of contacts per home focus)} \times 2s \text{ (minimum number of annual inspections per focus)}} \times 100$$

B. Annual evaluation of mobile sanitary units =

$$\frac{\text{Ne (number of examinations of contacts made during the year)}}{5c \text{ (average number of contacts per home focus)} \times 2s \text{ (minimum number of annual inspections per focus)}} \times 100$$

With the numerical results of these indexes the following equation is established, to obtain the percentual activities of the mobile sanitary units:

$$A : 100 :: B : X$$

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