

COMPARATIVE STUDY OF LEPROMIN REACTION IN INDETERMINATE LEPROSY AND CONTROLS

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Lepromin test (LT) was done on 100 cases of indeterminate leprosy (IL) and in 100, age and sex matched controls. LT was negative in 98% of IL, but positive in 80% of the controls. Lepromin positive cases showed a tuberculoid picture histopathologically, though the clinical picture was that of IL. There was no co-relation between Fernandez reaction and Mitsuda reaction.

Key words : Lepromin test, Indeterminate leprosy.

This study was undertaken to assess the immunological status of patients diagnosed as IL and to compare it with that in the age-sex-matched healthy controls.

Materials and Methods

The patients were diagnosed to have IL according to the criteria laid down by IAL in 1981.¹ Lepromin reaction was done in all 100 cases of IL and 100 age-sex-matched healthy controls.

The lepromin used was the standardised Dharmendra lepromin containing 1×10^6 organisms in 100 μ l obtained from Central Jalma Institute for Leprosy.

Biopsies of lepromin nodules were taken from lepromin Mitsuda positive cases and were stained with routine haematoxylin and eosin, modified Fite stain for AFB² and solochrome cyanin stain for myelin.³

To assess the potency of Dharmendra lepromin used in this study, the intradermal injection of the same antigen was given to 3 proved cases of lepromatous patients and 3 tuberculoid patients. In the 3 proved cases of lepromatous patients Mitsuda reaction was

negative, while it was 3+ in the 3 cases of tuberculoid leprosy.

The Fernandez reaction⁴ and Mitsuda reaction⁵ were recorded as per the criteria laid by Jopling.⁶

Results

Out of the 100 cases of IL, Fernandez reaction was read only in 60 cases, because the remaining 40 patients did not turn up for reading after 72 hours. However, Mitsuda reaction was studied in all 100 cases. A comparison of Fernandez reaction and Mitsuda reaction is given in table I.

Table I. Comparison of Fernandez reaction and Mitsuda reaction.

	Fernandez reaction	Mitsuda reaction
Negative (—)	18	58
Weakly positive (+)	21	—
Moderately positive (++)	14	1
Strongly positive (+++)	7	1
Total	60	60

Mitsuda reaction was read in all the 100 cases of age and sex matched healthy controls. Comparison of the results of Mitsuda reaction in IL and controls is shown in table II.

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Table II. Comparison of Mitsuda reaction in IL and controls.

	IL	Controls
Negative (—)	98	20
Weakly positive (+)	—	16
Moderately positive (++)	1	40
Strongly positive (+++)	1	24
Total	100	100

Microscopic examination of the biopsies of lepromin nodules from Mitsuda positive cases of IL revealed histopathologic picture of tuberculoid leprosy. The skin lesions of these two cases of IL also showed tuberculoid picture on histopathological examination.

Comments

Even though Fernandez⁴ found that the early reaction (Fernandez reaction) coincided with the late lepromin reaction (Mitsuda reaction) in the majority of cases, our study shows that there is little co-relation between the Fernandez reaction and Mitsuda reaction.

The fact that in the 3 proved cases of tuberculoid leprosy LT gave 100% positive results and in the 3 proved lepromatous cases LT was 100% negative, shows that the antigen used in this study was potent and predictable.

According to Dharmendra,⁷ the results of LT in indeterminate cases vary from negative to weak or moderately positive. But Bechelli⁸ has reported even strong late positive results in IL in Burma. They have reported that 36% cases of IL in Burma were strongly positive. But the Indian Association of Leprologists, while describing the features of IL, mentions that lepromin reaction varies from negative to doubtful in IL. Our study shows that Mitsuda reaction is negative in 98% of the cases and positive in only 2% of IL. This shows that

it is people with poor cell mediated immunity as evidenced by the lepromin test who develop the disease in an endemic area.

In healthy age-sex matched controls Mitsuda reaction is positive in 80% of cases. This shows that most of the people living in an endemic area who do not have the disease show evidence of effective cell mediated immunity, as detected by LT. Because they might have been exposed to subclinical infection of leprosy, they have developed good resistance to the disease. The healthy controls in whom the LT is negative need to be followed up, as they are more vulnerable to the disease.

Mitsuda reaction negativity in 98% of IL under study, suggests 2 possibilities. (1) A good proportion of them, if untreated, may evolve towards lepromatous form, (2) the immunological system has not yet determined the nature of the disease to develop. The more probable cause may be the latter.

The lepromin positive indeterminate cases showed tuberculoid picture on histopathological examination. Histopathological study of lepromin nodule in these cases also confirmed the tuberculoid nature of the disease.⁹

This further stresses the value of LT in deciding the immunological status and in turn the outcome of the disease in indeterminate leprosy.

It is worthwhile to do a study of LT in a normal population to detect negative cases which should be followed up for any evidence of leprosy in future.

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References

1. Dharmendra : Classification of leprosy adopted by Indian Association of Leprologists, Leprosy India, 1983; 55 : 148-152.
 2. Ridley DS : Pathology and bacteriology in early lesions in leprosy, Internat J Leprosy, 1979; 39 : 216.
 3. Page KM : Solochrome cyanine method for myelin stain, J Med Lab Technol, 1970; 27 : 1.
 4. Fernandez JMM : The early reaction induced by lepromin, Internat J Leprosy, 1940; 8 : 1-2.
 5. Hayashi F : Mitsuda's skin reaction in leprosy, Internat J Leprosy, 1933; 1 : 31.
 6. Jopling WH : Handbook of Leprosy, 3rd ed, William Heinemann Medical Books Ltd, London, 1984; p 48-49.
 7. Dharmendra : Leprosy, Vol II, Sumant and Co, Bombay, 1985; p 1011-1013.
 8. Bechelli LM : Late lepromin reaction in untreated patients with indeterminate leprosy under 21 years old in Burma, Bulletin World Health Organization, 1973; 48 : 113.
 9. Ridley DS : Skin Biopsy in Leprosy, Documenta Geigy, Switzerland, 1977; p 28.
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