

THE SPECIFICITY OF A BACILLUS ISOLATED FROM THE BLOOD OF LEPERS*

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SUMMARY

In May, 1933, I announced to the National Academy of Medicine, in Bogotá, that I had obtained in pure culture on Petrag-nani's medium an acid-fast bacillus from the blood of patients suffering from nodular leprosy. This bacillus has the same morphology, grouping and staining reactions as the *Mycobacterium leprae* found in the lymph and nasal mucus in leprosy. Since that time I have kept this organism in pure culture and so far have made over forty subcultures. During the past four years I have worked with material from 66 cases and have obtained cultures from 20 of them; i.e., 30.33 percent gave positive results.

I have endeavored to prove the identity of the bacillus and at present have succeeded in obtaining surprising results with a complement fixation test, using a methylic antigen prepared with my culture. In the preparation of the antigen Boquet and Négret's technique for making their tuberculous methylic antigen has been followed, and Kolmer's technique is used for the test. If anyone wishes to try the reaction I will gladly send him culture and antigen. The results obtained in 3,038 reactions are as follows:

First group.—638 reactions with serums from clinical and bacteriologically confirmed lepers. Of these, 63 gave positive results, i.e., 99.38 percent, practically 100 percent.

Second group.—360 reactions on patients who were clinically leprous but without bacilli in the lymph or mucous: maculo-anesthetic, nervous, etc., forms. Of these reactions 333 gave positive results, i.e., 92.5 percent.

Combining these two groups we have 998 reactions in leprous

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persons with positive results in 96 percent. I remark here that syphilis has no influence on my reaction, since among the first of these groups 47 percent gave positive results with the Wassermann and Kahn reactions, and in the second group 24.5 percent.

Third group.—211 reactions with serums of children of lepers resident in the leper colonies. Of these, 24 were positive, i.e., 11.38 percent. These children, on being examined by competent doctors, were in almost every case found to have symptoms that were suspicious, such as achromatic spots and slight anesthetics. In some cases ganglionic puncture was made, revealing Hansen bacilli.

Fourth group.—211 reactions on individuals who were apparently healthy but who live at the leper colonies with sick relatives. Of these reactions 39 were positive, i.e., 18.48 percent. On examining carefully these persons, the majority of whom were wives of lepers, it was found that all of them showed more or less suspicious symptoms; some had spots, others anesthetics, adenitis, etc. In some cases lymph node puncture revealed the bacillus.

Fifth group.—160 reactions on persons considered to be cured sufficiently to be able to mix with other people, or about to reach that stage. Of these, 61 were positive, i.e., 38.12 percent. Of these individuals who were considered sufficiently cured to be able to mix with other people but gave positive reactions, careful examination showed some clinical symptoms, and in some cases the Hansen bacillus was still to be found.

Sixth group.—264 reactions on individuals affected by diseases other than leprosy: tuberculosis syphilis, scleromas, mange, vitiligo, eczema, psoriasis, lupus, sundry adenopathies, epithelioma, acute malaria, amebiasis, tropical anemia, rheumatic erythema, etc. Of these there were 4 positives, an error of 1.52 percent. Of these four, one patient had rheumatic erythema and another had iritis, which might possibly have had leprous origin, but as they were outside patients we were unable to examine them.

Seventh group.—1,194 reactions on individuals who, so far as it was possible to ascertain, were healthy. Of these there was one positive, i.e., 0.09 percent, and that reaction was obtained from a woman on whose back were found achromic spots.

From the first part of my studies I have arrived at the following conclusions:

1. The complement fixation test in leprosy, using as antigen

a methylic extract of the culture of bacillus isolated by me from the blood of lepers, is specific.

2. Because of its sensitiveness the reaction enables us to discover unknown and latent cases of leprosy, and consequently insures an early diagnosis.

3. The reaction may assist the practitioner in doubtful cases, and it may be an important factor in the differential diagnosis of leprosy and other diseases.

4. The reaction, properly carried out and interpreted, may become the basis of really scientific prophylaxis of leprosy, and also of the control of the results of the treatment.

5. The results of the reaction furnish proof of unquestionable value with regard to the specificity of the bacillus isolated by me.

I have prepared from my cultures, by growing the bacillus in 4 percent glycerine bouillion, a product that I have named "leprolina," in the preparation of which I have followed the technique employed in preparing the *en bruto* tuberculin of Koch.

With this "leprolina" I make a test which consists in giving the patient an intradermal injection of 0.2 cc. of the glycerine extract. This intradermal reaction is positive in healthy individuals, in whom there is found 48 hours afterwards a warm erythematous papule, in the center of which a vesicle often appears. In some cases there is a general reaction. In leprosy the reaction is negative in a large number of cases. In view of these results I consider that the reaction is one of immunity, not of allergy.

My latest experiments have consisted in experimental inoculation of guinea pigs, rabbits, rats, white mice and monkeys. The culture is injected after being mixed with factor T of Duran Reynals of the Rockefeller Institute. In this way I have succeeded in producing in these animals lesions in the form of nodules, adenopathies, ulcers, etc. These lesions have been found to contain the bacillus with its typical grouping, both in smears and in histological sections. An anatomico-pathological study, made independently by three specialists, shows lesions that are very similar to if not identical with those of leprosy in human beings.