# TUBERCULOID CHANGES IN LEPROSY[1]

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In sixteen cases of macular leprosy under treatment in our policlinic, we have made histologic examinations of the skin lesions alone in seven cases, of a thickened peripheral nerve alone in one case, and of both skin and nerves in eight cases. In all but one instance the skin lesions showed the so-called tuberculoid condition—in the exceptional case only inflammatory changes of relatively slight degree were found—and the same condition was found in eight of the nerves examined.

According to their clinical appearances, these cases can be more or less clearly divided into the following forms: (1) lesions which are sharply contoured, but as regards the condition of the surface can hardly be differentiated from the healthy skin around them, though they may show a little desquamation. Disturbance of sensibility is complete. (2) Lesions which are more marked, but not very brownish-yellow or brownish-red in color. They are almost level with the neighboring healthy skin. Disturbances of sensibility are not especially marked. (3) Trichophytosis-like lesions with a peripheral, wall-like elevation, the central parts of which seem almost normal or are slightly depigmented. (4) Lesions with a warty surface and elevated edges, suggesting tuberculosis verrucosa cutis. (5) Lesions with gummatous ulcerations, a condition which rarely occurs in macular leprosy. (6) Lesions like lupus erythematosus.

Acid-fast bacilli were found in five cases. In one instance they were numerous, but in the other four they were few and mostly in the form of small fragments. The other cases were negative. Inoculation experiments on guinea pigs and white rats, made with all pieces of the skin and nerves, were all negative.

In the typical cases the histological changes could hardly be distinguished from actual tuberculosis. The vacuolate nature of the infiltrating epithelioid cells, which Kedrowsky considers to be a dis-

[1] From a translation, by Dr. A. C. Santos, of the authors' summary in *La Lepro*, 6 (1935) 37 (supplement). Original article in the Japanese language.
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tinguishing characteristic between leprosy and tuberculosis, is not a positive differential feature. Caseous necrosis, which is an outstanding characteristic of tuberculous change, is seldom observed in the leprous lesions; we found only small necrotic foci in the leprous granulations in a few of our specimens. The small vessels are generally increased and their walls frequently thickened, in fact they show at times the picture of an obliterating endarteritis. The areas of granulation tissue are scattered in the corium, or they coalesce to form larger conglomerations. These foci have in their centers a vessel, sweat gland or sebaceous gland, the sweat glands being especially often the sites of the infiltration. In cross-section the sweat glands or their excretory ducts frequently resemble giant cells. Probably there are giant cells that actually arise from the epithelium of the sweat glands, but genuine giant cells of the Langhan's type are found.

The changes in the peripheral nerves are more like those of true tuberculosis. Definite necrosis, which may be characterized as "caseous," is frequently observed—in fact it was present in almost all of the specimens that we examined. In this affection of the nerves the medullary sheath is first destroyed, and then the axis cylinder, after which there is proliferation of the granulation tissue, which is surrounded by connective tissue that originates from the endoneurium. Foci of such encapsulated connective-tissue lie scattered in the lesions of the nerves, or close together. These foci may coalesce with each other and, when they undergo necrosis they cause "nerve abscess." Two such lesions were found in our material.

We believe that the so-called tuberculoid changes are not caused by tubercle bacilli but by leprosy bacilli. The inoculation experiments in guinea pigs with pieces of tissue that showed the tuberculoid changes, which we made in all cases, were always negative, giving no evidence that the tissues contained the tuberculosis bacillus. Kedrowsky, Jadassohn, and Pautrier and Boetz, among many others, have had similar experiences. The result of the carefully controlled experiment of Tomikawa, of the dermatological clinic of the Kyushu Imperial University at Fukuoka, in which he succeeded in infecting guinea pigs with tuberculosis by inoculating them with material from tuberculoid leprosy, we consider as a very unusual incident in which the tuberculoid leprosy lesions happened to contain tubercle bacilli.

In two cases in which we examined together the skin lesion and the nerve in the same region, the latter showed a tuberculoid change, whereas in the former only simple inflammation was found. We suspect

that, in analogy to other cases, similar changes will appear sooner or later in the skin lesion.

The tuberculoid change is therefore not an unusual condition, as was formerly believed. At least it appears that, except in the nodular form of leprosy, it frequently occurs in skin lesions when the nerves are affected by the same change, either in the same region of the skin or elsewhere. Tuberculoid leprosy cannot, therefore, be considered a special form of the disease.

## DESCRIPTION OF PLATES

### PLATES 21 and 22

[The original article is illustrated with sixteen figures, of which fourteen are reproduced here from the printed article. No description of them can be given, since they are not referred to in the summary, but the correlation indicated in the following list has been made from the legends under them.—EDITOR.]

| | | |
|---|---|---|
| FIG. 1. | Case 1. | (See Fig. 7.) |
| FIG. 2. | Case 2. | (See Fig. 8.) |
| FIG. 3. | Case 4. | (See Fig. 10.) |
| FIG. 4. | Case 5. | (See Fig. 11.) |
| FIG. 5. | Case 9. | (See Fig. 12.) |
| FIG. 6. | Case 15. | |
| FIG. 7. | Case 1. | (See Fig. 1.) |
| FIG. 8. | Case 2. | (See Fig. 2.) |
| FIG. 9. | Case 3. | |
| FIG. 10. | Case 4. | (See Fig. 3.) |
| FIG. 11. | Case 5. | (See Fig. 4.) |
| FIG. 12. | Case 9. | (See Fig. 5.) |


Plate 21

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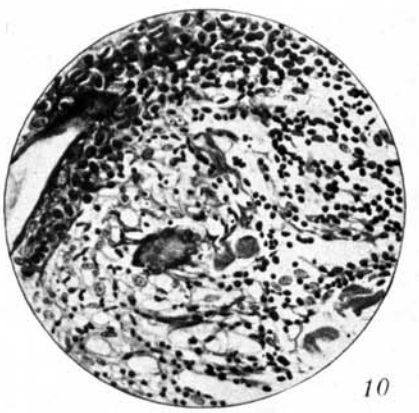

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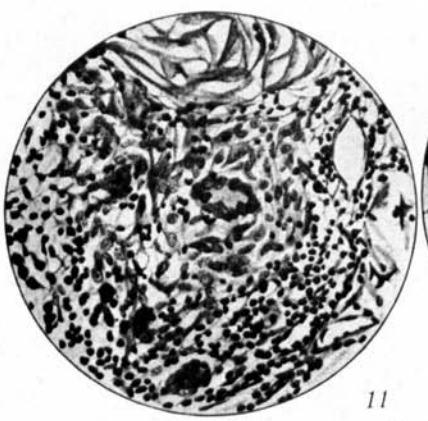

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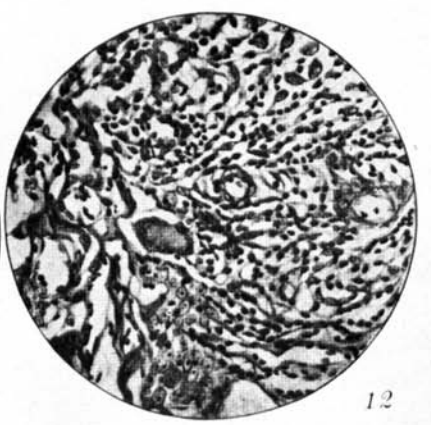

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Plate 22