

ON THE INFECTIVITY OF THE *M. LEPRAE* FROM A
REACTING LEPROUS NODULE AND A
NON-REACTING LEPROUS NODULE*

BY DR. G. R. RAO
Leper Colony, Purulia

Nodular cases of leprosy are infectious, the degree of infectivity being directly proportional to the stage of the disease. But it is not known whether *M. leprae* from non-reaction cases have the same degree of infectivity as those from reacting cases. Clinical experience suggests the possibility of an enhancement in the degree of infectivity in reacting cases. To settle this question the experiment here recorded was carried out, as suggested by Dr. E. Muir of the Calcutta School of Tropical Medicine.

Neural cases of leprosy are unfit for this experiment as there would be the danger of their passing into the infectious cutaneous type as a result of inoculation with living bacilli, so cutaneous cases of the first and second degree who had no visible lesions of any kind on their backs were selected.

Equal-sized nodules, one from a non-reacting and the other from a markedly reacting C3 case (B3 case), were excised. After the epidermis was shaved off they were cut into small pieces and ground up with sterile glass powder, normal saline being added until thick, opalescent emulsions were obtained. These were filtered through thin filter paper. Smears showed numerous *M. leprae*, each of the two emulsions containing approximately equal numbers.

Apparently healthy areas in the back were inoculated intradermally, 0.1 cc. of the emulsion being used. That from the non-reacting nodule was injected on the left side and from the reacting on the right. Next morning, local and general reactions (if any), were recorded. Three batches of cases, totalling fifty, were thus inoculated.

Slight swelling, erythema and pain were the commonest local signs of reaction. Some intelligent patients complained of more

* This is a condensation, too long and complete to be classed as an abstract, of a paper which appeared in *Leprosy in India*, 4 (1932) 71.—EDITOR.

pain on the right than on the left side, or on the right side only. A few patients complained of headache, heaviness in the head, a feeling of feverishness and joint pains; no actual rise of temperature was noticed in any case.

It is noteworthy that 26 of the 50 cases had neither local nor general reaction. However, one of them gave a positive result. Of the other 24 cases, 8 showed only local reactions, 5 only general reactions and 11 both. One of the 8 with only local reaction became positive.

Apparently cases showing both local and general reactions had some anti-bodies in their systems, and those showing only local or only general reactions had less. Those showing no reaction probably had no anti-bodies. This is the interpretation if Bargehr's¹ conclusions are correct. But how is it that only one positive case occurred from amongst the 26 that showed no immediate reaction? The supposition that only one got the living *M. leprae* may not be altogether untenable, especially when one considers the fact that close and prolonged contact is required before infection can take place; probably the majority of the bacilli die when they leave the human body. It is also possible that this particular individual had a very low level of natural resistance.

Further applying Bargehr's conclusions it is permissible to conclude that the cases who showed only local reaction have less anti-bodies than those showing general reactions. It is among the former that the second positive case occurred.

Although it is rather hazardous to draw general conclusions from a single experiment of this nature, yet it is interesting to observe that with similar conditions infection occurred in 2 out of 50 cases or 4 per cent. Possibly if antiforminised emulsions of leprous nodules had been used for inoculation, some more positive cases might have resulted. It is highly probable that the presence of a large amount of tissue extracts in the emulsion used might have considerably lessened the infectivity of the fluid. Further experiments with antiforminised emulsions of leprous nodules on similar lines will be undertaken shortly on a large scale.

Comparing the infectivity of the emulsions from the reacting and the non-reacting nodules, there does not appear to be any marked difference. In one of the two positive cases the resulting papule

¹ Bargehr (1926) abstracted in *Tropical Diseases Bulletin*, March, 1927.

on the right side was slightly larger than that on the left. There was no appreciable difference in the bacterial content of the new papules.

Notes on the two positive cases:

Masta Majhi.—A type B2-A2 (C2-N2) case, male, was inoculated on May 8, 1931. Three and one-half months later a small papule was noticed at the site of each inoculation; there was no appreciable difference in size. Smears from these papules were strongly positive for *M. leprae*. In both broken bacilli were found in abundance; there was no appreciable difference in either the morphology or the staining reactions. Smears from two control areas about 2 inches above the papules were negative. The bacilli in the papules probably came from those inoculated and not from any present before the inoculation.

Christochit.—A type B2-A2 (C2-N2) case, male, was similarly inoculated on June 2, 1931. Nearly three months later two papules were noticed at the sites of inoculation. That on the right was slightly but distinctly larger than that on the left. Smears were strongly positive for *M. leprae*; on both sides broken (beaded) bacilli were abundant, with no significant difference either in the numbers or in the morphology or staining reactions. Smears from control areas were negative.