

## TUBERCULOSIS AND LEPROSY. CROSS DESENSITIZATION BETWEEN TUBERCULIN AND LEPROMIN

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Various studies made in recent years have shown that there is a close correlation between the lepromin and tuberculin reactions in the children of a population in which both leprosy and tuberculosis occur, and that BCG vaccination will convert a lepromin-negative person to a positive reactor—even, sometimes, patients with lepromatous leprosy, although in such cases the conversion is transient. This paper describes an investigation of the possibility of the reverse phenomenon, i.e., the question of whether or not desensitization to tuberculin will result in desensitization to lepromin. An attempt was also made to desensitize patients to lepromin to determine if that would result in desensitization to tuberculin.

### MATERIALS AND METHODS

*Densitization to tuberculin.*—Two patients with tuberculoid leprosy who had been under sulfone treatment for some months and who gave positive tuberculin and lepromin reactions were selected. They were skin-tested with (a) 10 TU of PPD tuberculin (State Serum Institute, Denmark), read at 72 hours; (b) a lepromin prepared to give the Mitsuda (21-day) reaction; and (c), an antigen prepared by Dharmendra's technique to give the Fernandez (72-hour) reaction.

Both patients were given a deep subcutaneous injection of 1 TU of the PPD tuberculin, and this dose was doubled every three or four days until a final dose of 1.3 cc. of tuberculin containing 50,000 TU per cc. was administered, i.e., 66,666 TU. Subsequently the patients were re-tested with tuberculin and lepromin.

*Desensitization to lepromin.*—Two patients with tuberculoid leprosy who had been under sulfone treatment for several years and who gave positive tuberculin and lepromin reactions were skin-tested with 10 TU of PPD tuberculin read at 72 hours and the two lepromin preparations described. An attempt was then made to desensitize these two patients by injecting increasing doses of a saline suspension of bacterial powder of *M. leprae* prepared by the method described by Dharmendra<sup>(1)</sup> with slight modifications. The initial dose given was the equivalent of 0.1 cc. of an N/10 Dharmendra antigen (i.e., 0.001 mgm. of powder). The dose was doubled every three or four days until a dose of 4.1 mgm. was reached. This dose resulted in a sterile abscess in both cases. A further injection of the same dose was given and a second abscess was

produced in each case. No further injections were given. Both patients were then re-tested with tuberculin and lepromin.

## RESULTS

The skin reactions of the two patients who were given a course of injections of tuberculin are shown in Table 1. It is clear that both patients were desensitized to the intradermal injection of 5,000 TU of tuberculin, but that there was no change in the reactions to lepromin.

TABLE 1.—*Lepromin and tuberculin reactions in two patients before and after desensitization to tuberculin.*

Case No.	Antigen	Reaction before desensitization (mm.)	Reaction after desensitization (mm.)
10744	Tuberculin	10 TU	0
		100 TU	0
		5,000 TU	0
	Lepromin	72 hrs	10
		21 days	7
12002	Tuberculin	10 TU	0
		100 TU	0
		5,000 TU	0
	Lepromin	72 hrs	9
		21 days	8

The skin reactions of the two patients who were given a course of injections of a suspension of *M. leprae* powder are shown in Table 2.

TABLE 2.—*Lepromin and tuberculin reactions in two patients before and after attempted desensitization with lepromin.*

Case No.	Antigen	Before course of injections (mm.)	After course of injections (mm.)
10909	Tuberculin	14	10
	Lepromin	72 hours	7
		21 days	9
9890	Tuberculin	17	6
	Lepromin	72 hours	8
		21 days	7

Patient No. 10909 had a smaller Fernandez reaction but an increased Mitsuda reaction after the course of injections. The reaction to tuberculin was slightly diminished. Patient No. 9890 showed little change in the lepromin reactions, but a drop from 17 mm. to 6 mm. in the case of tuberculin.

## SUMMARY AND CONCLUSIONS

Two patients with tuberculoid leprosy with positive lepromin and tuberculin skin reactions were desensitized to tuberculin with no change in the lepromin reactions. An attempt was also made to desensitize two similar patients to a suspension of bacterial powder of *M. leprae*, but sterile abscesses resulted and anomalous skin reactions were subsequently obtained.

It is clear that desensitization to tuberculin does not result in desensitization to lepromin. The attempt to desensitize to lepromin was unsuccessful. The marked decrease in the reaction of one of the patients to tuberculin is difficult to explain.

#### RESUMEN Y CONCLUSIONES

Dos enfermos que tenían lepra tuberculoidea con cutirreacciones positivas a la lepromina y la tuberculina fueron desensibilizados a la tuberculina sin que se alteraran las reacciones a la lepromina. También se trató de desensibilizar a dos enfermos semejantes a una suspensión de polvo bacteriano del *M. leprae*, pero se produjeron abscesos estériles y subsiguientemente se obtuvieron cutirreacciones anómalas.

Es manifiesto que la desensibilización a la tuberculina no da por resultado desensibilización a la lepromina. La tentativa de desensibilización a la lepromina no tuvo éxito. Es difícil explicar la notable disminución en la reacción de uno de los enfermos a la tuberculina.

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#### REFERENCE

1. DHARMENDRA. Studies of the lepromin test. (9) A bacillary antigen standardized by weight. *Leprosy in India* **14** (1942) 122-129.