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IMPORTANCE OF THE CARVILLE-STYLE BACTERIOLOGIC
EXAMINATION IN THE RECOGNITION OF INAPPARENT
DIFFUSE LEPROMATOUS LEPROSY

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Inapparent diffuse lepromatous leprosy is a grave and contagious form which is often inadvertently passed over by both the patient himself and by the physician who occasionally encounters it. It is characterized by diffuse infiltrations of large areas of the skin without showing evidence of the bacilli they conceal, owing to the absence of clinical elements typical of leprosy.

This reaction of the affected tissues, so peculiar and mild, which does not conform to a granuloma capable of causing elevation of the skin or in any characteristic way of altering its color or texture, indicates a prolonged evolution before the appearance of lesions capable of orientating the observer. In spite of this, it is a typical example of "open leprosy," in which the nasal mucus is almost always infectious.

CLINICAL MANIFESTATIONS

It being concerned with the bacteriology of the condition, it is not the purpose of this paper to discuss the clinical manifestations of the cases of diffuse leprosy. Although limited, the signs are usually sufficient to make one suspect leprosy when they are given judicious analysis. In Table 1 are listed the manifestations—and also the bacteriologic findings, but not including those of the first examinations—seen in 17 such cases found among several hundreds of registered patients with the typical, classical lepromatous forms.

It will be noted that for 5 of the patients no cutaneous lesions at all were recorded, and that these cases were not confined to those of the shortest duration. For a few others there was note only of a "diffuse muddy (or earthy) color." In 2 instances (Cases 9 and 14), there was record of the Lucio phenomenon, which is a matter which we cannot discuss here.

THE BACTERIOLOGIC EXAMINATION

The paresthesias and other disturbances of sensation are the disturbance which, before any morphologic change of the skin occurs, usually leads the patients to seek medical consultation. It happens, then, that in the majority of the cases the physician will, before making a presumptive diagnosis of leprosy, request or himself make a bacteriologic examination. If any change of color comes to his attention, it is that area where the demonstration of *M. leprae* will be sought. It may happen that the findings of the examination will be weakly positive or even

TABLE 1.—Clinical manifestations and bacteriologic findings in 17 cases of diffuse lepromatous leprosy.

Case No.	Age (yrs)	Duration ^a (yrs)	Cutaneous lesions	Alopecia eyebrows	Edema, malleolar	Mal perforans	Inguinal adenopathy	Nasal perforation	Areas of hypoaesthesia or anesthesia	Enlarged nerves	Bacteriology		Histo-pathology
											Carville	Nasal smears	
1	65	<1	Diffuse muddy color	+	+	+	+	+	Feet, hands	-----	Pos.	Pos.	L
2	37	<1	None	-	-	-	+	-	Foot, lt	Cubitals	Pos.	Neg.	-----
3	27	<1	None	-	-	-	-	+	Cubital borders; ext. knee, rt	Cubitals; auricular, lt	Pos.	Pos.	-----
4	37	1-5	Hypochromic spots, buttocks	-	-	-	-	-	Buttocks	-----	Pos.	Neg.	-----
5	63	1-5	Erythema, mild, black	+	+	+	-	+	Feet; forearms, dorsal	-----	Pos.	Pos.	-----
6	70	1-5	Diffuse muddy color	+	+	-	-	-	Feet	Cubitals; auricular, rt	Pos.	Pos.	L
7	27	1-5	None	-	-	+	+	-	Foot, rt	-----	Pos.	Pos.	L
8	40	1-5	Diffuse muddy color; roseola, trunk	-	-	-	+	-	Feet, forearms	Cubitals	Pos.	Pos.	L
9	45	1-5	Dry skin, shiny	+	-	-	-	+	Feet	-----	Pos.	Pos.	L
10	35	1-5	Hypochromic spots, aquilian, lt	-	+	-	+	-	Feet	Cubitals; ext. popliteals	Pos.	Neg.	I
11	37	1-5	Reticular livido, legs	-	-	-	-	-	Feet; cubital border, lt	Cubitals	Pos.	Neg.	L
12	71	5-10	None	+	-	+	-	-	Feet	Cubitals; rt; ext. popliteals	Pos.	Pos.	-----
13	43	>10	Diffuse muddy color	+	-	+	+	-	Feet	Cubitals; ext. popliteals	Pos.	Pos.	L
14	50	>10	Diffuse muddy color	+	-	-	-	-	Feet	Cubitals; ext. popliteals	Pos.	Pos.	L
15	42	>10	Infiltration, face	-	-	-	-	-	Bands, all extremities	Cubitals; ext. popliteals	Pos.	Pos.	-----
16	58	>10	Diffuse muddy color	+	-	+	+	-	Feet; forearms	Cubitals	Pos.	Neg.	L
17	33	>10	Diffuse infiltrate	-	+	-	-	+	-----	Auriculars; ext. popliteals	Pos.	Pos.	L
No. of cases				8	5	6	7	5	14	12	17	12	
Percentages				47	29	35	41	29	82	70	100	7	

^aDuration less than 1 year, 3 cases; 1-5 years, 8 cases; 5-10 years, 1 case; over 10 years, 5 cases.

negative. In the former case, even if the diagnosis of leprosy is confirmed, one may fall into the error of interpreting the form of the disease as indeterminate leprosy, or initial lepromatous leprosy (L_1). In the latter case, the observer accepts the results of an examination which is inadequate by all standards. It is the nasal mucus, almost always positive, that gives the clue. It is almost always the rule in leprology that when the nasal mucus is positive, the numbers of bacilli in the skin are relatively large.

The coincidence of frankly positive nasal findings with weakly positive or negative findings in the skin is an apparent paradox characteristic of the form of leprosy under discussion. This discordance disappears when the bacteriologic examination is performed in accordance with the technique used at the U. S. Public Health Service Hospital at Carville, Louisiana, in the examinations made as a part of the conditions of issuing hospital discharge to cured patients.

This examination consists of a systematic search for bacilli in certain sites which, in the absence of lesions, are known to have the greatest preference for *M. leprae*, where they tend to persist for the longest time. This technique requires the symmetric taking of scraped-incision smears from the forehead, earlobes, cheeks, chin, forearms, elbows, abdomen, buttocks, thighs, knees and legs. In this exhaustive and methodical examination 24 skin areas are examined, and it is practically impossible for an accumulation of bacilli, if present, not to be hit upon. This particularly applies to the diffuse form of leprosy because, as we have stated, in this form of the disease the skin is infiltrated diffusely and almost totally.

In the 17 cases listed in Table 1, the ordinary bacteriologic examination, which is limited to a search of the infecting agent in the suspicious areas with slight change of color or of sensation, was insufficient to reveal the gravity of the process. On the other hand, when these patients were later subjected to examination by the Carville technique, they were found to have bacilli in many areas which were apparently free from leprosy.

The purpose of this communication is only to call attention to the simple method, which is well known to leprologists but, judging from the histories of the patients examined, is not included in the current practice of the general practitioners.

SUMMARY

The authors stress the importance of the Carville type of bacteriologic examination for the diagnosis of the diffuse cases of lepromatous leprosy, difficult to interpret. This method consists of a systematic and symmetric search for bacilli in certain parts — forehead, earlobes, cheeks, chin, arms, forearms, elbows, abdomen, buttocks, thighs, knees and legs—with or without lesions.

In several hundreds of lepromatous patients there were found 17 cases of the inapparent diffuse lepromatous form which were verified by this kind of examination in spite of the absence of typical cutaneous lesions.

RESUMEN

Los autores destacan la importancia de la investigación bacteriológica "a lo Carville" para el diagnóstico de enfermedad de Hansen en aquellos casos de difícil interpretación. Este método consiste en la búsqueda sistemática en determinados sitios y en forma simétrica (frente, lóbulos auriculares, mejillas, mentón, brazos, antebrazos, codos, abdomen, nalgas, muslos, rodillas y piernas), haya o no lesiones.

Entre varios centenares de enfermos lepromatosos típicos, encuentran diez y siete de la forma lepromatosa difusa inaparente en los cuales aquella investigación permitió precisar el diagnóstico a pesar de la ausencia de lesiones cutáneas visibles.

RESUMÉ

Les auteurs soulignent l'importance, pour le diagnostic des cas de lèpre lépromateuse diffuse, malaisés à interpréter, du type d'examen bactériologique utilisé à Carville. La méthode consiste en une recherche systématique et symétrique des bacilles en certains endroits avec ou sans lésions, — front, lobules des oreilles, pommettes, menton, bras, avant-bras, coudes, abdomen, fesses, cuisses, genoux et jambes.

Parmi plusieurs centaines de malades lépromateux, le diagnostic de forme lépromateuse diffuse inapparente a pu être confirmé dans 17 cas par cette méthode d'examen, malgré l'absence de lésions cutanées typiques.