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A NOTE ON THE LEPROMIN REACTION
IN MALES AND FEMALES OF THE GENERAL POPULATION
OF CORDOVA, MACTAN ISLAND, CEBU, PHILIPPINES

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As a general rule lepromatous leprosy is more frequent in males than in females, although usually no sex disparity is observed in the tuberculoid type. The excess of the lepromatous type in males in the municipality of Cordova, Cebu, has been noted in previous publications (1, 2, 3, 5). Three complete surveys of the population have shown the following prevalence rates per 1,000 of each sex for this form of the disease: 1933, males, 17.1 and females, 4.2; 1941, males, 12.9 and females, 3.3; and 1948, males, 10.6 and females, 2.4. Furthermore, it has been shown (2) that the excess prevalence of the lepromatous type cannot be attributed to longer duration of the disease in males, with consequent accumulation of cases, but is the result of higher attack rates. For the 15-year period 1933-1948, the average annual attack rate for lepromatous leprosy was for males 0.59 per 1,000, and for females 0.12, a ratio of about 5 to 1.

Although excess frequency of the lepromatous type in males is an established fact, the cause is unknown. Males may be more susceptible to infection than females, subjected to greater exposure, or both. Certain field observations suggest that greater susceptibility of males rather than greater exposure may play the major role. It has been found, for example (2), that under conditions of household exposure to leprosy where opportunity for contact would appear to be more or less the same for males as for females, the secondary attack rate is not only substantially higher for males but the excess is observed as early in life as the age group 5 to 9 years.

In lepromatous leprosy the lepromin test is almost always negative, whereas in the more benign tuberculoid type it is usually positive. For this reason reactivity to lepromin is widely interpreted as indicating some degree of resistance. If, therefore, the excess of the lepromatous type in males is attributable to lower resistance, an indication of this condition might be expected in the comparative results of lepromin tests in males and females of the general population.

In the literature there are few reports on the lepromin test in which the sexes are compared. Rotberg (8) tested 315 healthy children of leprosy parents, 179 males and 136 females. These were for the most part under 15 years of age. The numbers for individual years of age are not given by sex, but a similar age distribution may be assumed for each sex. On this assumption, the percentage of all males showing a positive Mitsuda reaction was 50.2; and of females, 42.6. Lara (6) tested 66 Cullion

children, of ages from 1 to 5 years, all of leprous parentage, and found a higher percentage of Mitsuda positives among the males. In a second series of 110 children limited to those from a few weeks to 18 months of age, the same author (7) found that the "reactions were not influenced by the sex."

PRESENT STUDY

The present report deals with results of the lepromin test made in 1949 on 1,851 persons of all ages, 776 males and 1,075 females, resident in Cordova and not known to have had household association with leprosy. All had been examined less than a year previously and found free from signs of the disease. Most of the individuals aged from 7 to 14 years were tested in the public schools; other children, and all adults, were tested in their homes.

The methods of preparing lepromin, testing, and reading have been described (4). Several batches of lepromin were used; all were prepared in the same manner by one of us (E.B.M.). Tests on a total of 56 lepromatous patients were made with these preparations; all were negative. The site of testing in the present series was the outer aspect of the left upper arm. Tests and readings were made by one of us (R.S.G.).

RESULTS

Early reactions.—Only 96 or 5.2 per cent, of the 1,851 persons tested showed an early (Fernandez) reaction with infiltration larger than 10 mm. in diameter. For males, the percentage reacting was 3.9; for females, 6.1.

TABLE 1.—Observed late (Mitsuda) reactions to lepromin, by sex and age, in 1,851 persons without known household exposure to leprosy, Cordova, 1949.

Age group (years)	Males		Females	
	Number tested	Per cent positive	Number tested	Per cent positive
0- 4	153	17.7	177	14.1
5- 9	198	38.8	234	37.6
10-14	220	57.8	254	62.6
15-19	74	74.8	73	78.4
20 & over	131	94.6	337	97.0
Total	776	66.5 ^a	1,075	69.9 ^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.

Late reactions.—The results of readings made from 22 to 25 days after testing (Mitsuda reaction) are shown by sex and age in Table 1.

In both males and females the percentages of late reactors are seen to increase, strikingly and to about the same degree, from a low proportion for those under 5 years of age to almost universal reactivity for those of 20 years and over. There was no significant difference between the lepromin response of males and that of females in any age group. The groups differed somewhat in age composition. Comparable rates for males and females of all ages were obtained by using the age distribution of the combined populations of Cordova and Talisay as a standard. The adjusted rate for males was 66.5 per cent and for females, 69.9 per cent, a difference too small to warrant consideration.

SUMMARY

In view of the current interpretation of reactivity to lepromin as an indication of resistance to lepromatous leprosy, and of the much greater frequency of lepromatous leprosy in males than in females, a comparison has been made of the results of the lepromin test in 776 males and 1,075 females of the general population of Cordova, Mactan Island, Cebu. Those tested were not known to have had household exposure to leprosy, and all were free from signs of the disease when examined within a year prior to testing.

The number of acceptable positive early (Fernandez) reactions was extremely small; 3.9 per cent in males and 6.1 per cent in females. The proportion of late (Mitsuda) reactions increased from 17.7 per cent for males and 14.1 per cent for females under 5 years of age to 94.6 and 97.0, respectively, for those of 20 years and over. No substantial difference between the sexes was found in any age group. For all ages, after adjustment for differences in age constitution, the percentage of late positives was for males, 66.5 per cent and for females, 69.9 per cent.

As far as reactivity of apparently healthy persons to lepromin may be accepted as an indication of their resistance to leprosy, there is no evidence in these results that males are less resistant than females.

SUMARIO Y CONCLUSIONES

En vista de la corriente interpretación de la reactividad a la lepromina como indicación de resistencia a la lepra lepromatosa, y de la frecuencia mucho mayor de esta forma de lepra en los varones que en las mujeres, se hizo una comparación de los resultados de la lepromino-reacción en 776 varones y 1,075 mujeres de la población general de Córdova, Isla de Mactán, Cebú, I. F. Los comprobados no habían tenido, en lo que se supo, exposición casera a la lepra, y todos estaban exentos de signos de la enfermedad, al ser examinados en término de un año antes de la comprobación.

La proporción de reacciones tempranas o precoces (Fernández) positivas aceptables fué sumamente pequeña: 3.9 por ciento en los varones y 6.1 por ciento en las mujeres. La proporción de reacciones tardías (Mitsuda) aumentó de 17.7 por ciento para los varones y 14.1 por ciento en las mujeres de menos de 5 años de edad a 94.6 y 97.0, respectivamente, en las personas de 20 años o más. No se descubrió ninguna diferencia substancial entre los sexos a ninguna edad. Para todas las edades, después

de ajustar las diferencias en cuanto a composición por edades, el porcentaje de positivas tardías fué para los varones de 66.5, y para las mujeres de 69.9.

Hasta donde cabe aceptar la reactividad a la lepromina en personas aparentemente sanas como indicación de su resistencia a la lepra, no ofrecen prueba estos resultados de que los varones sean menos resistentes que las mujeres.

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