

## LEPROMATOUS LEPROSY WITH LESIONS RESEMBLING NODULAR SUBEPIDERMAL FIBROSIS<sup>1</sup>

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Textbooks of dermatology and histopathology of the skin, in chapters dealing with the pathology of lepromatous leprosy, provide detailed descriptions of the typical microscopic picture of this type of leprosy (1,2,3,4,5). The rete ridges of the epidermis are flattened by pressure from the infiltrate in the cutis. There is diffuse to nodular cellular infiltration of the upper dermis and similar patchy involvement of the lower half and subcutaneous tissue. In the earlier stages the infiltrate is composed chiefly of connective tissue cells and the so-called "lepra cells of Virchow." The latter are histiocytes that have undergone lipid degeneration of the cytoplasm and resemble the "foam cell" or xanthoma cell. Acid-fast stains reveal many lepra cells containing groups of leprosy bacilli. Lymphocytes are present in surprisingly small number, together with plasma cells and occasional multinucleated giant cells.

Under the designation "histoid variety of lepromatous leprosy" Wade (6) has described an atypical form of this disease. Microscopically he considers the lesions as young and active subcutaneous lepromatous nodules that are not modified by secondary fibrosis or other local conditions. Although our findings are closely similar to Wade's, we do not wish to go so far as to propose the creation of a new variety of lepromatous leprosy. We wish only to emphasize the different, peculiar and special microscopic picture that lepromatous leprosy may present during the natural course of the disease. The object of this paper is to describe this infrequent but important picture, which can be found in lepromatous leprosy, and which resembles and can be mistaken for that described by Michelson (7), Rentiers and Montgomery (8) and many others as nodular subepidermal fibrosis.

### MATERIALS AND METHODS

The files of the Instituto Dermatológico de Guadalajara for the period from 1948 to 1956 were reviewed. More than 5,000 slides from cases of leprosy were screened. Seven cases were found to fulfill the requirements for diagnosis adopted in the present paper.

All the slides from the selected cases were stained with hematoxylin and eosin, Van Gieson connective tissue stain, Ziehl-Neelsen stain for acid-fast bacilli and Gram-Brown stain for gram-positive bacilli. Frozen sections from some of the cases were stained also with the reticulin and double impregnation methods of the Del Rio Hortega silver carbonate procedure for connective tissue and bacilli (9).

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The patients from whom the biopsy specimens were taken were of the nodular lepromatous type. Their lesions were situated in either the lower or upper extremities (Table 1). Clinically all the lesions were described as subcutaneous nodules with the exception of one that resembled a scar. Patients attending the Instituto Dermatológico for diagnosis and treatment of leprosy usually are examined by biopsy during the first visit and every six months thereafter. In three patients these were the first biopsies ever made, a fact indicating that the

TABLE 1.—*Clinical summary of cases, with bacteriology.*

Cases	Clinical diagnosis	Nature of lesion	Location	Previous biopsy	Bacilli
1	Nodular leprosy	Nodule	Right leg	None	Positive +
2	Nodular leprosy	Nodule	Left forearm	One	Positive +++
3	Nodular leprosy	Nodule	Left leg	One	Positive + Frag. Bac.
4	Nodular leprosy	Nodule	Left thigh	None	Positive +
5	Nodular leprosy	Cicatricial lesion	Right thigh	Two	Positive + Frag. Bac.
6	Nodular leprosy	Nodule	Right thigh	Two	Negative
7	Nodular leprosy	Nodule	Left arm	None	Positive + Frag. Bac.

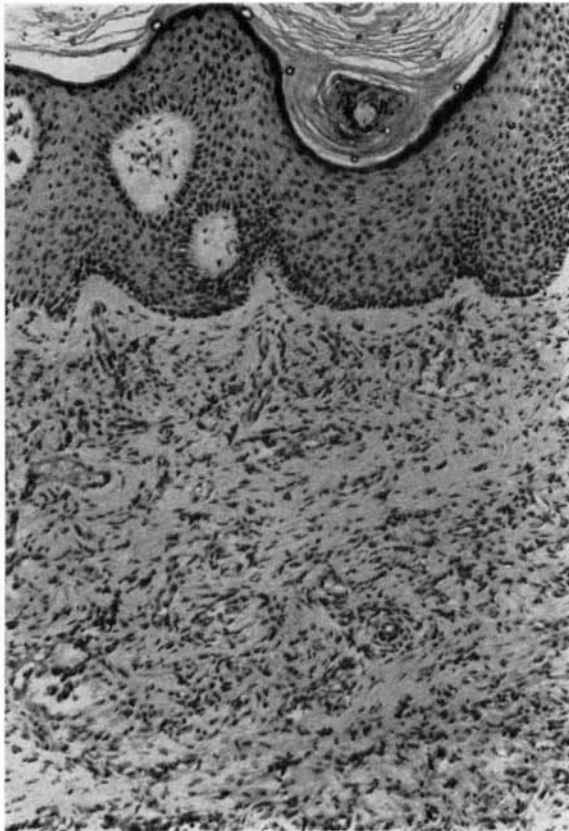


FIG. 1.—Epidermis showing acanthosis with flattening of the rete ridges. The nodule is rather cellular containing several small blood vessels. H.E.  $\times 100$ .

patients had never received sulfone treatment previous to their registration. In two patients one biopsy had been made previously, and in the remaining two patients two previous biopsy specimens had been taken; a fact indicating that these patients were under continuous sulfonic treatment from six to twelve months.



FIG. 2.—Moderate acanthosis of the epidermis. Periphery of nodular lesion involving adjacent dermis, showing numerous lymphocytes throughout. H.E.  $\times 100$ .

The microscopic findings were nearly uniform in all cases. The epidermis revealed mild acanthosis and flattening of the rete ridges (Figs. 1 and 2). In two examples the epidermis presented areas of atrophy overlying the dermal lesion. A poorly defined, thin and continuous band of connective tissue, situated between the basal layer of the epidermis and the dermal lesion, was observed (Fig. 3). In one case only this band was interrupted in some areas. The subepidermal lesion consisted of an irregular and poorly circumscribed nodule of varying size involving the entire dermis (Fig. 4). The hypodermis was never involved by the lesion. The nodule was composed of bundles of collagen fibers running in wavy or interlacing lines. The number of cellular elements varied with each individual lesion, but in the majority of cases a moderate number of spindle-shaped cells were observed. Extreme fibrosis was observed in one of the cases. Large cells with abundant and foamy cytoplasm were observed in small number scattered through-

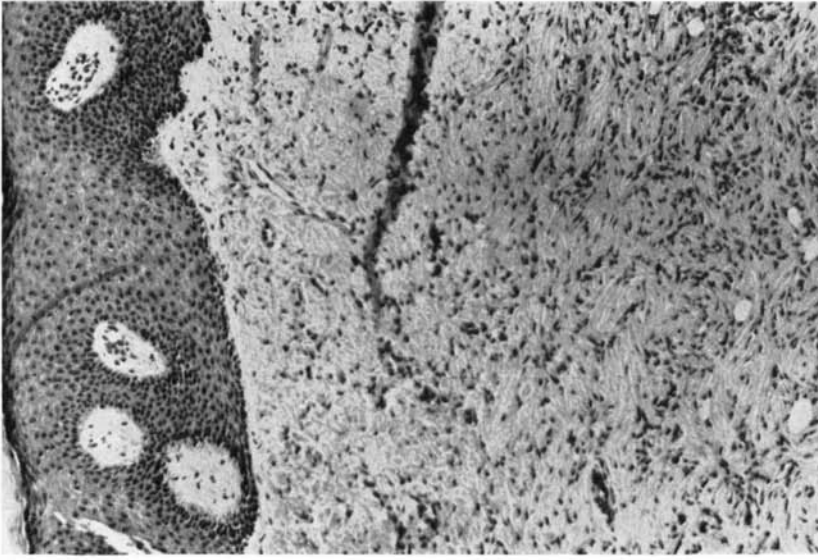


FIG. 4.—Findings closely similar to those of the previous picture. Stain for acid-fast bacilli in this area was positive +. H.E. X 100.

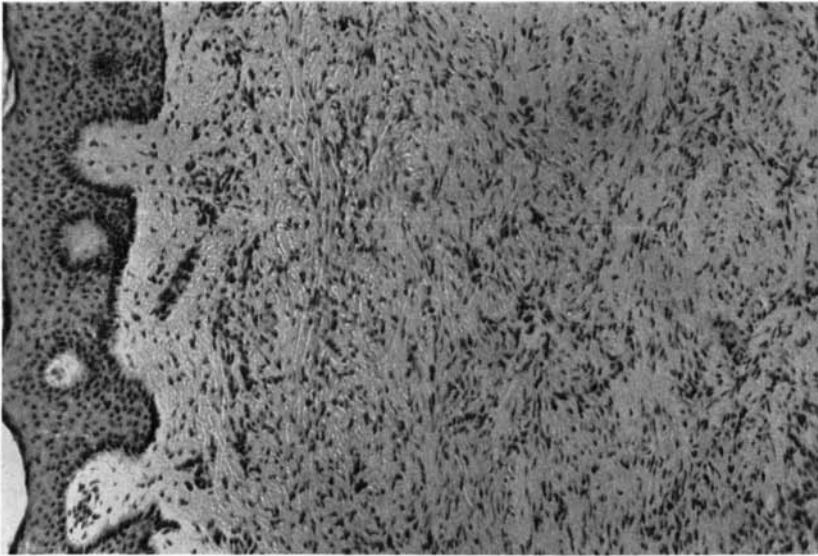


FIG. 3.—Subepidermal band between the epidermis and the lesion. Close resemblance of this picture with that of subepidermal fibrosis. H.E. X 100.

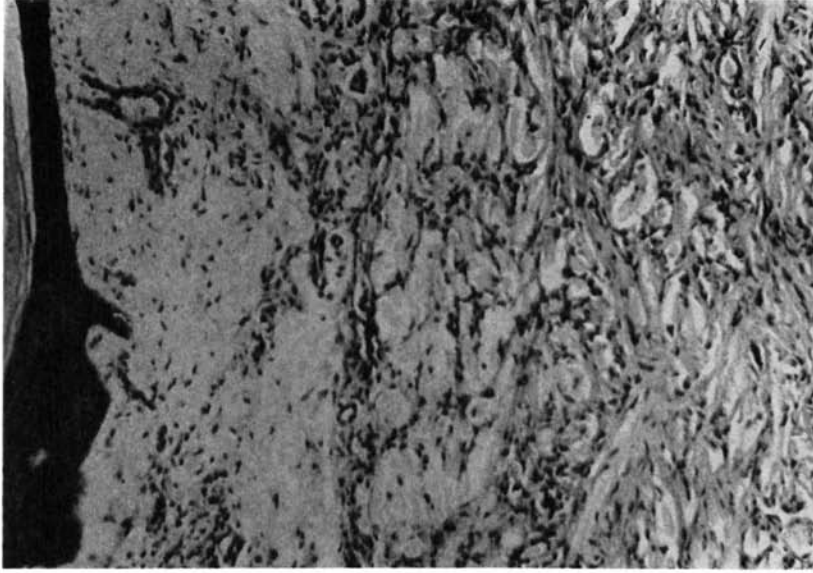


Fig. 6.—Epidermis showing an atrophic area. The main subepidermal fibrotic lesion is observed, with a perivascular lepromatous infiltrate in the left upper corner.



Fig. 5.—Picture showing two lepromatous cells containing markedly fragmented bacilli. Silver carbonate.  $\times 860$ .

out the nodule. These cellular elements represent true lepromatous cells, with cytoplasm containing variable numbers of leprosy bacilli, which were demonstrated by specific staining methods (Fig, 5). Lymphocytes and plasma cells were observed within the nodule in four cases; hair follicles and sebaceous glands were not demonstrated. A focal lepromatous infiltrate was always recognized in the dermis surrounding the subepidermal nodule. The lepromatous infiltrate varied from small collections, mostly perivascular, to large accumulations of Virchow cells around the hair follicles, sebaceous glands and adipose tissue of the hypodermis. Perception of the presence of this perinodular lepromatous infiltrate, and recognition of individual lepromatous cells within the subepidermal nodule, are of vital importance in the differential diagnosis between this peculiar microscopic variety of lepromatous leprosy and a benign subepidermal fibrotic lesion of the skin.

Staining methods for leprosy bacilli were positive in six of the seven cases studied. The number of bacilli and their appearance varied with each particular case (Table 1). The only negative case was a patient who had been under sulfone treatment continuously for more than one year.

#### SUMMARY

During its course lepromatous leprosy can develop a microscopic picture resembling nodular subepidermal fibrosis. A review of the files of the Instituto Dermatológico de Guadalajara revealed seven cases with this peculiar and important microscopic appearance. Identification of individual lepromatous cells within the subepidermal nodule and the presence of lepromatous infiltrate around the nodule are of vital importance in proper diagnosis of the lesion.

#### RESUMEN

Leprosia lepromatosa durante su curso puede desarrollar un cuadro microscópico similar al de fibrosis subepidérmica. Revisión de los archivos del Instituto Dermatológico de Guadalajara reveló la presencia de siete casos con este característico e importante cuadro microscópico. Identificación de células lepromatosas individuales dentro del nódulo subepidérmico, así como la presencia del infiltrado lepromatoso perinodular es de gran importancia para el diagnóstico correcto de la lesión.

#### RÉSUMÉ

Au cours de son évolution la lèpre lépromateuse peut développer un aspect microscopique qui ressemble à la fibrose nodulaire sous-épidermique. Une révision des archives de l'Institut Dermatologique de Guadalajara a révélé sept cas présentant ce tableau microscopique aussi spécial qu'important. L'identification des cellules lépromateuses individuelles à l'intérieur du nodule sous-épidermique et la présence d'infiltrat lépromateux autour du nodule revêtent une importance primordiale pour le diagnostic adéquat de la lésion.

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