

## GIANT CELLS AND INCLUSION BODIES IN THE LEPROUS SKIN LESIONS

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The occurrence of giant cells in leprous lesions and the appearance of inclusion bodies within them have been reported by various authors, including Mitsuda (<sup>1</sup>) and Hayashi (<sup>2</sup>). Recently, Croxatto (<sup>1</sup>) has studied giant cells and inclusion bodies in material from 300 cases of leprosy. The present author has also observed various types of giant cells in the skin lesions of leprosy, sometimes with inclusion bodies in them (<sup>3</sup>). The present article is, in effect, a translation of the previous report.

### MATERIAL AND METHODS

Skin biopsy specimens were obtained from 276 leprosy patients in the Suruga National Leprosarium. The clinical forms of these patients varied as shown in Table 1. Histologic examination of paraffin sections was performed after staining by the hematoxylin-eosin, van Gieson, and Mallory connective-tissue methods, and for elastic tissue and by silver impregnation. For demonstrating lipids and lepra bacilli in the same section, frozen sections were stained with Sudan III and then by the carbolie-acid fuchsin method.

### HISTOLOGIC FINDINGS

The histologic findings are summarized in Table 1. Giant cells were found in the specimens from 22 of 28 (78.5%) tuberculoid cases in the active, progressive stage, but none in tuberculoid cases in the stage of regression and absorption. In the specimens from cases of the lepromatous type, giant cells were encountered in 22 of 180 cases (12.2%). As regards the reactional stages of each type, giant cells were observed in 19 of 45 cases (42.2%) of erythema nodosum leprosum, in 3 of 4 cases of acute infiltration, and in 2 cases of acute exacerbation.

### RELATIONSHIP BETWEEN THE OCCURRENCE OF GIANT CELL AND CLINICAL SYMPTOMS

In the tuberculoid type giant cells are found only during the progressive stage. In such cases the lesions may be composed of almost pure epithelioid-cell tubercles, and sometimes the tubercles may consist of a moderate mixture of lymphocytes and giant cells of the Langhans type. In such tubercles the infiltration is found around the vessels and nerves in the dermis.

The tuberculoid lesion containing epithelioid cells may mature with the development of fibroblasts. In such a lesion the gradual transformation of reticulum fibers into collagen fibers may be well observed. The giant cells gradually decrease and finally disappear in the fibrotic lesion. Consequently, giant cells cannot be found in the healing phase of the tuberculoid leprosy lesion.

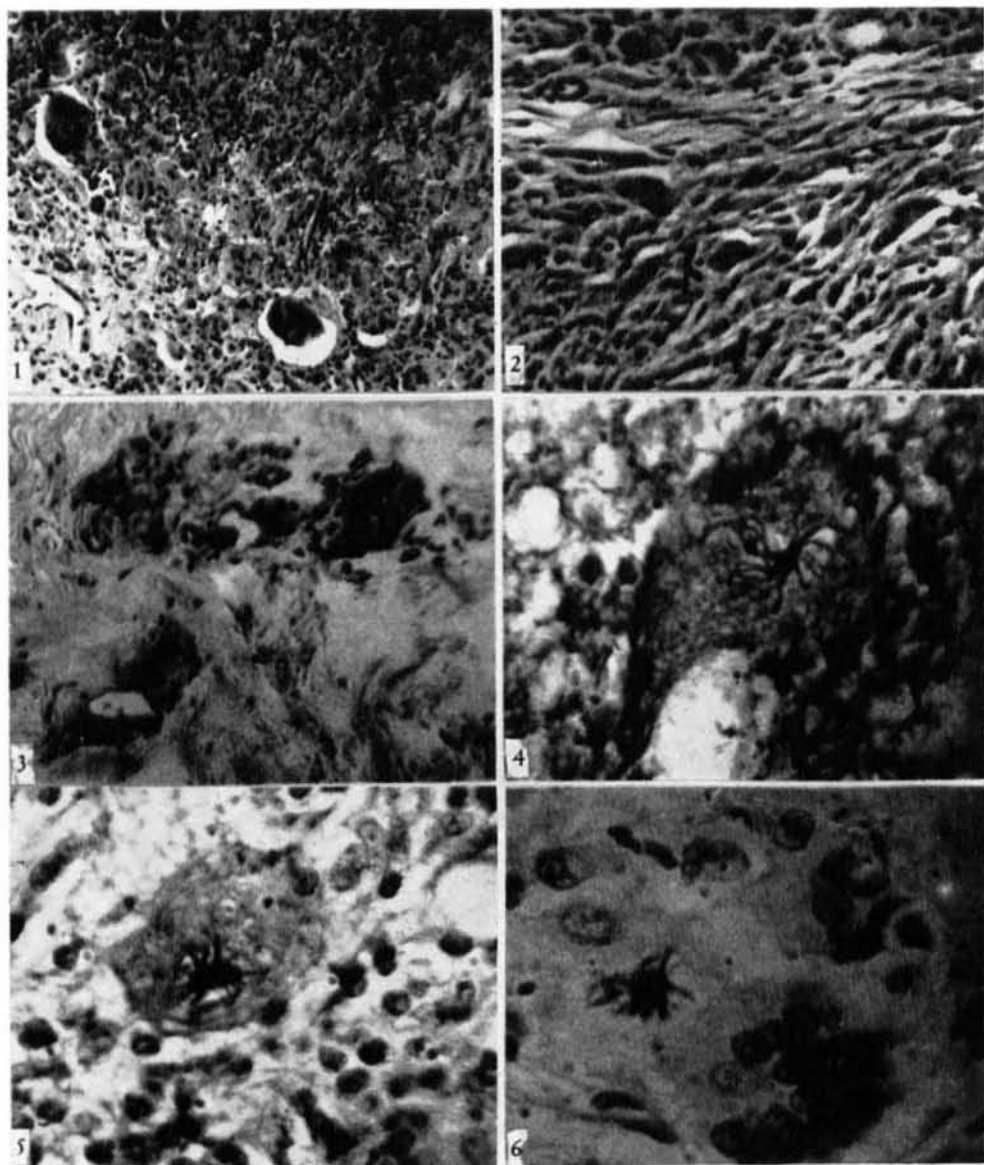
TABLE 1.—*The occurrence of giant cells and inclusion bodies in specimens of leprosy skin lesions from 276 cases.*

Clinical form and stage	Specimens examined	Specimens with giant cells	Specimens with inclusion bodies <sup>a</sup>
Tuberculoid, progressive	28	22 (78.5%)	0
Tuberculoid, regressive	17	0	0
Lepromatous	180	22 (12.2%)	9
Erythema nodosum leprosum	45	19 (42.2%)	3
Acute infiltration	4	3 (75.0%)	0
Acute exacerbation	2	2 (100%)	0
TOTAL	276	68 (24.6%)	12

<sup>a</sup> All inclusion bodies were of the Wolbach type, none of the Schaumann type.

In the lepromatous type, the cell infiltrate is massive in the upper dermis and focalized around the vessels and nerves in the lower dermis, and at times even in the subcutaneous fatty tissue. Histiocytes and lepra cells predominate, but also included are lymphocytes, plasma cells, and, in older lesions, fibroblasts. Giant cells may occasionally appear in the lesion, they being mainly of the foreign body type or the Touton type (Fig. 1), but rarely of the Langhans type. In a certain kind of lepromatous infiltration the giant cells seem to be formed as a result of confluence of the histiocytes (Fig. 2). Such foreign-body cells sometimes form under unusual circumstances (Fig. 3). As said, giant cells may also be seen occasionally in the reactional stages of leprosy, i.e., erythema nodosum leprosum, acute infiltration, or acute exacerbation.

Asteroid bodies (Figs. 4-6) were found in the giant cells in 9 of the 22 specimens of lepromatous leprosy in which those cells were found. Asteroid bodies were also found in giant cells of three specimens of erythema nodosum leprosum.



## DESCRIPTION OF PLATE

FIG. 1. Lepromatous granulation tissue containing many foamy cells and occasional multinucleated lepra cells, and Touton giant cells. In the Touton cells the nuclei lie near the center of the cell, grouped around a small island of nonfoamy cytoplasm and surrounded by foamy cytoplasm.

FIG. 2. Lepromatous granulation tissue, composed largely of spindle-shaped histiocytes which they tend to fuse together and form multinucleated foreign-body giant cells.

FIG. 3. Histiocytes tend to wander from the pericapillary regions, and sometimes they fuse together and grow to giant cells.

FIGS. 4-6. Asteroid bodies in giant cells

INCLUSION BODIES IN GIANT CELLS

In the lesion of sarcoidosis a moderate number of giant cells are usually present. Occasionally, the giant cells contain the so-called Schaumann inclusion bodies, which are round or doubly-contoured and laminated. On the other hand, asteroid bodies have also been found inside the giant cells of sarcoid lesions.

Croxatto (<sup>1</sup>) reported that giant cells in leprosy may contain either or both kinds of inclusion bodies. In this study however, only the asteroid body was found, not the Schaumann body. Although giant cells are usually found in tuberculoid lesions, they contain no inclusion bodies; such bodies are found only in lepromatous lesions, including erythema nodosum leprosum.

Although asteroid bodies can be demonstrated with all of the stains used, they are especially prominent after elastin staining or silver impregnation. They may take various shapes, and may resemble an insect, a spider, a chrysanthemum blossom, or a star. Each of the giant cells with asteroid bodies usually contains a single one, but occasionally two to four may occur together.

SUMMARY

1. The giant cells to be found in leprosy lesions belong to either the Langhans, the foreign-body, or the Touton type.

2. In the lesions of tuberculoid leprosy the giant cells are mostly of the Langhans type. They were found in 22 of 28 (78.5%) specimens from active, progressive cases, but in none of those from cases in the recessive, absorption stage.

3. In the specimens from cases of the lepromatous type, giant cells were found in 22 of 180 instances (12.2%). They were mainly of the foreign-body or the Touton type.

4. In reactional stages of lepromatous leprosy giant cells were observed in 19 of 45 cases of erythema nodosum leprosum, in 4 cases of acute infiltration, and in 2 cases of acute exacerbation.

5. Regarding the relationship between the occurrence of giant cells and clinical symptoms, it is concluded that they appear in the progressive stage of the tuberculoid type and in the recessive stage of the lepromatous type.

6. Inclusion bodies were found in giant cells in 9 specimens from lepromatous cases and 3 specimens of the erythema nodosum leprosum reaction, but were never seen in those of the tuberculoid type.

7. The inclusion bodies were of the asteroid type in all 12 cases; no bodies of the Schaumann type could be detected.

## RESUMEN

Las células gigantes que se encuentran en las lesiones leprosas pertenecen a la clase ya de Langhans, de cuerpo extraño o de Touton. En las lesiones de la lepra tuberculoidea las células gigantes son principalmente de la forma de Langhans. Se encontraron en 22 (78.5%) de 28 ejemplares procedentes de casos evolutivos activos, pero sin que ninguno procediera de casos en el período recesivo, de absorción. En los ejemplares procedentes de casos de la forma lepromatosa, se descubrieron células gigantes en 22 (12.2%) de 180, siendo principalmente de la forma de cuerpo extraño o de la de Touton. En los períodos reactivos de la lepra lepromatosa, se observaron células gigantes en 19 de 45 casos de eritema nudoso leproso, en 4 casos de infiltración aguda y en 2 casos de exacerbación aguda.

Con respecto a la relación entre la existencia de células gigantes y los síntomas clínicos, se deduce que aparecen en el período evolutivo de la forma tuberculoidea y en el período recesivo de la forma lepromatosa.

Encontráronse cuerpos de inclusión en células gigantes en 9 ejemplares procedentes de casos lepromatosos y en 3 ejemplares de la reacción de tipo eritema nudoso leproso, pero nunca en ejemplares de la forma tuberculoidea. Los cuerpos de inclusión fueron de la forma asteroidea en todos los 12 casos; no pudieron descubrirse cuerpos de la forma de Schaumann.

## REFERENCES

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