Animal Inoculation (Cont’d)

Chairman: K. E. Mason

Dr. Binford. We shall now return to the research problems. Dr. Karl E. Mason, Professor of Anatomy in the School of Medicine and Dentistry of the University of Rochester, continues as chairman.

Dr. Mason. We shall proceed to the first paper in the continuation of the animal inoculation studies. Dr. Rees will speak on "Recent bacteriologic, immunologic and pathologic studies on experimental human leprosy in the mouse foot pad."

Recent Bacteriologic, Immunologic and Pathologic Studies on Experimental Human Leprosy in the Mouse Foot Pad

R. J. W. Rees, F.C. Path.1

The evidence for the transmission and multiplication of human leprosy bacilli in the foot pads of mice (6–15, 18) was formally accepted by a special committee of the VIIth International Congress of Leprology in Rio de Janeiro in 1963 (1). This work represents an important advance since it provides, for the first time, an opportunity for studying the pathogenesis of leprosy in an experimental animal. It also provides an opportunity for studying the host-parasite interactions in one of the most chronic of human infections caused by the slowest growing bacterium known. More recently it has been shown that an infection similar to the one obtained in the mouse foot pad can be produced also by the inoculation of M. leprae into the ears (11, 12) and foot pads (20) of hamsters, the ears of mice (24), and the foot pads of rats (25). In this paper I will summarize our present results and briefly discuss some of our more recent studies on the bacteriologic, pathologic and immunologic aspects of foot pad infection in mice.

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General aspects. Quantitative analyses have shown that the multiplication of M. leprae is limited, is dependent on the size of the inoculum, and is confined to the foot pad. For example, inocula of 10^6 M. leprae (counted as acid-fast bacilli) yield 10^6 in 6–8 months, and although smaller inocula may eventually give the same yield, larger ones give no higher yields, and inocula of 10^9 or more fail to multiply significantly. Once the bacterial population in the foot pad has reached approximately 10^9 it remains steady for many months, although there is a gradual increase in the proportion of dead bacilli (15). M. leprae recovered from foot pads can be passaged, apparently indefinitely, their bacteriologic characteristics remaining unchanged. In our own studies we have successfully transmitted human leprosy to the foot pads of mice from 35 previously untreated patients from

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