INTERNATIONAL JOURNAL OF LEPROSY

VOLUME 28, NUMBER 3 JULY-SEPTEMBER, 1960

THE INITIAL FORMS OF LEPROSY IN DAKAR, AND THEIR DIAGNOSTIC PROBLEMS

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The dermatology clinic service of the Hôpital Le Dantec is not a center of leprology, but in the ten months since its foundation up to December 1, 1959, we have encountered 69 cases of leprosy out of the total of 1,253 patients dealt with. In other words, 5.5 per cent of the dermatology consultations had been by leprosy patients, most of them unrecognized cases.

Summarized in Table 1 are the data on clinical form, age group of the patients, and duration of the disease. Regarding the last point, duration of less than one year is considered "recent."

TABLE 1.—*Clinical forms and other data on 69 leprosy cases detected.*

Clinical form	No. of cases	Age group		Duration	
		Under 30	Over 30	Recent	Old
Indeterminate	27	15	12	18	9
Tuberculoid	31	19	12	21	10
Lepromatous	9	3	6	1	8[a]
Borderline	2	1	1	2	----
Total	69	38	31	42	27[a]

[a]Including 4 relapsed cases.

These figures call for some comments on the epidemiology of leprosy in Dakar. Among other things we wish to lay emphasis on the aspects of the beginnings of this affection as the dermatologist con-

sultant is called upon to see it, aspects which often pose difficult problems from both the clinical and the histopathologic points of view.

A. EPIDEMIOLOGY

(1) The rate of 5.5 per cent of cases found by a dermatology service not specialized in leprosy is high. During the same period this service registered only 2.1 per cent of syphilis cases with clinical manifestations, in spite of the fact that the endemicity of syphilis in the country is important, 20 to 30 per cent of the population giving positive serologic reactions.

(2) As for the ages of the leprosy patients, 38 of the 69, or 55 per cent, were less than 30 years old; 8 were below 15 years of age, the youngest being 7 years old.

(3) The figures for the duration of the disease show that 42 out of the 69 cases, or 62 per cent, presented early forms. These cases break down as follows: indeterminate, 18; tuberculoid, 21; lepromatous, 1; and borderline, 2.

These figures readily reflect the notion not only of the persistence but also of the progress of the leprosy endemy. They attest to the difficulties encountered in the fight against leprosy in the big towns, which are the centers of attraction of the people with leprosy of the entire country, who hope to find there a lucrative occupation in begging. Human concentration under the bad conditions of hygiene and housing in the heart of Medina, and the difficulty of maintaining surveillance of the patients, are other reasons why a lepromatous person is more dangerous in Dakar than in the bush.

The percentage of lepromatous cases in our statistics (9 cases, or 13%), is unusually high for Africa. Among these 9 cases, 4 were patients who had been previously treated and cleared up. Believing themselves cured, they had suspended their treatment and had relapsed.

B. DIAGNOSIS

Perhaps the dermatologist, more than the leprologist, will be faced with diagnostic problems. It is, in fact, often in his consultation that are presented to him cases with atypical forms (*fruste*) of leprosy.

The usual physiognomy of leprosy may in fact be modified, either spontaneously for unknown reasons, or—and more often—due to improper therapy. Lesions may be camouflaged by native corrosive treatment, with the formation of keloidal cicatrices, in which the burnt part may be so deep as to modify the histologic aspect. Or even, in recent years, more orthodox treatment with cortisone derivatives may completely change the aspect of the lesions.

In the present paper we shall first deal with the cases that are easily diagnosed with less difficulties in the differential diagnosis, after which we shall discuss the forms involving more difficulties.

(1) *The lepromatous forms.*—These, in general, are the forms of leprosy whose diagnosis is the most manifest. The only condition required for its confirmation is the presence of leprosy bacilli. Two errors are possible here:

(*a*) On the minus side: Not to recognize a discreet form of unusual topography; for example, the single plaque of the right thigh in one of our patients; or to incline oneself toward a diagnosis of malign reticulosis when confronted with infiltrated plaques, violaceous-red and with strong lymph-node reaction. The histology itself would not have been able to correct this diagnosis if one had not thought of searching for leprosy bacilli.

(*b*) On the plus side: To take for leprosy the cutaneous leucemides, secondary syphilitic lesions with pseudo-leontine facies, and the skin disease of von Recklinghausen. We know of a patient with this condition and who received sulfone treatment for over a year.

(2) *The borderline forms.*—By their polymorphism, borderline cases may, even more than lepromatous cases, simulate the malign reticuloses. One of our patients was covered with nodules in and under the dermis except for the ears; and, in addition, he showed large ulcerated plaques on the thigh, the popliteal fossa, and the leg. This ensemble appeared clinically to be malign reticulosis, but the detection of leprosy bacilli soon permitted correction of the diagnosis. By questioning the man we learned that, affected with unrecognized tuberculoid leprosy, he had received a prolonged treatment with hydrocortancyl; and it was probably this medicament that was responsible for the modification of the symptoms and lepromatous conversion.

(3) *The tuberculoid forms.*—The association of skin and nerve disorders is pathognomonic. But in the beginning forms there are often only neural signs, or only cutaneous signs as in the case represented by Fig. 1.

The pure neural forms, with neuritis of the ulnar or of the external popliteal nerve, when they are atypical (*fruste*), are not necessarily easy of diagnosis, and to make nerve biopsies is not a routine practice.

Faced with a single depigmented spot bordered by a fine lichenoid border (Fig. 9), the clinical diagnosis is difficult. Sometimes a biopsy may demonstrate indubitably the presence of a specifically leprous tuberculoid infiltrate, but in other instances, the histology is not sufficiently affirmative; it is necessary, then to consider many diagnoses.

(*a*) Tuberculosis: In a child 9 years old (Fig. 9) the first biopsy was not demonstrative. The second one, made several months later, showed a follicular structure so clear that it indicated cutaneous tuberculosis. It was thanks to the context, negative tuberculin reaction, and appearance of discreet sensory disorders, that it was possible to establish the diagnosis of leprosy.

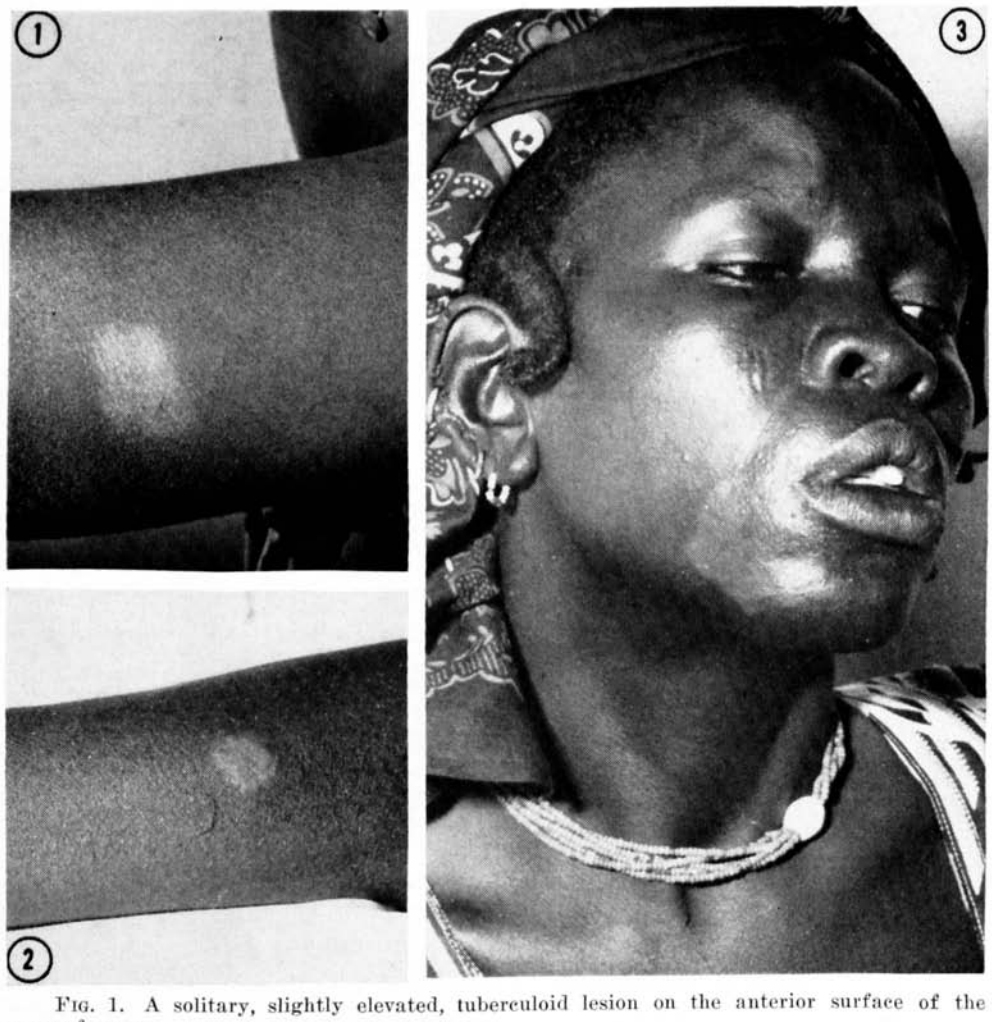


FIG. 1. A solitary, slightly elevated, tuberculoid lesion on the anterior surface of the upper forearm.

FIG. 2. A solitary indeterminate macule, on the outer upper left arm of a young adult female.

FIG. 3. Indeterminate leprosy with alopecia of the eyebrows, the latter indicating that the condition is not as simple as it appears to be.

(*b*) The Besnier-Boeck-Schaumann disease: There are cases in which the clinical and histopathologic aspects are entirely similar to those of leprosy. In Paris we have seen a Senegalese student with lesions of an arm and a forefinger, with osteitis of the phalanges. On the basis of the histologic examination, and also because of his origin, we considered him a case of leprosy, but in view of the complete failure of specific treatment and the spectacular success of one week's treatment with cortancyl, we had to revise that diagnosis and admit that of the Besnier-Boeck-Schaumann disease:

(*c*) Silicotic and foreign-body granuloma: A patient who had suffered a work accident was sent to us because of an infiltrated cutaneous

lesion of the hand with nerve disorder, in which the histologic picture suggested tuberculoid leprosy. Actually it was a case of tar granuloma (*goudronoma*). Indeed, an accumulation of tar was easily detectable in a histologic preparation. It was not so for the particles of silica, which requires an examination by the polarized microscope. In this case the neural disorders were of tramuatic origin.

(*d*) Lupus erythematous tumidus: Clinically this condition strongly resembles a reactional tuberculoid plaque; and the deep infiltrates, which are often follicular, may simulate that condition.

(*e*) Trypanides: Lastly, certain trypanides, with their persistant annular erythemas, may deceive one as leprosy.

In all these questionable cases, the detection of mild disturbances of sensation has a considerable value, but as will be seen in connection with the forms to be discussed below, this examination itself is not always easy.

(4) *The indeterminate forms.*—It is when faced with some achromic spots, often even a single spot as in Fig. 2, that we meet the most difficult diagnostic problems. Nothing is more banal than pigmentary changes in the Negro, as for example: (*a*) in all the parakeratoses, regardless of their origins, mycotic, microbial, or allergic such as the eczematides; (*b*) after the irritations due to various topical applications; (*c*) in vitiligo, and in all the leucomelanodermias attributable to trepanomatosis, yaws, or syphilis.

In leprosy, however, the depigmentation is never as complete as in vitiligo. Of course, there are clinical arguments, some against leprosy such as the presence of scaling, and others in favor of leprosy such as the partial alopecia of the eyebrows; but once the parakeratoses are cured they no longer are squamous. In one of our patients we have seen the association of depigmenting parakeratosis of the face, of mycotic origin, with a lumbosacral element of leprous nature.

The story of indeterminate leprosy in Africa—or, to put it otherwise—of African cases with skin lesions of that sort—is not always a simple one, as is only recently being realized. A most unusual situation, of which we can do no more here than show a picture, Fig. 3, is the presence of alopecia of the eyebrows with otherwise only indeterminate macules.

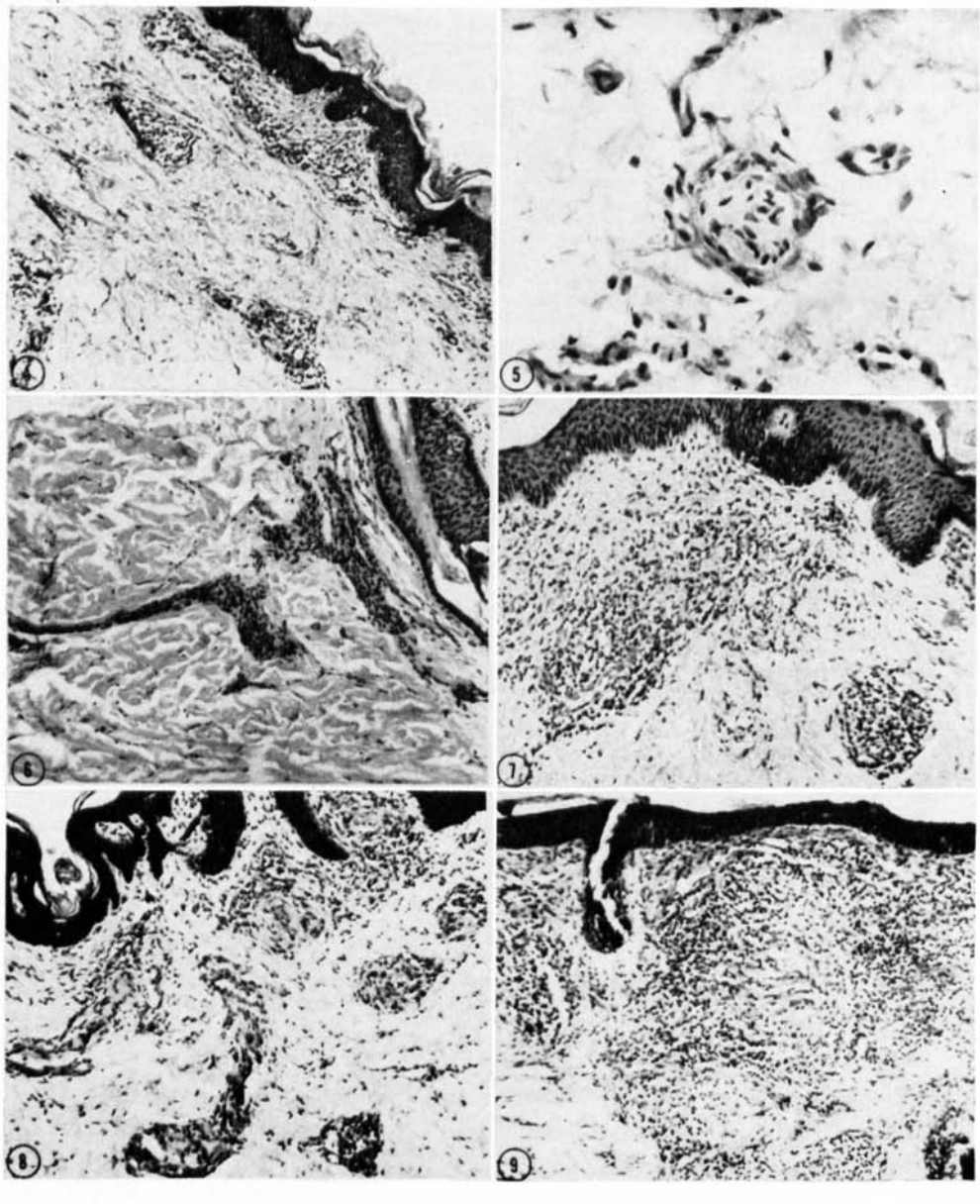
Hypochromia being so little diagnostic, diagnosis often rests solely on the presence of sensory disturbances in the macules, and it is again in this nerve affection that one seeks the histologic confirmation.

Difficulties of demonstrating sensory disturbances: In practice it will be found that there are difficulties in demonstrating the lesser sensory disorders.

(*a*) Dissociation of the sensory disturbances: Classically, the thermoanalgesic sensitivity is the earliest one affected. Indeed, in the advanced neural forms the disturbances of the thermoanalgesic sensitivity

extend beyond the areas of sensory disorder with respect to touch and pricking. This is not true, however, with the small, early macules; and, furthermore, the precession of the sensory disturbances varies from case to case. In most of the cases we have observed, the thermoanalgesic sensitivity was intact. Only the senses of touch and pin-pricking were lost.

(*b*) Psychologic factors: Firstly, there is the barrier constituted by the intermediary of interpretation. Then there is the obstinate indifference shown by some patients, like the little girl who did not



admit any sensation in a lesion when it was picked to bleeding, although it was in reality a lymphangioma and not leprous.

(*c*) The histamin test: This test, which is employed routinely with white patients, and which has been useful in yellow peoples generally, cannot be interpreted in the Negro.

(5 *The hyperchromic forms.*—Indeterminate leprosy is usually maculoanesthetic; it is in short the old form described by Jeanselme. In some cases, however, and especially in the Europeans, the plaques may be hyperpigmented. With Chaussinand, we have known of one example in which, in view of the yellowish (*chamois*) macules of the buttocks and thigh it was quite difficult to make a diagnosis, which however was made by a biopsy which revealed the presence of rare Hansen bacilli in the depths.

DISCUSSION

The *histopathologic examination* is a capital element of diagnosis in cases such as early indeterminate cases. But in these early forms of the infection the histologic changes are quite slight, as shown in the photomicrographs (Figs. 4-9). The atrophy of the epidermis, if any is very useful; the pigmentary alteration is banal; the small polymorphous infiltrates are not specific, for they are currently found in numerous dermatologic affections, and especially in the toxicodermias.

It is therefore much more on the topography of this infiltrate than on its nature or its extent that the diagnosis is based. Of little significance when it is localized in the superficial dermis (Fig. 4), it takes on a greater value when it involves the cutaneous appendages—hair

DESCRIPTION OF FIGURES

FIG. 4. Photomicrograph of a biopsy section of a flat, hypochromic, anesthétic macule of the buttocks of a 7-year-old child. Thinning of the epidermis, with attenuation of the papillary elevations. Infiltrates predominantly composed of lymphocytes in the perivascular spaces, seen as well in the superficial dermis as in the deep dermis.

FIG. 5. A small nerve branch in the deep dermis of the same specimen, seen by higher magnification. Nuclei of lymphocytes and histiocytes are seen infiltrating the nerve between the clear Schwann nuclei. This idea of nerve involvement seems usefully to orient the information obtained by the low-power examination, permitting one to make the diagnosis of leprosy with near certainty. (Indeterminate leprosy, in the present case.) We recall that in preparations of such lesions leprosy bacilli are very rare, and should be sought electively in the Hennle sheaths of the dermal nerve branches.

FIG. 6. Biopsy section of a flat, achromic macule, without sensory disturbance, of a 25-year-old woman; photomicrograph of the deeper dermis. Here also the lymphohistiocytic infiltrates, located around the blood vessels and nerve branches, should make one suspect indeterminate leprosy.

FIG. 7. From a skin biopsy of a hypochromic and anesthetic area on the buttocks of a young girl, 14 years old. Note the reduction of the epidermal papillae. The lymphohistiocytic infiltrates can be seen spread like a sheet, often poorly limited but differentiated from the environment by islets of reticular cells. Such a picture suggests early tuberculoid leprosy.

FIG. 8. Biopsy of a hypochronic macule of the lumbosacral region of a child, 12 years old. The histologic picture is that of a follicular tuberculoid leprosy, the structures of which are distinct, with many follicles and some Langhans' giant cells.

FIG. 9. Biopsy of an achromic area at the base of the nose, of a 9-year-old child, with lichenoid border but without sensory disturbances. Epidermis thin and devoid of papules (but this is normal in this area of the skin). Strands of abundant lymphocytic infiltration centered by islets of epithelioid histiocytes. The diagnosis of a tuberculid was suggested by the importance of the lymphoid infiltration, but the tuberculin tests were negative, and the lesion later became hypoesthetic, confirming the diagnosis of leprosy.

follicles and sweat glands (Fig. 6)—it becomes practically pathognomonic of leprosy when it infiltrates and dissociates a nerve branch in the deeper dermis (Fig. 5). Furthermore, it is in such a lesion in which one encounters the very rare bacillus or bacilli in suitably stained sections.

On five occasions all diagnosis was impossible, in spite of repeated clinical and histologic examinations. One of these patients had keloid lesions in rounded plaques, provoked voluntarily by the application of corrosive substances. Another one seemed to have been cured spontaneously, and we were no longer able to find either disturbances of pigmentation or anesthesia. The others remain under observation.

Regarding *classification,* we may note that the clinical onset in our patients was manifested 18 times by indeterminate spots, 21 times by tuberculoid plaques, and once by a lepromatous lesion. This does not entirely agree with the actual picture of the classification of leprosy.

Considered from the clinical point of view the disease often skips stages of the ordinary course (*plan clinique*). Many of our indeterminates are on the way to change to tuberculoid, and it can be surmised that these conversions may be so rapid in certain cases that they do not have time to be detected by the clinical examination. Besides cases with tuberculoid onset, we also see cases with lepromatous onset.

In one-third of the Dakar patients the initial element appeared on the face, in the frontal area. If one admits the reality of the chancre of inoculation, one may ask if this location is not the result of the Mohammedan prayer, in which one has to prostrate himself in the dust. Or the close contact of the infant with the infected skin of his mother's back, for in Africa mothers carry their children closely tied against their bodies.[1]

CONCLUSION

The diagnosis of leprosy at the beginning of the disease is difficult, even when the histologic control is associated with the careful clinical examination. This is especially true for the indeterminate forms. Nevertheless, in view of the psychologic, social and therapeutic consequences that are involved in the diagnosis of leprosy, one cannot surround himself with enough proofs and scruples before making it.

SUMMARY

Of the 1,253 persons who in 1959 consulted the newly-opened Service of Dermatology of the College of Medicine of Dakar, 69, or 5.5 per cent, were found to have leprosy, and in 42, or 62 per cent of the cases, the disease was in beginning stages. The diagnosis of the lepromatous

[1]In French Guiana one of us found that, in about 15 per cent of the cases, macules of the face—especially the forehead and cheeks—were the initial manifestations of indeterminate or tuberculoid leprosy.

forms should always be confirmed by the demonstration of the leprosy bacillus. In the early atypical (*fruste*), tuberculoid or indeterminate forms the diagnosis is impossible without the aid of biopsy.

CONCLUSIÓN

El diagnóstico de la lepra en los comienzos de la enfermedad es difícil, aun cuando la fiscalización histológica acompaña al cuidadoso examen clínico. Esto rige en particular con las formas indeterminadas. No obstante, en vista de las consecuencias psicológicas, sociales y terapéuticas que figuran en el diagnóstico de la lepra, no cabe rodearse de demasiadas pruebas y escrúpulos antes de hacerlo.

RESUMEN

De las 1,253 personas que en 1959 consultaron el recién inaugurado Servicio de Dermatología del Colegio de Medicina de Dakar, 69, o sea 5.5 por ciento, resultaron tener lepra, y en 42, o sea 62 por ciento de los casos, la enfermedad se hallaba en los períodos incipientes. El diagnóstico de las formas lepromatosas debe comprender siempre el hallazgo del bacilo deproso. En las formas atipicas (frusta), tuberculoidea o indeterminada, el diagnóstico resulta imposible sin la ayuda de la biopsia.