

THE MITSUDA REACTION IN PERSONS WITH AND WITHOUT
HOUSEHOLD EXPOSURE TO LEPROSY

RICARDO S. GUINTO, M.D., JAMES A. DOULL, M.D.
Epidemiologist and Medical Director, respectively
Leonard Wood Memorial
AND EPIFANIO B. MABALAY, D.D.S.
Department of Health, Cebu, Philippines

It is a well established fact that persons exposed to lepromatous leprosy in the household have a much higher risk of contracting leprosy than persons who are not subject to such exposure but who are apparently comparable in other respects.

In the studies of the Leonard Wood Memorial (American Leprosy Foundation) and the Department of Health of the Philippines carried out in Cordova and Talisay, Cebu, Philippines, the relative risks for these two groups were found to be about eight to one (4). The risk for those exposed to the tuberculoid type was less than twice as high as for unexposed persons. The prevalence of leprosy as determined by examination of the entire population was 20.4 per 1,000 for Cordova in 1948, and 17.6 per 1,000 for Talisay in 1950-51. About one-third of the cases in each locality were of the lepromatous type.

In view of the emphasis being given to reactivity to lepromin, either acquired naturally or induced by BCG, as an indication of resistance, a comparison of the results of the lepromin test in persons known to have lived in household association with leprosy patients with the results in other persons resident in these municipalities is of timely interest.

Chatterjee (1) found that children with family contact showed a lower percentage of lepromin reactors than casual contacts or noncontacts of similar ages. Apparently the chance of becoming positive was lessened by close contact. Cochrane *et al* (2) reported a similar result, but the numbers of healthy contact and noncontact children included were small.

Souza Campos *et al* (7) tested 185 children, 2 to 16 years of age, of leprosy parents. Of these, 148 were separated at birth from their parents, and 37 were separated after varying intervals of exposure up to several months. The ages are not given in detail. The percentages of Mitsuda reactors were 89.2 for the exposed children, and 48.0 for those separated at birth.

A different type of study was made by Dharmendra and Jaikaria (3), who compared lepromin results obtained on 295 persons in Bankura, West Bengal, where leprosy was highly prevalent, with those on 270 persons in villages in the Punjab where it was uncommon. The percentages of persons of all ages who reacted to lepromin were 59.0 in Bankura and 36.0 in the Punjab. Age distributions are given, and adjustment for differences, using the total population of both areas as a standard, changes these figures to 61.9 per cent and 32.7 per cent, respectively. Accepting the comparison as fair in other respects, lepromin positives were twice as frequent in an area where leprosy was frequent as in one where it was uncommon.

METHODS OF PRESENT STUDY

Most of the lepromin tests here reported were made in Cordova in 1949. To obtain larger numbers of subjects exposed to leprosy in the household the work was extended to Talisay in 1950. In Cordova, tests were made in public schools and in homes; in Talisay, only in homes. Except for a few in Talisay, which were made and read by an experienced nurse, all tests and readings were performed by one of us (R.S.G.).

The method of preparing the lepromin used and the criteria for recording results have been previously described (5).

RESULTS

The findings have been consolidated in Table 1, which shows the numbers tested and proportions positive, by age groups, for persons without household exposure, those exposed to lepromatous leprosy, and those exposed to the nonlepromatous forms. In another report (6) it has been shown that reactivity to lepromin is not related to sex. The figures given, therefore, are for both sexes combined.

TABLE 1.—Frequency of late reaction to lepromin by age groups, in persons without household exposure and in those exposed respectively to lepromatous or nonlepromatous leprosy, Cordova and Talisay, Cebu.

Age group (years)	No household exposure		With household exposure			
	Number tested	Per cent positive	To lepromatous		To nonlepromatous	
			Number tested	Per cent positive	Number tested	Per cent positive
0-4	330	15.7	35	11.4	64	18.7
5-9	432	38.2	51	54.9	93	49.5
10-14	474	60.3	53	81.1	54	53.7
15-19	147	80.3	37	89.2	45	80.0
20 & over	468	96.4	244	95.5	151	92.7
Total	1,851	68.2 ^a	420	73.4 ^a	407	68.3 ^a

^a Adjusted for differences in age constitution. The age distribution of the combined populations of Cordova and Talisay, as enumerated in 1948 and 1950, respectively, was used as a standard.

In all three classes the frequency of reactors increased markedly with age, from a low point for children under 5 years of age to almost universal reactivity for those of 20 years and over.

Examining individual age groups, the only difference which approaches statistical significance is at 10 to 14 years, where the percentage for children exposed to lepromatous leprosy was higher than that for children

exposed to nonlepromatous forms. Further data on this point would be of interest.

The classes differ somewhat in age composition. To obtain comparable rates for all ages it was necessary to make adjustment for this difference. This was done by applying the age-specific percentages for each of the three classes to the numbers in corresponding age groups of a "standard" population, taken as the combined population of the two municipalities. When adjusted, it was found that the total percentage of reactors (68.2) was the same for unexposed persons as for those exposed to nonlepromatous leprosy (68.3), and only slightly higher (73.4) for those exposed to the lepromatous type.

SUMMARY AND CONCLUSIONS

1. A comparison has been made of the frequency of late reactions to lepromin in persons (a) exposed to lepromatous leprosy in the household, (b) exposed to nonlepromatous leprosy in the household, and (c) not known to have had household exposure to leprosy. All tested were residents of Cordova or Talisay, Cebu, Philippines.

2. In all three classes the proportions reacting increased with age from less than 20 per cent in children under 5 years of age to more than 90 per cent in persons of 20 years and over.

3. In the age group 5 to 9 years the proportions of reactors were not significantly different for the three classes. In the age group 10 to 14 years the proportion of those exposed to lepromatous leprosy who reacted to lepromin was not significantly higher than the average for all three classes. The difference between those exposed to lepromatous leprosy and those exposed to nonlepromatous forms for this age group is larger and approaches statistical significance. It suggests the need for further observations.

4. For all ages, after adjustment for differences in age composition of the three classes, the proportions of reactors were 73.4 per cent for contacts of lepromatous patients; 68.3 for contacts of nonlepromatous patients, and 68.2 for persons without household exposure to leprosy.

5. As far as can be judged from results of the lepromin tests, there is therefore no evidence of lower resistance in persons exposed to lepromatous leprosy in the household. On the other hand there is no definite evidence that such exposure increases the chance of acquiring reactivity to lepromin. Household exposure to nonlepromatous leprosy appears to have no influence on reactivity of contacts to lepromin.

SUMARIO Y CONCLUSIONES

1. Trázase aquí una comparación de la frecuencia de reacciones tardías a la lepromina en personas. (a) expuestas a lepra lepromatosa en el hogar, (b) expuestas a lepra no lepromatosa en el hogar, y (c) sin exposición conocida a la lepra en el hogar. Todas las comprobadas era residentes de Córdova o Talisay, Cebú, Filipinas.

2. En todas las tres clases, las proporciones de reactores aumentaron con la edad, de menos de 20 por ciento en los niños menores de 5 años a más de 90 por ciento en las personas de 20 años o más.

3. En el grupo de 5 a 9 años de edad, las proporciones de reactores no fueron muy distintas para las tres clases. En el grupo de 10 a 14 años de edad, la proporción de los expuestos a lepra lepromatosa que reaccionó a la lepromina no fué mucho más alto que el promedio para las tres clases. En este grupo, la diferencia entre los expuestos a lepra lepromatosa y los expuestos a formas no lepromatosas es mayor y casi posee importancia estadística, sugiriendo la necesidad de verificar nuevas observaciones.

4. Para todas las edades, después de ajustar las diferencias en la composición por edades de las tres clases, las proporciones de reactores fueron: 73.4 por ciento para los que tuvieron contacto con enfermos lepromatosos; 68.3 por ciento para los que tuvieron contacto con enfermos no lepromatosos; y 68.2 por ciento para las personas sin exposición casera a la lepra.

5. En lo que cabe juzgar por los resultados de la reacción a la lepromina, no hay, pues, signos de menor resistencia en las personas expuestas a la lepra lepromatosa en el hogar. Por otro lado, tampoco hay pruebas precisas de que tal exposición acreciente las probabilidades de adquirir reactividad a la lepromina. La exposición casera a la lepra no lepromatosa no ejerce al parecer el menor influjo sobre la reactividad de los contactos a la lepromina.

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