Sensitization and Immunization by Mycobacteria

TO THE EDITOR:

The article of Ridley ([1]) confirms again that sensitization and immunization are biologically different processes in mycobacterial diseases (and hence also in leprosy). This is no geographical peculiarity but a fact already recognized by Robert Koch. It was not taken into account by the current concepts of leprosy, but during the past 100 years competent authors have repeatedly proven the correctness of Koch's findings ([2]).

This fact is of great practical significance, as will be illustrated by the following points:

1. The reactivity to lepromin indicates sensitization (allergy), not immunity. Sensitization does not result in protection. Non-reactivity to lepromin indicates only that no sensitization occurred, at least not in the skin. Reaction or non-reaction to lepromin is not correlated with the so-called state of immunity or defense (similar to the tuberculin reaction in tuberculosis).
2. Depending on the transmitter of the disease and the infected macroorganism, allergic reactions of varying degree are seen in mycobacterial diseases as consequences of sensitization. In the case of tuberculosis caused by *Mycobacterium tuberculosis* the consequences of sensitization may be dangerous for man (e.g., cavities). In rats the same bacterium causes symptoms which apparently do not include allergic reactions. Rat tuberculosis is therefore similar to LL-leprosy caused by *M. leprae* in man. Large numbers of bacteria are found in an almost non-reactive tissue. Depending on the number of bacteria and their virulence and, on the other hand, on the reaction of the macroorganism, both the infecting bacterium and the infected macroorganism do produce the symptoms of the disease through the reaction system they are producing in common. It remains to be clarified whether in leprosy bone processes and glomerulonephritis, for instance, are typical consequences of sensitization, i.e., whether they are of an allergic nature, or whether they are due to something else.
3. The wide differences with regard to reactivity and kind of reaction of the macroorganism are not the only but a major reason why, in animal tests, no conclusions on the causative mycobacterial species can be drawn from the pathohistological findings. Many misconceptions have crept into our picture of leprosy because this fact has not been taken into account.
4. In connection with studies aimed at the development of vaccines against leprosy, the opinion is often voiced that vaccines will result in reactivity to lepromin, thus indicating the onset of protection. This opinion is scientifically unfounded, because the difference between sensitization and immunization has not been taken into account. From the present state

of our knowledge on mycobacterial infections sensitization is an immunologically "specific" phenomenon; whereas immunization (as far as it results in protection) is "unspecific," i.e., independent of specific antigens or antibodies. Hence, there can be no effective vaccine against leprosy so long as research in this field is based on the principle of BCG vaccination.

The communication of Ridley ([1]), which is based on keen observation and great experience, might be an impetus to again focus attention on the sensitizing potency of *M. leprae* in man and his reaction to it, since all endeavors to fit "correct" immunological findings in a "wrong" concept must inevitably fail.

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