CHILDREN OF LEPROSY PATIENTS ISOLATED AT BIRTH, GIVEN LEPROMIN AND BCG INJECTIONS, THEN RETURNED TO THE COLONY, FIRST REPORT[1]

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The earliest efforts to protect Culion-born children from infection with leprosy consisted in sending groups that were still apparently untainted to an orphanage in Manila. That, however, proved unsatisfactory to the inmates, so later a Children's Home was built just outside the colony proper where the children could be visited under sanitary precautions. The capacity and facilities of the home, however, were limited. Isolation at birth was not attempted, presumably for fear of high mortality, but it was soon concluded that children should be isolated not later than the age of six months if they are to be saved from infection. Certain unpublished official reports, and several publications (1, 3, 5, 8), have recorded cases that occurred among those isolated at higher ages.

From 1925 to 1941 all that could be done was to isolate some children temporarily at the home (later called the Nursery) and then transfer them to the Welfareville institution near Manila, although some were released directly to relatives outside. At no time was it possible to remove the new-born infants from their mothers. Some of the few children who had been discharged to nonleprous relatives after only six months or less of exposure were later returned with established leprosy (5). The nursery was closed during the war and so remained up to 1948.

BACKGROUND OF PRESENT WORK

Postwar joint U. S. P. H. Service-Philippine Health Department rehabilitation work made possible the first attempt to isolate children immediately at birth in the reopened nursery, commencing in May 1948. It was at first intended to transfer these children as early as possible to Manila, but there was no institution ready to take care of infants, and —considering earlier experience at Welfareville—it was objected that the mortality would be very high. It was, therefore, decided to keep them in the nursery for about three years, in the hope that by that time arrangements could be made for their care and upbringing outside.

In February 1949, with the nursery already half-filled and the prospect of doubling its capacity practically assured, a long-term plan for the care and study of these children was approved, and funds to provide for additional temporary personnel were secured. The proposal called for three groups, all isolated at birth: one to be reared only in a nonleprous environ-

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ment, another to be returned to the parents after varying periods of isolation, and the third to be similarly returned but only after having been made strongly reactive to lepromin through repeated testing.

The objective was the elucidation of several fundamental questions bearing on the transmission of leprosy. These were, specifically: (1) the role of congenital transmission; (2) the range of age susceptibility; (3) the possibility of specific immunization as apparently suggested by our previous observations (5); and (4) the occurrence and extent of spontaneous healing in childhood leprosy.

Unfortunately, termination of the aid from the U. S. P. H. Service and other restrictions of budget eventually made it impossible to carry out the entire expanded program for the nursery phase of the work. It, therefore, became necessary to make adjustments to permit attaining solution of at least some of the questions indicated, preferably the first and the third, which have more immediate practical implications.

SCOPE OF STUDY; PROCEDURE

When in October 1949 the full capacity of the nursery had been reached, admission of newly-born babies had to be discontinued except in replacement of those that might be discharged or returned to their parents. It was decided, as originally had been planned for only the proposed third group, to submit all of the children to repeated injections of lepromin (Mitsuda tests) until fairly strong reactions (2+ at least) should be obtained, after which they would be returned to the colony. Their eventual return was made unavoidable by further financial difficulties.

A complication arose in the unexpected relative refractoriness of a large proportion of the children to the effects of the injections, a number of them showing only 2+ reactions after many repeated tests. In the hope of further intensifying these moderately strong reactions, BCG vaccination—first by multipuncture, repeated later by intradermal injection —was resorted to commencing in 1952. Surprisingly enough, this did not materially intensify the reactions to lepromin (4).

Since October 1954 most of those who have attained 2+ or 3+ Mitsuda reactions have been returned to the colony. Also returned were a few others who had been successfully and repeatedly vaccinated with BCG only and had developed Mitsuda positivity, in order to ascertain the value of this measure of leprosy prophylaxis which was recommended by the Madrid congress (7).

To detect as early as possible the appearance of unequivocal lesions of leprosy, regular bimonthly physical examinations of all the children were made, as has been done since 1932, most of the examinations of those born since 1948 being made by one of us (C. B. L.). The examination of scraped-incision smears of lesions was done chiefly by technical aides, while one of us (J. O. N.) made practically all of the histologic examinations and diagnoses. In a few cases (some of them while Dr. Nolasco was on a study tour abroad) stained sections were referred to Dr. C. Manalang,

formerly pathologist in the Department of Health. The skin tests and BCG vaccinations were performed by the other two of us (C. A. P. and J. L. I.). The biopsy specimens were removed by either Dr. J. O. Tiong or Dr. A. F. Laureola.

Regarding the operation of the nursery, it should be pointed out that sanitary precautions include pre-employment and subsequent periodic physical examinations of all personnel, use of a disinfecting basin for shoes, independent linen and utensils, and hygienic handling of food. They do not include wire-mesh screening of windows, but insecticide spraying is done occasionally.

GENERAL OBSERVATIONS

The present report deals mainly with the children isolated since the reopening of the nursery in May 1948, and more particularly with those who have been under continuous observation for at least three years. The findings and observations of this group so far will be compared, where this is possible, with those of the contemporaneous, unisolated children, especially those left exposed in the colony after the capacity of the nursery was filled.

Although started about eight years ago, this study as yet cannot provide full information for assessing the situation regarding the objectives enumerated above. More years of observation are necessary, and a larger number of children should be isolated. Meanwhile, the work is constantly subjected to uncontrollable influences, including discharges, transfers and deaths of children, and shifting of personnel. A number of the children have been released to relatives, and they cannot be followed up adequately. However, some of the data already gathered may now be interpreted, we think, definitively.

From previous and more recent experience (5, 6) we had learned that a peak incidence of leprosy among children exposed from birth is reached within their first three years of life. That period of continuous observation should, therefore, be considered a minimum for any such study. We have given this factor due importance in our interpretations. In Table 1 are listed all of the 100 children isolated at birth in the nursery from May 1948 to March 1956, with pertinent data for each of them up to the latter date.

FINDINGS AND DISCUSSION

During isolation in the nursery.—Not one of the 100 children isolated during this period of practically eight years, 51 of whom had remained continuously in isolation from 3 years 1 month to 6 years 3 months, showed any lesion of leprosy while still in the nursery. Of 127 unisolated children born from October 1949 to March 1953 who have been under continuous observation in the colony for at least 3 years, 46, or 36.2 per cent, have developed unequivocal leprous lesions. From these observations alone we feel justified in concluding that leprosy is seldom if ever transmitted during prenatal life.

After discharge from the nursery.—All of the 66 children released from the nursery (not counting one who died at the age of 10 days of a

congenital heart defect) were still nonleprous at the time of discharge. They are considered here in two groups: 11 children released to guardians outside, including outgoing "negative" parents, and 55 returned to their parents in the infected environment of the colony. This second group has been subject to regular bimonthly follow-up examinations.

Of the first group, five have not been heard from since they were removed from Culion: No. 16 (who lived with negative parents in the nonleper section of Culion and could be examined regularly, and who was still nonleprous when he was finally taken away when a little over 2 years old), and Nos. 23, 44, 53 and 54. Four (Nos. 1, 2, 3, and 15) have been seen by us or by other leprologists more than once since release and were still nonleprous in recent months.

The other two of the first group, Nos. 12 and 24, were returned to Culion surreptitiously by their parents still nonleprous, but they subsequently developed lesions and are still in the colony. Both had been discharged to negative mothers who received them on board an outgoing ship and took them to presumably nonleprous environments. These cases present points of interest.

No. 12 was brought back by the negative mother at the age of 3 years 9 months. After 2 years 5 months in the colony he developed a typical wheal-like lesion, histologically and bacteriologically confirmed as leprous.

No. 24, who had been only 23 days in the nursery, remained outside for 1½ years after which he was brought back by his negative father at the age of 1 year 7 months. After three years of exposure he developed a typical early lesion, a flat macule, confirmed by histologic and bacteriologic examinations.

No. 12 had received four lepromin injections but became only 1+ Mitsuda positive. No. 24 had not been given any lepromin injection. Neither had received BCG vaccination.

With both of these children there is a remote possibility that their negative mothers were the sources of the infection. It seems more probable, however, that infection took place after their return to the colony, where they had unlimited contact with active, bacteriologically-positive cases. The time elapsed from their return to the appearance of the first recognizable lesions closely approximates the average age at onset—i. e., the incubation period—of constantly-exposed contemporaneous children with similar prototype lesions (6). This observation is suggestive, but the finding might have been also a chance coincidence.

It may be noted that the age of nearly four years of No. 12 on his return to Culion, and his four lepromin tests with (only) 1+ positivity while in the nursery, did not provide sufficient resistance to prevent development of an early lesion. No. 24, who had been isolated only 23 days before he was taken away and was returned to the colony under two years of age, might properly be regrouped among the unisolated children. In both cases the lesions that developed, both only partially biopsied, have apparently completely subsided without recurrence for about one year up to the present.

TABLE 1.—*Status of children isolated at birth, as of time of discharge or March 1956 (if still in the nursery).*

Case, name and sex	Date born and isolated	Date discharged from nursery[1]	Mitsuda tests			BCG vaccinations[2]		Age when discharged (or in Mar. '56)[3]
			No.	Maximum reaction				
				Before BCG	After BCG	M.P.	I.D.	
1. E.N., M*	5-11-48	7- 5-54	9	2+	2+	2	2	6y. 1m.*
2. E.C., F*	5-11-48	12-26-52	7	2+	2+	2	0	4y. 7m.*
3. F.B., M*	6-18-48	10- 2-54	8	2+	3+	1	1	6y. 3m *
4. C.B., F	7-18-48	10-16-54	9	2+	2+	2	2	6y. 3m.
5. E.A., M	7-27-48	10-13-54	9	2+	2+	2	2	6y. 2m.
6. C.S., M	8-18-48	10- 1-54	5	3+	....	0	0	6y. 1m.
7. V.M., F	8-25-48	10-11-54	9	2+	2+	2	2	6y. 1m.
8. A.O., M	8-29-48	10- 1-54	5	3+	....	0	0	6y. 1m.
9. L.R., F	8-31-48	10- 1-54	6	3+	....	1	1	6y. 1m.
10. T.M., F	9-30-48	10- 1-54	5	3+	....	0	0	6y.
11. A.M., M	10- 5-48	10- 1-54	6	3+	....	1	1	5y. 11m.
12. P.K., M*	10- 5-48	4- 9-51	4	1+	....	0	0	2y. 6m.*[a]
13. J.B., M	10-19-48	10- 1-54	6	3+	....	1	1	5y. 11m.
14. C.V., M	11-15-48	10- 3-54	6	3+	....	2	0	5y. 10m.
15. A.M., M*	11-21-48	7- 1-51	5	2+	....	0	0	2y. 7m.*
16. A.R., M*	12- 1-48	8- 9-49	0	....	....	0	0	8m.*
17. C.A., F	12-15-48	10-13-54	9	2+	3+	2	2	5y. 10m.[b]
18. V.B., M	12-23-48	10- 4-54	6	3+	....	0	1	5y. 9m.
19. A.F., F	1-21-49	10- 1-54	5	3+	....	0	0	5y. 8m.
20. M.D., M	1-26-49	10- 2-54	6	3+	....	1	0	5y. 8m.
21. T.M., F	2- 6-49	10- 1-54	6	3+	....	2	2	5y. 7m.
22. C.B., M	2-13-49	10- 1-54	6	3+	....	2	2	5y. 7m.
23. T.L., F*	2-19-49	11- 5-50	4	2+	....	0	0	1y. 8m.*
24. A.V., M	3-15-49	4- 7-49	0	....	....	0	0	23d.[c]
25. F.C., F	3-21-49	10- 1-54	9	2+	2+	2	2	5y. 6m.
26. C.C., M	4-12-49	10- 1-54	5	3+	....	0	0	5y. 5m.
27. V.P., F	5- 3-49	10- 1-54	6	3+	....	1	1	5y. 5m.
28. P.T., M	5- 4-49	10- 1-54	6	3+	....	2	1	5y. 4m.
29. N.V., M	5-16-49	10- 1-54	9	2+	2+	2	2	5y. 4m.
30. A.V., F	6- 3-49	10- 1-54	6	3+	....	1	0	5y. 4m.
31. F.L., F	6- 4-49	10- 1-54	6	3+	....	1	0	5y. 3m.
32. J.P., M	6-21-49	10- 1-54	9	2+	2+	1	1	5y. 3m.
33. D.T., M	6-23-49	10- 1-54	6	3+	....	2	0	5y. 3m.
34. C.M., M	6-24-49	10- 1-54	5	3+	....	1	1	5y. 3m.[d]
35. F.M., M	7-30-49	10- 1-54	5	3+	....	0	0	5y. 2m.
36. I.P., M	7-31-49	10- 1-54	5	3+	....	1	1	5y. 2m.
37. V.D., F	8- 2-49	10- 4-54	5	3+	....	2	1	5y. 2m.
38. A.B., M	8- 2-49	11- 2-54	9	2+	2+	2	2	5y. 3m.
39. A.A., F	8- 8-49	11- 2-54	6	3+	....	2	2	5y. 2m.
40. C.B., M	8-12-49	11- 2-54	6	3+	....	1	0	5y. 2m.
41. P.M., M	8-16-49	11- 2-54	9	2+	2+	2	2	5y. 2m.
42 J.B., M	8-19-49	11- 6-54	6	3+	....	1	2	5y. 2m.
43. A.B., M	8-28-49	11- 3-54	5	3+	....	0	0	5y. 2m.
44. G.D., M*	9- 1-49	1- 2-54	5	3+	....	1	0	4y. 4m.*
45. V. M., F	9- 1-49	11- 2-54	5	3+	....	0	0	5y. 2m.
46. N.G., M	9- 1-49	11- 3-54	5	3+	....	1	2	5y. 2m.
47. R.S., M	9- 3-49	11- 2-54	5	3+	....	0	0	5y. 2m.
48. R.L., F	9- 4-49	11- 2-54	5	3+	....	0	0	5y. 2m.[e]
49. M.A., F	9-17-49	11- 2-54	6	3+	....	0	1	5y. 1m.
50. J.M., M	9-18-49	11- 2-54	5	3+	....	0	0	5y. 1m.
51. R.A., M	10- 1-49	11- 6-54	6	3+	....	2	1	5y. 1m.
52. R.S., F	10- 2-49	11- 2-54	5	3+	....	2	1	5y. 1m.[f]
53. M.D., F*	6- 3-50	3-18-51	0	....	....	0	0	9m.*
54. E.D., M*	5-30-51	4-19-52	1	1+	....	0	0	10m.*
55. N.S., F	7-23-51	4- 2-55	6	±	2+	1	1	3y. 8m.
56. A.A., F	8-15-51	3-25-55	4	±	3+	1	1	3y. 7m.

TABLE 1.—Continued

57. T.M., F	10-10-51	7- 5-55	8	—	2+	1	1	3y. 8m.
58. J. A., M	2-12-52	3-22-55	4	....	3+	2	1	3y. 1m.
59. S.P., F	12-19-52	3-25-55	3	....	3+	0	1	2y. 3m.
60. N. A., M	7-15-53	8- 6-55	4	—	2+	1	1	2y. 1m.
61. B. V., M	2-18-54	8- 6-55	7	2+	....	0	0	1y. 5m.
62. E.S., F	7-21-54	8- 6-55	1	....	1+	2	2	1y. 1/2m.
63. C.L., M	10-25-54	11-16-55	1	....	2+	1	2	1y. 3/4m.
64. C.M., F	10-25-54	.....	7	1+	....	0	0	1y. 5m.
65. R.A., M	11-28-54	3-19-56	1	....	1+	2	2	1y. 3m.
66. M.P., F	12- 2-54	.....	7	1+	....	0	0	1y. 3m.
67. E.M., F	12-10-54	2-17-56	1	....	1+	1	2	1y. 2m.
68. E.L., F	12-16-54	.....	6	1+	....	0	0	1y. 3m.
69. L.A., F	12-17-54	.....	1	....	1+	1	2	1y. 3m.
70. E.S., F	12-27-54	.....	6	1+	....	0	0	1y. 3m.
71. S.B., M	1-12-55	.....	1	....	1+	1	2	1y. 2m.
72. C.M., F	2- 2-55	2-15-55 [g]	0	....	....	0	0	.....
73. B.F., M	2-23-55	.....	5	±	....	0	0	1y. 1m.
74. F.G., F	2-23-55	.....	1	....	1+	0	3	1y. 1m.
75. C.B., M	3- 2-55	.....	5	2+	....	0	0	1y. 1m.
76. M.J., F	3- 3-55	3-26-56	1	....	2+	0	3	1y. 1m.
77. L.V., F	3- 4-55	.....	4	2+	....	0	0	1y. 1m.
78. A.M., F	3-16-55	.....	1	....	1+	0	3	1y. 1m.
79. J.O., M	3-19-55	.....	5	2+	....	0	0	1y. 1m.
80. H.M., F	4-13-55	.....	0	....	....	0	3	11m.
81. M.A., M	4-15-55	.....	4	1+	....	0	0	11m.
82. M.C., F	4-26-55	.....	0	....	....	0	3	11m.
83. S.C., M	5- 1-55	.....	4	1+	....	0	0	11m.
84. R.P., F	5-17-55	.....	0	....	....	0	3	10m.
85. V.J., M	5-18-55	.....	3	2+	....	0	0	10m.
86. V.B., M	6- 2-55	.....	0	....	....	0	3	10m.
87. B.P., M	6- 5-55	.....	4	1+	....	0	0	9m.
88. A.A., F	6-13-55	.....	0	....	....	0	3	9m.
89. D.A., F	6-14-55	.....	4	1+	....	0	0	9m.
90. L.B., M	6-20-55	.....	0	....	....	0	3	9m.
91. P.S., F	6-26-55	.....	4	1+	....	0	0	9m.
92. P.P., M	6-26-55	.....	0	....	....	0	3	9m.
93. R.S., M	6-28-55	.....	4	1+	....	0	0	9m.
94. F.L., M	7- 3-55	.....	0	....	....	0	2	8m.
95. R.P., M	7- 4-55	.....	3	1+	....	0	0	8m.
96. P.D., F	7- 8-55	.....	0	....	....	0	2	8m.
97. J.G., M	7- 9-55	.....	3	1+	....	0	0	8m.
98. A.A., F	7-26-55	.....	1	....	1+	0	1 [h]	8m.
99. E.S., F	7-27-55	.....	3	1+	....	0	0	8m.
100. J.J., M	3-10-56	.....	0	....	....	0	1	3/4m.

[1] Children discharged to relatives or guardians outside Culion are indicated by asterisks. Others discharged were returned to the colony.

[2] M. P. = multiple punctures; I. D. = intradermal.

[3] All nonleprous when discharged; but see notes about Nos. 12 and 24.

a Discharged outside as shown, this child was brought back surreptitiously when 3 years 4 months old, and after 2 years 5 months in the colony developed a leprous lesion.

b This child, returned to the colony as shown and still nonleprous on 7-28-55, died on 9-27-55 because of shock from abdominal pain ascribed to ascaris infestation.

c Discharged outside as shown; brought back surreptitiously when 1 year 7 months old; after 3 years in the colony developed a leprous lesion.

d Returned to the colony as shown; taken away 7 months later by her outgoing father, still nonleprous.

e Returned to the colony as shown; taken away 1 year 4 months later by her outgoing mother, still nonleprous.

f Returned to the colony as shown; sent out to an adopting family a year later, still nonleprous.

g Died at the age of 10 days, with congenital heart anomaly.

h Developed a cold abscess of the left axillary lymph nodes after the BCG vaccination.

Of interest also is the fact that these two children had not been given maternal breast feeding. Thus, while they may not rule out breast feeding as a way of infection, we think they suffice to show that it is not a necessary factor in the natural transmission of leprosy.

After return to the colony and continuous exposure.—Of the 55 children returned to their parents in the colony, 38 had attained 3+ Mitsuda reactivity, 14 had 2+, and 3 had only 1+ even after repeated BCG vaccinations. Not one, so far, has shown any leprous lesion.

All but 1 of the 3+ reactors and 9 with 2+ reactions (total 46) have had from 12 to 18 months exposure. Five of the 2+ group and all 3 with only 1+ reactions have had exposures of only 9 months or less. No. 17, a 3+ reactor, died after a year in the colony, still nonleprous. No. 34, also 3+, was taken home by his outgoing negative father after 7 months in the colony, and was reported still nonleprous in March 1956 at a second follow-up examination.[2] No. 48, yet another 3+ reactor, was taken out by her outgoing negative mother in March 1956, still nonleprous; and No. 52, also 3+, was sent out nonleprous in November 1955 to an adopting family and has not yet been heard from.

No conclusion can as yet be drawn from the limited observation of this group, which was exposed to infection following measures calculated to build up their resistance. Since the average age at appearance of the earliest typical lesions among contemporaneous unisolated children has recently been found to be at least 20 months (6), and for the later-developing types of lesions from 40 to 44 months, a further observation period of three years will be needed before we can attempt to assess more definitely any possible value of lepromin injections and BCG vaccination as protective measures.

Data on lepromin and BCG inoculations.—The maximal Mitsuda reactions of children given first lepromin and then BCG, or lepromin alone, or BCG followed by lepromin, are given in Table 2.[3] Four children were not given either lepromin or BCG because of their early removal or refusal of their parents, and 10 children have been given only BCG.

The results of repeated Mitsuda tests in the first 50 of these children have recently been reported (4), attention being called to the relative failure of BCG to further intensify reactions that were persistently only moderately strong. It will be noted in Table 2 that of the Group I children there was material increase of reactivity after BCG only in the 4 previously with negative or doubtful reactions; of the 12 with 2+ reactions only 2 became 3+.

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[2] By Dr. J. Puno, chief of the Western Visayas Sanitarium.

[3] The lepromin used for the first 50 children was prepared locally (J. O. N.) according to the Hayashi-Mitsuda technique. Among the younger children some tests were with lepromin prepared by Dr. H. W. Wade by a slightly modified technique. BCG was obtained from the field laboratory of the Philippine Department of Health.

In the present report only those children at present under 2 years of age, among the second half of the whole group, need be considered with respect to the Mitsuda reaction. There were 10 such children who had the lepromin test only after BCG vaccination (Group Ia of Table 2), and 20 children given lepromin but no BCG (Group II). Of the latter group the maximal Mitsuda reactions reached were: ±, 1 child; 1+, 14 children; and 2+, 5 children; or 5, 70 and 25 per cent, respectively. Of the 10 in

TABLE 2.—*Maximum Mitsuda reactions reached in 86 children injected with lepromin and/or vaccinated with BCG, as of March 1956.*[a]

Group	Maximum Mitsuda reaction	Before BCG		After BCG			Not retested[b]
		No.	%	1+	2+	3+	
I. Given both lepromin and BCG (40 children)	— or ±	4	10.0	0	3	1	0
	1+	0	0.0	0	0	0	0
	2+	12	30.0	0	10	2	0
	3+	24	60.0	—	—	—	24
Total		40	100.0	0	13	3	24
Ia. Lepromin given only after BCG (12 children)	—	—	—	8	2	2	
II. Given only lepromin, no BCG (34 children)	±	1	3.0				
	1+	15	44.1				
	2+	7	20.5				
	3+	11	32.3				
Total		34	99.9				

a Four of the 100 children studied received neither lepromin nor BCG. Ten children received only BCG injections but were not tested with lepromin; of these, 9 were given the Mantoux test (10 TU) after vaccination and all reacted positively.

b Not retested for fear of severe ulcerative reactions.

Group Ia, 8 were 1+ and 2 were 2+, or 80 and 20 per cent, respectively. In the results with these small groups there is no appreciable difference in the response to the Mitsuda test between the group that received BCG followed by lepromin and the one that received only lepromin.[4]

These groups are of course much too small to warrant any definite statement as to whether or not BCG vaccination has an intensifying effect on the Mitsuda reaction, but this more recent experience is in keeping

[4] Note that, as shown in Table 2, there were altogether 12 children in Group Ia and 34 in Group II; but 2 of the former lot and 14 of the latter one were 2 years of age or more, and they are not considered in the present discussion. There were no 3+ reactors before the age of 2 years in these particular lots of children.

with the earlier one. It would seem to us that some workers have not sufficiently considered the sensitizing action of previously-injected lepromin on young, Mitsuda-negative children, an effect which we have regularly observed in both contact and noncontact children repeatedly tested.

Furthermore, we feel that each group or series of children studied must, to a greater or lesser extent, be different from and not directly comparable with, other groups. For example, the opportunity for exposure to cases of leprosy or to tuberculous infection, whether recognized or not, cannot be of the same order for different groups.

This is not to deny that BCG will induce reactivity to lepromin in negative individuals, or that it may in some cases increase the degree of reactivity in positives. Guinto's very recent data (2) on this subject are indeed most convincing, although his interpretation of them seems to us overly precise and possibly misleading for the reason just stated. We, therefore, feel that repeated studies, which include clinical control, of different groups under varying conditions must be made before it is possible to appraise more adequately this effect of BCG vaccination.

SUMMARY

1. Since May 1948, 100 Culion-born children of leprosy patients have been isolated at birth in the nonleprous environment of the Culion Nursery. Of this number 11 have been released to families outside Culion, 55 have been returned to their parents in the colony after attaining moderate to strong Mitsuda reactions or after successful BCG vaccination, and 33 remained in the nursery in March 1956; 1 died at the age of 10 days of a congenital heart defect.

2. Forty children were given repeated lepromin tests, and the 16 who did not attain 3+ reactivity were then vaccinated with BCG and retested afterward; 12 children were tested with lepromin only after BCG vaccination; 34 were given repeated lepromin tests alone; and 10 had only BCG vaccination. Four children received neither lepromin nor BCG.

3. Of the 11 children released to guardians, 5 have not been heard from. Four were still nonleprous at recent follow-up examinations. Two were brought back to the colony, still nonleprous, at the ages of 3 years 9 months and 1 year 7 months, and they subsequently developed leprous lesions after periods of exposure of 2 years 5 months and 3 years, respectively.

4. The exposure periods in these two cases approximate the average incubation period of cases among unisolated, constantly-exposed children developing similar types of lesions. The first of them had been discharged from the nursery at the age of 2 years 6 months, after receiving four lepromin tests but developing only 1+ reactivity; the other had received neither lepromin nor BCG. Both probably acquired the infection after their return to the colony. Neither had received breast feeding, which indicates that maternal feeding is not a necessary factor in transmission.

5. None of these children has developed leprosy while still in the nursery, although 51 of them have been there for from three to six years. Of 127 slightly younger, unisolated children born between October 1949 and March 1953, aged 3 to over 6 years, 46, or 36.2 per cent, have developed lesions. From this contrast it is concluded that congenital transmission is rare, if it occurs at all.

6. Forty-six of the 55 children returned to the colony have now been exposed for from 12 to 18 months without showing evidence of infection. While it might be expected, from previous observations, that a few of them should have developed lesions by this time, three more years of observation will be needed before it will be possible to assess the protective value of prolonged isolation from birth and the effects of lepromin injections and BCG vaccinations.

7. The use of BCG, which is accepted by many as a potent means of inducing or increasing reactivity to lepromin, should be more carefully studied and evaluated before it can be assigned a definite place in leprosy prophylaxis.

RESUMEN

Dede mayo de 1948, se ha aislado desde el nacimiento en la Casa-Cuna de Culión a 100 hijos de leprosos, nacidos en la Leprosería de Culión. Once han sido puestos en manos de familias de fuera de la colonia, 55 han sido devueltos a los padres después de mostrar reacciones de Mitsida que variaban de moderadas a intensas o de haber sido vacunados con éxito con BCG y 33 permanecían en la Casa-Cuna en marzo de 1956; 1 falleció a la edad de 10 días de una anomalía cardíaca congénita.

Cuarenta fueron objeto de repetidas pruebas con lepromina, y los 16 que no alcanzaron una reactividad de 3 fueron vacunados con BCG y recomprobados después; 12 fueron comprobados con lepromina únicamente despueés de la vacunación con BCG; 34 fueron solamente objeto de repetidas pruebas con lepromina; y 10 sólo recibieron la vacunación BCG. Cuatro no recibieron ni lepromina ni BCG.

De los 11 niños entregados a guardianes, de 5 no se ha sabido más, mientras que 4 permanecían todavía sin lepra en recientes exámenes de observación subsiguiente. A 2 se les devolvió a la colonia, aun sin lepra, a las edades de 3 años 9 meses y 1 año 7 meses, manifestando más tarde lesiones leprosas tras períodos de exposición de 2 años 5 meses y 3 años, respectivamente. Estos períodos de exposición se aproximan al período medio de incubación en niños expuestos constantemente y sin aislar que manifiestan lesiones de formas semejantes. Ambos niños adquirieron probablemente la infección después de su regreso a la colonia. Ni uno ni otro habían sido amamantados, lo cual indica que la lactancia materna no es un factor obligado en la transmisión.

Ninguno de estos niños manifestó lepra mientras se hallaban todavía en la Casa-Cuna, aunque 51 han estado allí de tres a seis años. De 127 niños un poco más jóvenes, sin aislar, nacidos entre octubre de 1949 y marzo de 1953, de 3 a más de 6 años de ead, 46, o sea 36.2 por ciento, han manifestado lesiones. De esta comparación se deduce que la transmisión congénita es rara, si la hay.

Cuarenta y seis de los 55 niños devueltos a la colonia ya han estado expuestos de 12 a 18 meses, sin revelar signos de lepra. Aunque a juzgar por observaciones anteriores, sería de esperar que algunos ya habrían manifestado lesiones para esta fecha, se necesitarán tres años más antes de que sea posible justipreciar el valor protector del aislamiento prolongado desde el nacimiento y los efectos de las inyecciones de lepromina y de la vacunación con BCG.

El uso del BCG debe ser estudiado y valuado con más cuidado antes de poder concedérsele un puesto bien definido en la profilaxis antileprosa.

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