SURVIVAL OF THE BACILLI OF LEPROMIN INJECTED INTRADERMALLY IN LEPROMATOUS AND TUBERCULOID CASES

This note is another one of unusual origin. In the course of personal correspondence one writer expressed the view that even the heat-killed bacilli in lepromin, injected intradermally, would persist in the inoculated site for long periods, regardless of the form of leprosy in the patient injected, saying that that opinion had been supported by various people consulted. The other writer, aware that bacilli injected into nonreactive animals, such as the mouse, or rat, or guinea-pig, had long since been shown to be long-persistent [e.g., H. C. de Souza-Araujo. Experimental leprosy. *Trans. Roy. Soc. Trop. Med. & Hyg.* **24** (1931) 577-597], was of the opinion that bacilli injected into a lepromatous case, in which no reaction to the injection occurs, might very well survive indefinitely, but that the bacilli injected into lepromin-positive tuberculoid cases would be destroyed in the course of the tissue reaction, for which they are the source of the antigen. This view was not accepted, observational proof being requested.

It was recalled that Drs. Fernandez and Schujman, both of Rosario, Argentina, had at some time investigated the matter, and they were asked for notes on their experience. Their replies form the basis of the following statements.

Dr. J. M. M. Fernandez.—In 1954 I published a paper[1] in which there are at least partial answers to your questions about the persistence of injected bacilli *in situ*. Unfortunately, this work was published in a little-known periodical and was ignored.

Of the several inquiries reported in that paper, one made on a few cases bears on the point. Details of late bacteriologic findings, after injection of a mortar-triturated suspension of a boiled leproma from an untreated case, are as follows:

Tuberculoid Case No. 1: At 96 hours after the injection, which had elicited an early reaction, there was an abundance of bacillary elements with their acid-fastness well preserved, but disintegration forms were also present. At 15 days there was only a small number of well-preserved acid-fast elements, with a predominance of amorphous, faintly acid-retaining elements and of bacilli in involution. On the 21st day the examination was negative, no acid-fast bacilli being found.

Tuberculoid Case No. 2: By the 7th day there was only a small quantity of well-stained elements, and none were found on the 10th day, but there were blue-staining forms in involution or disintegration. On the 21st day there were encountered very scarce bacillary remains, consisting of amorphous masses, with hardly a trace of the fuchsin stain, which gave the impression of disintegrated old globi.

Lepromatous Case: The one case injected gave only a very slight early erythematous reaction to the antigen, but no nodular reaction. Examinations made after 48 and 96 hours, and 15 and 21 days, all showed an abundance of acid-fast elements, morphologically well preserved.

Lepromin-positive dogs: In both of the dogs injected the antigen caused an intense 48-hour reaction, and the formation of an ulcerated nodule at 15 days. The bacteriologic findings were similar to those in tuberculoid leprosy cases: at 21 days no acid-fast bacilli or derivative forms were found.

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[1] FERNANDEZ, J. M. M. Bacteriología de la lepra. Investigaciones para dilucidar si el Mycobacterium leprae está muerto o vivo. Valor del método de Ziehl-Neelsen. Med. Panamericana **3** (1954) 345-358.

It may be concluded that, as the local tissue reaction is stronger in tuberculoid cases, the destruction of bacilli is greater. On the contrary, in lepromatous cases—and also in lepromin-negative indeterminate cases—the bacilli persist longer, without morphologic or tinctorial modification. We are now investigating what happens to *fresh* bacilli when injected intradermally in these kinds of cases.

Dr. S. Schujman.—During my stay in Brazil in 1936, I made a histopathologic study of the reactions provoked by lepromin in the different forms of leprosy.[2] More attention was paid to the structural changes than to the bacteriology, but there are data in the article which may be summarized as follows:

(*a*) In biopsy specimens of 2-day lepromin reactions (Fernandez' early reaction) of 5 tuberculoid cases, I was able to demonstrate bacilli in only 1 of them.

(*b*) Of 10 specimens of reactions in 10 other tuberculoid cases, taken from 4 to 30 days after injection, bacilli were not demonstrated in any.

(*c*) Of 10 specimens from typical lepromatous cases, taken 2 days after the inoculation, all were found positive for bacilli. It can be argued that the bacilli encountered were from the lepromin, because bacteriologic examinations of the sites made before the lepromin was injected were negative.

(*d*) Biopsy specimens were also taken from lepromatous patients after 21 days, but unfortunately I paid no attention to the bacteriologic examination, and the preparations were left in Brazil.

Since receiving your inquiry I have reviewed material at the Carrasco Hospital, biopsy specimens from lepromatous cases taken 21 days after the injection of lepromin, but have found no bacilli. It may be that the bacilli have lost their acid-fastness with the passage of the years. I am now repeating the experiment in some 15 cases, and hope to be able to give you new data on the matter.

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[2] SCHUJMAN, S. Histopatología de la reacción de Mitsuda. Estudio progresivo y comparativo de las reacciones tisulares que provoca en las diversas formas clínicas de lepra. Rev. brasileira Leprol. **4** (1936) 469-478.