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## 6 THE PAN-AMERICAN CLASSIFICATION OF THE FORMS OF LEPROSY<sup>1</sup>

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- I. Origin of the Pan-American classification. Evolutive characteristics of leprosy. Bases of the classification. The principal forms and their varieties.
- II. Critical study of the Pan-American classification. The indeterminate form. The polyneuritic cases. The *limitantes* or "borderline" cases. Reactional episodes (leprous reaction); lepromatous, tuberculoid and borderline leprotic reactions.
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### I. ORIGIN OF THE PAN-AMERICAN CLASSIFICATION

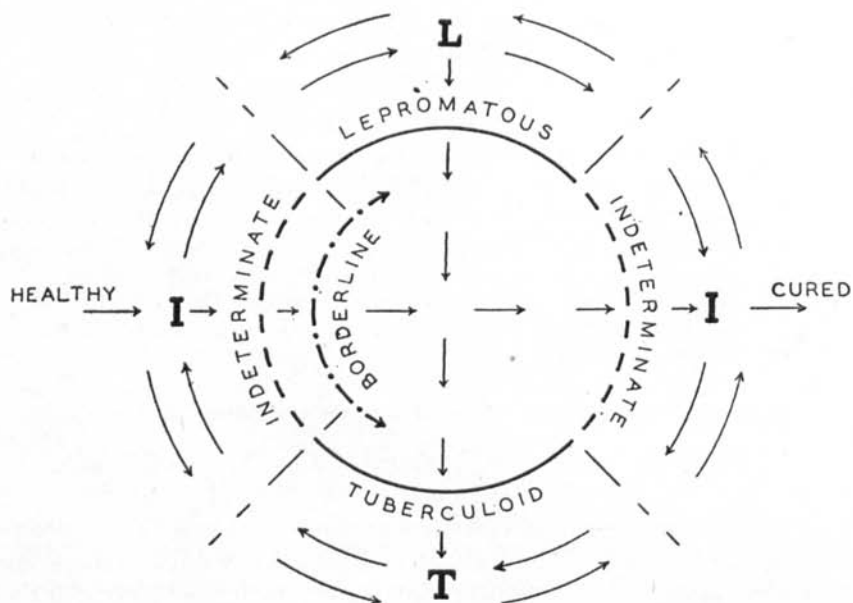
The subject of the classification of the forms of leprosy is of particular importance because, if we succeed in arriving at a formula which is scientifically acceptable and essentially practical, as specified by Wade (8), we shall have provided the general physician with a working instrument which will efficiently guide him in the management of his patients.

I believe that the Pan-American classification is the formula which is closest to this objective, and if there is still opposition to it that is due largely to the fact that it is not correctly interpreted, although it is not denied that it has certain flaws which can be remedied. This article is an attempt to achieve that end, in response to the invitation of Wade to the South American leprologists among whom it originated.

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This classification had its origin in certain differences between the South American delegates and other members of the committee on classification of the Cairo Congress, in 1938.<sup>3</sup> The majority group objected to the introduction of major modifications of the Manila (1931) classification, which recognized two main types: cutaneous and neural. The minority group, composed of the members from Argentina and Brazil, held that the tuberculoid form should be considered a main type, with a clinical, histological and immunological individuality as definite and important as that of the lepromatous type. In short, they proposed the recognition of lepromatous and tuberculoid types, and elimination of the neural type as such.



TEXT-FIG. 1. Schematic representation of the Pan-American classification of the primary forms of leprosy. The *limitante* or "borderline" form, a reactional episode, is indicated although it is not provided for in the original formula.

It was finally decided not to change the types, except that the name "lepromatous" was substituted for "cutaneous." The tuberculoid form was included in the neural type as a variety (Nt). The committee's report mentioned the questions raised

<sup>3</sup> This committee, of which H. W. Wade (U.S.A.) was chairman, comprised: P. Baliña (Argentina); A. Dubois (Belgium); J. M. M. Fernandez (Argentina); R. Germond (South Africa); V. Klingmüller (Germany); J. Lowe (India); and E. Rabello, Jr. (Brazil).

by the South American minority, and recommended that future research should be in the direction indicated by them in the hope that unanimity might be attained at the next Congress.

The features of the South American classification stem from discussions held in São Paulo and Rio de Janeiro late in 1938 and early in 1939. At a meeting held late in February 1939<sup>4</sup> the bases of the new classification were definitely established. They were published anonymously as editorials (4), and the new system was discussed at length by Aguiar Pupo (6). Seven years later, at the Third Pan-American Leprosy Conference, held in Rio de Janeiro (2), it was established officially and was designated the "Pan-American" classification.

A schematic representation of this classification, to be elucidated later, is presented in Text-fig. 1.

#### THE EVOLUTIVE CHARACTERISTICS OF LEPROSY

In leprosy the struggle between the invading agent and the invaded organism provokes a series of reactions or pathological pictures, always conditioned by the degree of defense of the organism, which ranges from simple lymphocytic inflammatory reaction at the beginning to the lepromatous and tuberculoid changes of the matured polar forms.

Histologically the disease starts with a simple inflammatory process, a lymphocytic infiltrate located in the skin and nerves. Clinically, this condition is manifested by macules (erythematous, hypochromic, or erythematohypochromic), or simply by areas of anesthesia. This form of onset, undifferentiated or neutral, in which the organism has not as yet defined its attitude toward the invasion by the leprosy bacillus, is the *incharacteristica* or indeterminate form of the Pan-American classification.<sup>5</sup>

Once the process has started in this manner, the following eventualities may occur:

- (1) If the organism does not define its attitude toward the

<sup>4</sup> The participants in this meeting were: the late Prof. E. Rabello, Prof. J. Aguiar Pupo, and Drs. E. Rabello, Jr., N. de Souza Campos, L. de Souza Lima, H. de Moura Costa, H. Portugal, Duarte do Pateo and the present author.

<sup>5</sup> The terms "incharacteristic," "indeterminate," or "simple inflammatory" have been applied indiscriminately by the South American leprologists to designate this form of leprosy, and it may be admitted that none of them is completely satisfactory. The point of view was that, whichever of these terms might be used, they would all have an explicit conventional meaning by definition.

infection, remains indecisive, the "indeterminate" (I) condition persists until the lesions, whether spontaneously or because of treatment, undergo regression and disappear, temporarily or permanently. This type of evolution is observed with some frequency among contacts under observation.

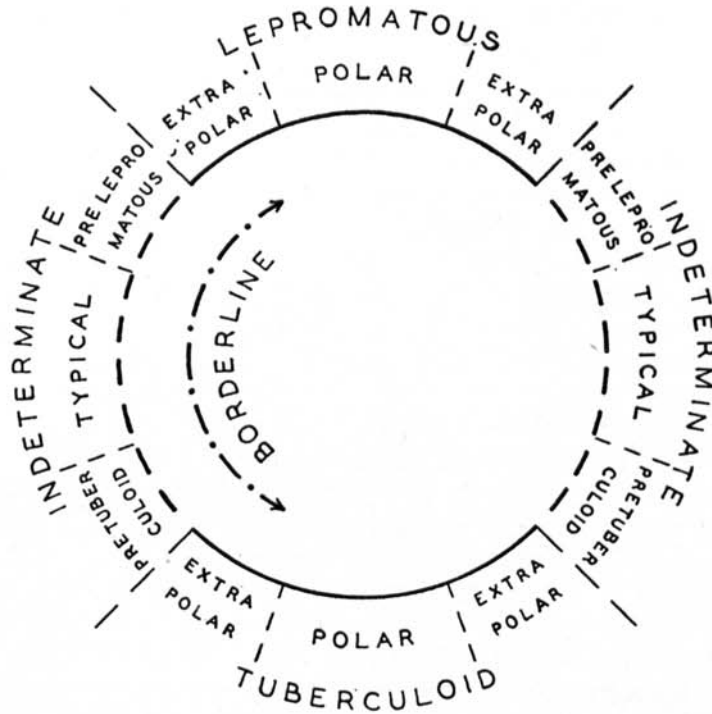
(2) If the organism does not offer resistance against the bacillus, but adopts a passive attitude, the disease evolves from the initial indeterminate form toward the malign lepromatous (L) one. The lymphocytic infiltrate is replaced by accumulations of Virchow cells; the bacilli, originally scarce or absent, multiply; the lepromin reaction, if not negative from the outset, becomes so; and the initial cutaneous macules are replaced by diffusely outlined, infiltrated or nodular lesions. With progression the disease invades the nerves and other organs, and when it reaches its peak or maturity it constitutes the "lepromatous polar" form of the Pan-American classification.

(3) If, on the contrary, the organism offers resistance to the infection, the disease evolves to the benign tuberculoid (T) form. The original histological picture is transformed to a follicular infiltrate constituted chiefly by epithelioid and giant cells; the bacilli, if any were to be found, gradually disappear; the lepromin reaction becomes positive; and the cutaneous lesions acquire more distinct borders or show papuloid elements or typical tubercles. When the case reaches its evolutive peak or maturity it constitutes the "tuberculoid polar" form.

When an I case evolves to L or T the course is usually gradual and progressive, by stages of transition, in which we can distinguish: an initial or typical indeterminate stage; a stage of progression, either prelepromatous indeterminate or pretuberculoid indeterminate, still with indeterminate structure but with clinical or immunobacteriological features of L or T; an atypical or incomplete lepromatous or tuberculoid stage, i.e., without all of the attributes of L or T except the histological structure; and, lastly, a polar or complete lepromatous or tuberculoid stage, exhibiting the four attributes—histological, clinical, bacteriological, and immunological—which characterize these forms in their stage of maturity.<sup>6</sup>

<sup>6</sup> This concept of stages, which refers to the dynamic aspect of the disease and which is tacitly implied in the Pan-American classification, is particularly important because it expresses the kind and degree of evolution of the process, when it changes from one form to another. It marks the different evolutive phases within each form, and at the same time it indicates in what direction the evolution is tending. The "polar" concept was introduced by Rabello, Jr.

A schematic representation of these stages of evolution of the forms of leprosy is presented in Text-fig. 2.



TEXT-FIG. 2. Stages of evolution of the forms of leprosy.

Once the process has reached its peak or maturity, in the polar stage, it may retrogress spontaneously (exceptional), or under the influence of treatment (frequent). Thus is initiated a postlepromatous or posttuberculoïd stage of regression, and this may go on until all signs of activity have disappeared. It may happen, however, that at any given moment the regular course of the disease is altered, producing one of the following alternatives:

- Persistence of any of the stages, brief or prolonged;
- Reverse evolution from any stage;
- Abrupt rather than gradual evolution ("burning the stages");
- Complete deviation from the usual course.

In short, experience shows that once the disease is started no path of evolution is closed to it, although customarily it tends to follow determined courses.

In the polar stages, when the process attains the distinctive and well-defined anatomoclinical physiognomy, it acquires greater stability. In the intermediate, transition stages its sta-

bility is less and the physiognomy ambiguous, especially if a reactional episode develops, in which case the anatomoclinical picture and the evolutive course of the disease may be substantially modified.

#### BASES OF THE PAN-AMERICAN CLASSIFICATION

As has been seen, the Pan-American classification distinguishes the principal or primary forms on the basis of the four fundamental aspects of the disease considered together: the histological structure, the clinical aspects of the lesions, the immunological reaction, and the bacteriological findings. The fundamental feature is the histological structure of the lesions, and the forms are identified and designated on that basis. On the other hand, in order to distinguish the varieties of each form it takes into account only the accessory characteristics or aspects of the process, taken separately, such as the morphology, the localization and the extent of the lesions.

Leprosy presents only three definite structural types which can be called primary: lepromatous, tuberculoid, and lymphocytic or simple inflammatory. Apart from these three modalities the histopathological examination will only reveal either infiltrates of those kinds in a state of reaction, or infiltrates of mixed composition, i.e., tuberculoid combined with lepromatous, also in a reaction state (the *limitante* or "borderline" form).

Since, however, to each structural type of the disease there pertain certain clinical, immunological and bacteriological features, in practice the type classification of cases usually can be made by means of those readily identified features, without the necessity of making the histopathological examination. The situation is much the same as in the classification of cutaneous epitheliomas, the basis of which is also histological (prickle and basal cells) but which in practice are usually identifiable without biopsy because each structural type presents a distinctive clinical aspect, localization and evolutive course.

#### THE PRINCIPAL TYPES OF FORMS AND THEIR VARIETIES

In each of the three principal forms of the Pan-American classification, lepromatous, tuberculoid, and indeterminate, the process may have a varied localization, being either limited to the skin and nerves or extended to other organs. It may present skin lesions of multiform morphology, and the degree of dissemination may be slight or marked. These partial or secondary aspects of the disease, considered singly, characterize the varieties of the principal forms.



The Second Pan-American Leprosy Conference, held in Rio de Janeiro in 1946, established the following varieties:

*Lepromatous type*: Macular, infiltrative (in plaques or diffuse), nodular, neural, and generalized

*Tuberculoid type*: Macular, papuloid circinate, neural, and reactional

*Indeterminate type*: Macular, neural, and neuromacular

At the Fifth International Leprosy Congress, Havana 1948, the classification committee established the following varieties, which, however, were not approved by the plenary session:

*Lepromatous type (L)*: Macular (Lm), infiltrative (Li), diffuse (pure) (Ld), nodular (Ln), and polyneuritic (Lp)

*Tuberculoid type (T)*: Elevated, major (TE), elevated, minor (Te), maculoanesthetic (Tm), and polyneuritic (Tp)

*Indeterminate group (I)*: Macular (or maculoanesthetic) (Im), and polyneuritic (Ip)

The Third Pan-American Conference of Leprology, Buenos Aires 1951, recommended recognition of the following varieties:

*Lepromatous (L) type*: Macular, diffuse, tuberculo-nodular, neuritic, and systemic

*Tuberculoid (T) type*: Macular, circinate (*figurada*), neuritic and reactional

*Indeterminate (I) group*: Macular, neuritic and maculo-neuritic

## II. CRITICAL STUDY OF THE PAN-AMERICAN CLASSIFICATION

Criticisms of the Pan-American classification concern chiefly the indeterminate form, but it is also objected that it does not provide for the polyneuritic cases or the *limitantes* or "border-line" ones. These objections are considered here, to see how well they are grounded. The reactional episodes of the disease are also discussed.

### THE INDETERMINATE FORM

The innovation of elevating the tuberculoid form to the category of a principal type, it and the lepromatous form constituting the two polar ones, received wide acceptance. On the other hand, the introduction of the indeterminate form as a principal type was the most debated feature of this classification.

That there is a form of leprosy, neither lepromatous nor tuberculoid, which possesses a consistent clinical physiognomy and a histopathological picture of its own, is an undeniable fact which is observed daily when examining patients. The Cairo classification recognized that such cases exist; they were called "simple macular" and were placed as a variety (Ns) of the neural type.

Attempts have been made to minimize the importance of this

form as an unstable, passing one, which always terminates as L or T. This is not correct because, although a certain proportion of the cases do so change, by no means do all of them. Many remain indeterminate until they involute toward total regression. This is often seen, as said, among contacts under periodical observation. But even if it were a fact that in time they would all invariably evolve to L or T, the designation of I would hold until such transformation occurred. A classification should designate each case as is at the time of examination.

Why, then, is there so much discussion about this form of leprosy, whose existence is a proved fact? I believe that the main objection stems from the fact that its correct diagnosis cannot be based solely on the clinical manifestations, but requires the histological examination. An indeterminate case transforms to lepromatous or tuberculoid when its histological structure is no longer a banal lymphocytic infiltrate. It may happen, however, that this structural mutation does not, at first, have the corresponding clinical repercussion. The case may continue to be of indeterminate clinical appearance (i.e., simple macular), whereas histologically it is already lepromatous or tuberculoid. As the evolution toward L or T progresses, the time will come when there will be unequivocal symptoms of this transformation, because the macules are substituted or accompanied by other dermatological lesions, proper to the L or T forms.

Stated in other terms, the only dermatological lesion of the indeterminate form, the macule, is also observed—and sometimes as the only cutaneous manifestation—in the L and T forms.<sup>7</sup> Furthermore, in this type of leprosy the other essential

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<sup>7</sup> The expert clinician, however, may recognize features in the appearance of the macules which are significant for their diagnosis. Wade (9) has described the clinical characteristics of each type of macule as follows: *Early lepromatous macule*: Erythematous macule with so little cellular accumulation that it is not a manifest "infiltration." In its typical form it is distinguishable from the erythematous macules of the indeterminate form by less distinct demarcation from the surrounding skin, less hypopigmentation when any, less anesthesia when any, and especially by the fact that bacilli can be recovered from all parts of the area, often in considerable numbers. *Tuberculoid macule*: The essential features are clear demarcation, marginal infiltration and elevation, and centrifugal progression with central resolution and healing. *Indeterminate macule*: Flat ("simple") macular lesions of varied aspects but typically well-defined, which cannot be classified either as lepromatous or as tuberculoid on the basis of the clinical and bacteriological criteria of those types. They may or may not present erythema, diffuse or marginal, according to their



features of the disease, immunological and bacteriological, have nothing which is characteristic. Consequently, the clinical examination is frequently insufficient to establish a correct diagnosis, and hence biopsy is indispensable.

In summary, my opinion on the indeterminate form is as follows: It is an undeniable anatomoclinical reality. It frequently evolves toward the L or the T type, but this mutation does not always occur. Until it is demonstrated that all indeterminate cases will invariably evolve to L or T, and until there is available a procedure (immunological, serological, histological, etc.) which will predict the trend of this evolution, the indeterminate form should retain its place as a primary type in classification. The anatomoclinical criteria established by the Pan-American classification for the individualization of the indeterminate cases are scientifically correct. They have, however, the drawback that their practical application is difficult or impossible in rural centers with few technical facilities. We would suggest, therefore, that in such circumstances precedence be given the clinical aspect, so that all clinically macular cases which cannot be identified as L or T would be classified as indeterminate.

#### POLYNEURITIC CASES

The neural manifestations of leprosy—anesthesias, muscular atrophies, trophic disturbances of the skin, thickening of the nerve trunks, etc.—can be provoked by any of the three forms of the disease, I, L or T, when it involves the nerves. In the Pan-American classification, therefore, the polyneuritic cases constitute simple varieties of those forms, peculiar in that they exhibit changes due to lesions of the mixed, trunk nerves as the exclusive symptom of the disease.

To give these cases the position of a primary group would involve our falling again into the error of taking a secondary or accessory aspect of the disease, i.e., the anatomical localization of the process, as the basis for individualizing a principal group. Such a "polyneuritic group" would be heterogeneous, comprising lepromatous, tuberculoid and indeterminate cases, and its creation would be of little help to the practising physician since

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variety and the degree of activity. Usually they are more or less hypochromic, more definitely so in dark skins than in light ones, in which latter case they are at times hyperchromic. Typically they show distinct sensory changes, although they may be slight in recent lesions. Bacilli are usually not found in smears from even active margins, and when present they are few.

it would not orient him with respect to prognosis, therapy or prophylaxis.

We recognize that there are polyneuritic cases in which it is difficult, and at times impossible, to determine exactly to what type they belong, because the clinical picture is not distinctive and the histological examination either cannot be made or is inconclusive. This is the reason why it has been proposed to put them together in a separate group. I believe, however, that cases of this kind which are difficult to classify are a minority and do not justify the creation of a separate form.

There are polyneuritic cases which can be classified by the simple clinical examination. The tuberculoid condition can be distinguished if there is unilateral nerve-trunk thickening, especially if it is irregular and with a tendency to abscess formation. The immunological examination may be contributory, for a strongly positive lepromin reaction, with ulceration, is seen only in tuberculoid cases. The combination of clinical and immunological evidence would also allow one to diagnose the form when there is symmetrical gross thickening of trunk nerves and the lepromin reaction is negative. Such cases are of the lepromatous type. In case of doubt there always remains the recourse to biopsy of the nerve trunk, and although it is not a simple procedure it is justified in exceptional cases.

We recognize, on the other hand, the existence of polyneuritic cases in which it is very difficult, and sometimes even impossible, to identify the form to which they belong. Such, for example, are those which exhibit only regional ("acroteric") anesthesia or atrophies, without perceptible thickening of the nerve trunks; and also those in which the lepromin reaction is negative or doubtful. How should such cases be classified? I suggest that, so long as there is doubt about them, they be classed as a variety of the indeterminate form.

In resumé, there are polyneuritic cases in which the type diagnosis can be made, either on clinical grounds alone or with the aid of the lepromin test or other procedures. To classify these cases as varieties of the primary forms is logical, and it eliminates all problems. There are, however, polyneuritic cases in which the type diagnosis cannot be so made, and it is suggested they be classified conditionally as of the indeterminate form so long as doubt exists.

#### THE LIMITANTES OR "BORDERLINE" CASES

Besides the three primary forms which have been discussed, each characterized by its own anatomical structure, there is a

fourth group which is not provided for in the Pan-American classification. This consists of those cases which, neither frankly lepromatous nor tuberculoid, are a mixture or combination of the two forms. To Wade belongs the merit of having pointed out for the first time the existence of this mixed or impure form, which he called "borderline," the origin and evolution of which is closely connected with the reactional phenomena. The following is my view of the genesis of such cases.

When an I case evolves toward L or T, but before it reaches the complete or mature polar stage, it passes through a stage or phase of transition—prelepromatous or pretuberculoid—wherein it gradually loses its indeterminate anatomoclinical physiognomy and acquires that of the type toward which it is evolving. At this time it is "extrapolar." At any stage of this evolutive progress a reactional episode may intervene, and the consequences of this complication will differ according to the evolutive period in which it occurs. If it occurs when the case has already reached the polar stage, whether L or T, it will not greatly modify the physiognomy of the case or affect its stability, and after the reactional episode has passed the patient will return to the previous lepromatous or tuberculoid condition. If, however, the reaction occurs during the unstable transitional, "extrapolar" stage, the anatomoclinical physiognomy of the case may be changed fundamentally; the original course of evolution may be accelerated, or there may be deviation from it. The phenomena of mutation are accelerated and accentuated in this emergency, and at its peak the process exhibits an exuberant and ambiguous symptomatology, with simultaneous lepromatous and tuberculoid features. These mixed, intermediates, or impure forms, of frankly reactional aspect and nature and of uncertain future evolution, are the cases called "borderline" by Wade, "intermediate" or "atypical" by Cochrane, "mixed" or "N?C" by Lowe, and certain of those called "reactional tuberculoid leprosy" by de Souza Campos (7).

The subsequent evolution of these cases may follow different courses: (a) they may become typical L, T or I, or (b) undergo regression, or (c) indefinitely remain borderline, ambiguous, with mixed symptomatology, but more or less "quiescent." What happens depends essentially on the immunological terrain, but it may also be influenced by the effects of treatment.

This form of leprosy has no explicit place in the Pan-American classification, for the reason that its individualization is relatively recent.

## THE REACTIONAL EPISODES, LEPRO REACTION

The reactional episodes of leprosy, commonly called "lepra reaction," include a gamut of acute or subacute phenomena, local or general, precipitated by various factors, which interfere with the chronic course of a form of leprosy and alter its usual physiognomy and affect its evolution, sometimes in a transitory way without modifying its structure but sometimes changing it substantially and even provoking a mutation of type. The symptomatology, evolution and prognosis of these phenomena are in close relationship with the forms, and more exactly with the evolutive stages, in which they occur.

Accepting the suggestion of Gatti and Cardama (5) to apply the term "leprous reaction" generally to all reactional phenomena, and "leprotic reaction" to the particular kinds which occur in the different types, we distinguish three types of the latter: lepromatous, tuberculoid, and borderline. Each of these presents varieties which constitute stages of transition between one type and another.

*Lepromatous leprotic reaction.*—At times the reactional episodes which occur in the lepromatous form consist of the specific reactivation of the pre-existing lesions and the appearance of new ones, of acute course and of lepromatous structure. This is called "acute lepromatization," implying an extension of the process and consequently an aggravation of the disease. At other times the condition is manifested by the appearance of elements of the nature of erythema nodosum or erythema multiforme, the process and lesions being nonspecific, perhaps of immunoallergic nature. These appear together with the specific lesions of the disease, thus complicating its picture, with or without accompanying general symptoms and extracutaneous inflammatory manifestations (iridocyclitis, orchitis, neuritis, etc.). Büngeler and Alayon (1) have observed that, histologically, a perifocal reaction is always found in these lesions, even in those which occur in apparently healthy skin.

If the reaction occurs in the stable polar lepromatous stage, the case retains at all times a fundamentally lepromatous physiognomy, and once the reactional episode is over, the case, whether improved or worsened, still remains lepromatous as before. If, however, the reaction occurs in a less stable, extrapolar lepromatous stage, mutation of form is possible, although exceptional; and in such a case the change is toward borderline or indeterminate. This eventuality is especially frequent under the influence of sulfone treatment.

*Tuberculoid leprotic reaction.*—This comprises all of the reactional episodes which occur in the tuberculoid form. The process consists in a reactivation of some or all of the pre-existent lesions, which become congested and more infiltrated, and the appearance of new elements, macular or nodular, also congestive.

If the reaction occurs in the stable, polar tuberculoid stage, the case retains its tuberculoid physiognomy, more or less disturbed by the reactional condition but always identifiable. The lepromin reaction will remain positive in the great majority of cases, but the lesions may become bacteriologically positive; if so, it will be to a moderate degree at most and always temporarily. When the reactional episode has passed, the patient's condition, whether improved or aggravated, remains tuberculoid as before. Mutation of form is exceptional in these cases. There may be a regression of all the symptoms of the disease, with or without scarring.

If the reaction occurs in a less stable, extrapolar stage, the condition may become radically changed. The histological structure may remain tuberculoid, or it may acquire a "lepromatoid" aspect with marked cellular vacuolization. Frequently the bacteriological findings are moderately positive and continue to be so for a longer period than in the condition just described. The lepromin reaction, if it was positive, may diminish in intensity and even become negative. The subsequent evolution of this variety of reaction is variable, with the following alternatives: (a) remain tuberculoid, (b) change to borderline, (c) change to indeterminate, (d) regress completely, temporarily or definitively, (e) exceptionally, change to lepromatous. This variety of reaction coincides, in general, with the one which de Souza Campos described as "reactional tuberculoid leprosy."

*Borderline (limitante) leprotic reaction.*—The indeterminate form has no specific type of reaction, but all of the known reactional conditions may arise from it. Because of its position between the two polar forms the changes which occur in its reactional phenomena generally lead to similarity with those of the L or the T form. There are, however, cases in which both components, lepromatous and tuberculoid, are more or less in equilibrium, and thus the reactional episode acquires a mixed physiognomy. These are the *limitantes* or borderline cases, which as said have a clinical appearance resembling both the tuberculoid and lepromatous forms in reaction. The condition may be accompanied by general symptoms—fever, arthralgias,



malaise—always of moderate degree, and by edema especially of the extremities. The histological structure is also ambiguous, with infiltrates of follicular disposition alternating with others of the lepromatous type, with all of which are associated the changes peculiar to reactions—capillary dilatation, changes of the collagen, etc. Bacteriologically the lesions are persistently and abundantly positive, and the lepromin reaction is almost always negative. The later evolution is uncertain, for it may change to any of the other forms.

### III. THE PAN-AMERICAN CLASSIFICATION IN PRACTICE

The most serious obstacles which are encountered with this system of classification arise from the difficulties of its application by the rural physician. To establish a strictly scientific classification for use in a center of leprology equipped with all technical facilities would not be difficult. Nor would it be difficult to formulate a very elementary scheme adapted to the limited facilities of the physician in the field. But neither of these extremes would solve the problem, because the former lacks practical value and the latter is oversimplified, taking into account only the rudimentary objective symptoms of the disease and ignoring its fundamental aspects.

The ideal classification, one which is scientific, useful, and easy of application, should be sufficiently elastic to be adaptable to the circumstances of both the specialized centers and the rural dispensaries. It is indispensable, however, that the rural dispensary be equipped with a certain minimum of technical facilities, without which it cannot accomplish its important mission. If the dispensary physician, however willing he may be, has only a few syringes and drugs and works in isolation he can hardly apply successfully any scheme of classification. If, on the other hand, he has the materials needed for making bacteriological examinations and performing the lepromin test, the situation is very different. In that case the Pan-American classification would be applicable and useful. Furthermore, if his dispensary works in connection with a leprology center, even if that be many kilometers away, from which he can receive aid and advice as needed there is no problem.

Among his leprosy patients the dispensary physician who employs the Pan-American classification can identify, by means of the clinical examination alone, all of the polar L or T cases which present typical lesions; and he can classify as indeterminate all clinically macular or polyneuritic cases which cannot



be identified as L or T. Among this group of clinically indeterminate cases he will find some which are strongly positive bacteriologically and lepromin negative, and others in which few or no bacilli are found and which react positively to lepromin. From the practical point of view, with respect to prophylaxis, treatment and prognosis, he will deal with the former as lepromatous and with the latter as tuberculoid. Contreras Dueñas (3) has demonstrated the possibility of applying the Pan-American classification following eminently practical criteria, and our point of view agrees with that of this Spanish leprologist in this respect.

In any well-organized antileprosy campaign the dispensary, which constitutes a primary element of control, should always function in close connection with a regional center of leprology, which has the essential facilities, including a well-equipped laboratory. It does not matter, then, if the dispensary is located in a remote region and has only modest facilities, since it can always appeal to the regional center for the solution of problems beyond its capabilities. The Leprosy Service of Peru and the Leprosy Department of São Paulo have solved the problem in this way, demonstrating the advantages of this organization.

Finally, although it is true that the histological examination is at times indispensable to assign certain cases correctly within the Pan-American scheme of classification, it is no less true that the rural physician can, in practice, manage all of his cases by the guidance of the clinical, bacteriological and immunological findings.

#### SUMMARY

In the Pan-American classification of leprosy the individualization of the principal forms is based on the essential aspects of the disease, clinical, histological, immunological and bacteriological, identification and designation being based on the histological structure. The varieties of these principal forms are determined according to the localization, morphology and extent of the clinical manifestations.

The indeterminate form is the most debated feature of this classification because, although it constitutes an anatomoclinical entity, its correct diagnosis frequently requires the histological examination. This lessens its scope and makes its application difficult in rural centers which lack laboratory facilities. To overcome this drawback it is suggested that in such circumstances, the clinical symptoms should be given predominance.

In accord with this criterion, all macular or polyneuritic cases which cannot be identified as L or T should be classified as indeterminate.

In the Pan-American classification the polyneuritic cases are placed as varieties of the three principal forms. The *limitantes* or "borderline" cases are considered by the author as reactional episodes. Lepra reaction is classified, according to the form in which it occurs, as lepromatous, tuberculoid and borderline.

#### RESÚMEN

La clasificación Panamericana de las formas de lepra se basa en los aspectos esenciales de la enfermedad (clínico, histológico, inmunológico y bacteriológico) para individualizar las formas principales. Sus variedades se determinan de acuerdo a la localización, morfología y extensión de las manifestaciones clínicas.

La forma indeterminada constituye el punto mas discutido de la clasificación porque a pesar de constituir una entidad anátomo-clínica, su diagnóstico exacto requiere, con frecuencia, el examen histológico. Esto reduce su amplitud y dificulta su aplicación en los centros rurales que carecen de laboratorio. Se sugiere, para salvar este inconveniente, que en tales circunstancias se le otorgue prevalencia a los síntomas clínicos. De acuerdo a este criterio, se clasificará como indeterminado todo caso maculoso o polineurítico que no pueda ser identificado como L o T.

Los casos polineuríticos se ubican, en la clasificación Panamericana, como variedades de las formas principales. Los casos limitantes o "borderline" son considerados por el autor como episodios reaccionales. La reacción leprosa se clasifica, de acuerdo a la forma sobre la que se instala, en lepromatosa, tuberculoide y limitante.

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