

CLINICAL STUDY OF LEPROMATOUS LEPROSY IN COSTA RICA¹

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Although knowledge of the symptomatology of leprosy is very complete, we believe it of interest to describe the clinical picture presented by lepromatous leprosy in Costa Rica, with respect to the characteristics of its cutaneous and visceral manifestations.

At the outset it is to be said that the 177 cases of leprosy seen in Costa Rica from 1945 to the end of 1947 were classified as follows: lepromatous, 125 (70.6%); undifferentiated, 33 (18.6%); tuberculoid, 19 (10.8%). The undifferentiated and tuberculoid cases, the symptoms of which have been described in detail by South American writers, will not be discussed here. Suffice it to say that, of the undifferentiated group, 10 were positive and 23 negative for the Hansen bacillus, and that several of the positive ones turned lepromatous while one of the negatives became reactional tuberculoid.

We will confine ourselves in this paper to a description of the cutaneous and visceral manifestations of the lepromatous form, leaving its nerve trunk lesions for future discussions. The 125 lepromatous cases are grouped as follows:

<i>Form or manifestations</i>	Number of Cases	Per cent
Lepromas (nodules or tubercles) and infiltrated spots or plaques	14	11.2
Infiltrated macules (<i>manchas</i>) or plaques without nodules or tubercles	49	39.2
Diffuse form, without macules, infiltrated plaques, or lepromas	56	44.8
Incipient forms, with abundant bacilli only	6	4.8
Totals	125	100.0

¹ Translation of paper sent to the Fifth International Leprosy Congress, held in Havana, Cuba, April 3-11, 1948.

As can be seen, few of our lepromatous cases show nodular or tuberculoid lesions. In fact, during 1946 and 1947 only two such cases presented themselves, and in them the lepromas were scarce. This is the reason why it is impossible to prepare lepromin in Costa Rica. Of the total of 14 cases with such lesions, five were Negroes, natives of Jamaica or born in Costa Rica.

The cases showing infiltrated macules (*manchas*) or plaques are more frequent. They, as well as those showing nodules or tubercles, frequently possess all or at least a part of their eyebrows, except when the lepromas or infiltrations are located in those hairy regions.

Of the total of 63 cases which showed these cutaneous manifestations—nodules or infiltrations—5 had ocular lesions, and 8 had splenomegaly and hepatomegaly; but the enlargement was quite moderate, not exceeding two finger-breadths below the costal border.

The 6 cases called incipient lepromatous were contacts in whom no cutaneous lesions were found clinically but who had thickened nerves, and in whom the nasal mucosa and other parts of the body were found positive for bacilli.

A summary study of these 69 cases reveals the following:

1. That the lepromatous form in Costa Rica starts in the nasal mucosa, judging from the marked positivity of the Hansen bacillus in that tissue in incipient cases, without any other apparent clinical manifestation.

2. That as regards the cutaneous lesions these cases are characterized by sepia-colored macules or livid plaques, or by pale reddish infiltrations, or by shot-sized tubercles or nut-sized nodules.

3. That in two cases the hands showed infiltration of a wine-red color and succulent appearance and, they were highly painful, reproducing a veritable erythromelalgia.

4. That in one case the skin tubercles, of a bright pale reddish color, moderately firm consistence, and pediculate, located on the forearms, knees, forehead and nape, resembled the neurofibromatosis of von Recklinhausen.

5. That only in these forms are ocular lesions observed.

6. That these cases present lepra reaction, with its fever, with inflammatory reaction of the preexisting lesions, or with outbreaks of erythema multiforme, or with erysipelatoid plaques.

7. That those organs which possess an abundance of reticuloendothelial tissue—the liver and spleen—become moderately hypertrophied in a small number of cases.

DIFFUSE LEPROMATOUS LEPROSY

The remaining 56 cases, 44.8 per cent of the 125 lepromatous ones, are of a distinct form. This form was described about a century ago by Lucio in Mexico under the name of *lepra manchada* (spotted leprosy), and it has been described recently by Latapí and other Mexican leprologists as *lepra difusa* (diffuse leprosy).²

Onset.—This form of leprosy begins with falling of the eyelashes, eyebrows, and the hairs of the forearms and legs accompanied by dryness of the skin. Some patients complain of excessive sweating prior to the development of the dry condition, and some notice an increase of the hairs of the forearms prior to their falling out. At the same time they complain of nasal obstruction and edema of the legs, which almost always precede by days or months the lesions of the hair system. The patient loses weight and becomes pale.

Active period.—The edema of the legs becomes more noticeable and is accompanied by general debility and marked fatigue of the extremities. Rhinitis becomes more pronounced and is accompanied by slight and frequent epistaxis. The dryness of the skin, at first only a subjective sensation, becomes evident objectively as an ichthyotic condition, or a hairless senile atrophy. The face assumes a special aspect due to the waxy paleness of the skin, to the absence of eyebrows and eyelashes, to conjunctival irritation, and to the livid infiltration of the earlobes and the alae nasi.

Besides the atrophic changes of the skin described, physical examination reveals: (a) telangiectases, seen in 29 out of the 56 cases, abundant in the cheeks and forehead; and fine varicosities of the thighs which increase with the duration of the disease; (b) hairless areas on the nape, located at the border of the hairy scalp, which gives these lesions an arciform aspect (seen in 4 cases, all in men); (c) small ulcerations of the vellum of the palate, and of the pharynx; (d) enlargement of the liver and spleen (in 54 of the cases), usually quite pronounced and sometimes, in old cases, reaching to the umbilical line, indicating a blockade of the organs rich in reticuloendothelial tissue; (e) thickening of the nerve trunks in many cases, and corresponding atrophies in some of them; (f) perforation of the nasal septum

² Actually, Latapí calls this form of leprosy pure diffuse lepromatosis with outbreaks of multiple necrotizing vascularitis (*lepromatosis difusa pura y primitiva con brotes de vascularitis multiples necrosantes*); see THE JOURNAL 16 (1948) 421-430.—EDITOR.

due to rhinitis, with or without deformity of the nose (the rule); (g) lack of ocular lesions; (h) lack of the classic febrile lepra reaction, but rather a special reaction which is indicated by a purpuric ecchymotic eruption (to be described further).

Besides these clinical features there is a normo—or microcytic anemia with a reduction in the number of monocytes. The erythrocyte sedimentation rate is increased, especially during the eruptions referred to, in which it may reach values of 120 to 150 mm. Westergren. The urine is normal.

Evolution.—The symptoms described become gradually accentuated until, with the passing of years, a state of cachexia is reached, or sometimes a true picture of cirrhosis develops. This evolution is interrupted by the appearance of eruptive outbreaks, in most cases afebrile and painful. The eruption consists of the appearance of purpuric spots (*manchas*), in number varying from one or two to many, in size varying from 1 to 10 cm. in length, with well-defined but irregular borders, preferentially located on the forearms and legs but also to be found on the arms, thighs, face and ears.

The reaction lesions.—When these spots are small they are of red or pink color, but when they are larger they are wine-red or dark violet in color. In some cases they present a bluish peripheral zone, which indicates that the process is at the same time purpuric and ecchymotic, and consequently we have called these eruptions “purpuric ecchymotic outbreaks” (*brotos purpúrico equimóticos*). These spots appear, as a general rule, without rise of temperature, but they are accompanied by local pain and they evolve according to the depth and extension of the hemorrhagic process. The superficial lesions present a dark brown color after two weeks, and then scale off in layers to leave a hypochromic area which may remain as such or regain the normal pigmentation.

The deeper lesions follow a process of tissue necrosis which ends in its elimination, leaving at the place an ulcer which cicatrizes with great difficulty, or which becomes secondarily infected to give rise to deep and stubborn ulcers. These may increase in size due to confluence of new ulcers which appear with new outbreaks of the original condition, so that if the patient is left without treatment he may present enormous ulcerations which, in their totality, may cover the entire leg and extend up to the thigh. In the same way ulcerations occur on the forearms and arms. Ulcers of the ear may produce mutilations of the lobes.

When these ulcerations heal, they leave white, atrophic scars. They radiate, and frequently are united by fibrous cords of keloid type which, when found in the flexion folds such as the popliteal space, may cause retraction of the member.

These eruptive outbreaks amount to a special form of lepra reaction which appears from time to time, either spontaneously or precipitated by some drug such as potassium iodide, chaulmoogra oil, promin or diasone. In two cases we have seen them appear after injections of vitamin C. It should be said that with diasone and promin treatment these eruptions appeared almost entirely between the 15th and 30th days of the treatment. Only in three cases did it appear later; in one, it occurred in the fourth month of diasone treatment, and in the other two cases after the 12th and 16th months of treatment with promin. In other words, in this diffuse form of lepromatous leprosy under diasone or promin treatment purpuric ecchymotic reaction outbreaks occur at an early stage as a reactivation (Herxheimer) phenomenon, but after four to six months of treatment the patients begin to show lepra reaction with skin lesions of the erythema multiforme type.

HISTOPATHOLOGY OF DIFFUSE LEPROMATOUS LEPROSY

1. *Dry skin of early cases.*—Epidermis: All of its layers are more or less normal in thickness. Vacuolated cells are seen on the surface of the spiny cell layer, and there is marked pigmentation in the basal layer. Dermis: There is slight perivascular lymphocytic infiltration. There are some fibroblasts, but foamy cells are not found. Residual elements of the hair follicles, sebaceous glands and sweat glands are to be seen.

Ichthyotic skin of old cases.—Epidermis: All layers are thin, especially the spiny cell layer. Basal layer hyperpigmented. The dividing line between the dermis and epidermis is almost rectilinear, without the papillary undulations of the normal skin. Dermis: Connective tissue thin, with few blood vessels; no hair follicles or sebaceous or sweat glands. Hypoderm: The adipose tissue has almost disappeared.

Small purpuric lesions of the eruptive reaction outbreaks.—Basal layer normal except for infiltration of some red cells. Spiny layer reduced in thickness, the superficial cells invaded by numerous red cells. Stratum granulosum entirely hyalinized. At this level is seen longitudinal loosening of the superficial layer of the epidermis from the spiny cell layer, leaving a cavity which is full of red cells which in some traverse the horny layer. (This condition would explain the laminar desquamation which

is seen when the superficial purpuric lesions are in the process of healing.) Dermis: Sclerotic connective tissue, invaded by an infiltration of abundant red cells, especially in the subpapillary zone. The scarce vessels or capillaries which are observed show no lesion of their walls.

Extensive and deep purpuric ecchymotic lesions.—Epidermis: Invasion of red cells seen in all the layers, with separation of the epidermis into two layers at the level of all the stratum granulosum above the superficial row of the spiny cell layer. Dermis: Blood suffusion is more abundant, flooding the dermis in all its depth, but lesions of the walls of the few vessels which are spared in this zone are not seen.

Comment on pathogenesis of the lesions.—Because of the slight tissue reaction at the level of the bacillary foci, with the absence of Virchow cells; because of the marked hypertrophy of the organs rich in reticuloendothelial tissue, such as the liver and spleen; because of the reduction of monocytes in the blood of most of the patients; because of the presence of many telangiectases and the frequency of purpuric lesions, indicating the thinness and fragility of the walls of the cutaneo-mucous blood vessels; because of the presence of great numbers of Hansen bacilli in the nasal mucosa even in early cases; because of the resemblance of the histological lesions of the skin that this form of leprosy shows, with histologic structure of senile skin; it appears to us that the diffuse process of this form of lepromatous leprosy is due to a massive invasion of the Hansen bacilli blocking the reticuloendothelial system, or to a not massive invasion by the Hansen bacilli in an organism with weakened defenses.

CONCLUSIONS

1. In Costa Rica the lepromatous form represents 70 per cent, the indeterminate form 18 per cent, and the tuberculoid form 11 per cent of the cases.

2. Among the lepromatous cases the diffuse form is frequent (45%), and cases with nodular lepromas are so scarce as to prevent us from preparing lepromin.

3. The diffuse form is characterized by: (a) alopecia of the eyebrows, eyelids and lanugo hair (*vellos*); (b) first obstructive rhinitis and later perforation; (c) a special form of lepra reaction consisting of a purpuric ecchymotic eruption; (d) marked hypertrophy of the liver and spleen (enlarged in 99% of the cases); (e) telangiectases of the cheeks (50% of the

cases); (f) much accelerated erythrocyte sedimentation (over 100 mm. in one hour, Westergren); (g) lack of ocular lesions.

4. Treatment with diasone and promin causes disappearance of the purpuric ecchymotic reaction, after which the ordinary form of lepra reaction appear, as a sign of improvement in the evolution of the disease.

5. Blockade of the reticuloendothelial system as a possible explanation of the pathogenesis of diffuse lepromatous leprosy would suggest new therapeutic standards in this kind of leprosy.