

Leprosy 10-3-57

LACK OF REACTIVITY TO TUBERCULOUS ANTIGEN OF LEPROSY SERA AS ASSAYED BY THE GLOBULIN TITRATION TECHNIQUE¹

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For over forty years, research workers have tried various preparations of the tubercle bacillus as antigens for the detection of antibody in sera from cases of leprosy. Existing views on the immunologic interrelationships between infections with *M. leprae* and *M. tuberculosis*, including BCG immunization, are conflicting.

Fujinami and Honda (²), who have long studied the compliment-fixation reaction in leprosy with antigens containing cephalin fractions, have recently compared them with an antigen consisting of the purified lipid fraction (oligomannoinositides) of BCG cultures. The former gave positive reactions with sera of leprosy and syphilis, the latter with sera of leprosy and tuberculosis, and they believe that with this combination the nonspecific reactions which obscure the serologic diagnosis of leprosy can be eliminated.

Dozier, Fusillo and Woodham (¹) have recently introduced a technique which has been used by Fusillo, Weiss and Dozier (³) for the demonstration of circulating antibodies to *M. tuberculosis* in patients with active tuberculosis. The technique, as shown in Text-fig. 1, is based on the theory that specific antibody globulin is extracted from serum by an antigen-antibody reaction with a polyvalent *M. tuberculosis* antigen. The adsorbed antibody is then assayed by a fall in titer of Coombs serum when human "O" Rh-positive cells sensitized with anti-D serum are used as the indicator system. Further studies by Fusillo and Weiss (⁴) with 17 BCG-immunized individuals indicated that no reactive circulating globulin measurable by the technique was elicited up to eight weeks after the BCG vaccination.

PRESENT REPORT

This report describes the results obtained when sera from 56 cases of leprosy were tested by the globulin titration technique.

It is shown in Table 1 that, in the cases studied—lepomatous leprosy with amyloidosis (11 cases), lepomatous leprosy with erythe-

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ma nodosum (2 cases), active lepromatous leprosy (29 cases), arrested lepromatous leprosy (8 cases), and inactive tuberculoid leprosy (6 cases)—no circulating antibody comparable to that demonstrated in active tuberculosis could be demonstrated. Parlett *et al.* (5), using an agar double-diffusion technique, have recently reported similar findings in 13 sera from leprosy cases using tuberculosis antigen.

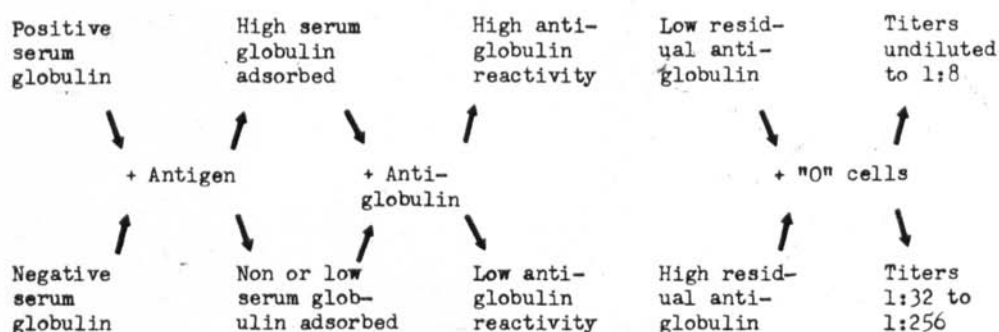


FIG. 1. Flow sheet of test procedure for tuberculosis globulin.

Previous studies have demonstrated a possible relationship between circulating antibody in tuberculosis and the appearance of circulating antistreptolysin antibody. It is interesting to note that in only 10 of the leprosy cases were the ASO titers negative (< 100 Todd units), and that 4 of these were "active" (i.e., bacteriologically positive) cases. The remaining 46 cases had levels ranging from 100 to 500 Todd units, with a mean of 311 units. The significance of the antistreptolysin titer is not understood.

TABLE I.—Results of serologic study of sera from 56 cases of leprosy, assayed with M. tuberculosis antigen by the globulin titration technique.

Type and variety	No. of cases	Duration of disease	Globulin titer	No. of cases	ASO titer range ^a
Lepromatous, with amyloidosis	11	11 to 30 yrs.	Negative	2 9	Negative 100-500 T.U. (mean 316)
Lepromatous, with ENL	2	7 to 8 yrs.	Negative		125 T.U. 100 T.U.
Lepromatous, active ^b	29	1 to 34 yrs.	Negative	4 25	Negative 100-500 T.U. (mean 380)
Lepromatous, arrested	8	20 to 38 yrs.	Negative	2 6	<100 T.U. 100-500 T.U. (mean 322)
Tuberculoid, inactive	6	17 to 42 yrs.	Negative	2 4	<100 T.U. 125-500 T.U. (mean 313)

^a Antistreptolysin antibody.

^b "Active" signifies only bacteriologic positivity.

The question of a blocking antibody between leprosy and tuberculosis has not been answered in this study. Unfortunately, no sera were available from patients suffering with concurrent leprosy and tuberculosis.

From this study it may be considered that the antigenic mosaic of the Hansen bacillus (*M. leprae*) is not related to *M. tuberculosis* with respect to the stimulation of a comparable circulating antibody globulin as measured by the globulin titration technique.

RESUMEN

Por este estudio cabe considerar que el mosaico antigénico del bacilo de Hansen (*M. leprae*) no guarda relación con el del *M. tuberculosis* con respecto a la excitación de una globulina comparable del anticuerpo circulante, medida la misma por la técnica de titulación de la globulina.

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