

## Leprosy: A Unique Immuno-Pathologic Disease Model

Advances in understanding with respect to the immuno-pathology of leprosy have long been, to a considerable degree, derivative of understanding respecting other disease, notably tuberculosis. Thus Daniëlsen and Boeck's 1847 *Atlas Colorié de Spedalskhed* followed on an understanding of the pathology of tuberculosis derived from the work of Richard Morton, Matthew Baillie, Gaspard-Laurent Bayle and René Laënnec. Hansen's recognition of *M. leprae* as an etiologic agent of disease cautiously antedated Koch's announcement regarding the tubercle bacillus but followed Marten's 1720 astute speculations regarding the causation of infectious disease and Villemain's experiments (1865 and 1868) demonstrating that human tuberculosis could be transmitted to experimental animals. Mitsuda's development of the lepromin test followed and was patterned after Koch's development of the tuberculin test. Just as Koch's efforts in this direction were initially directed at developing an immunizing, rather than a diagnostic, procedure for tuberculosis, so also were Mitsuda's efforts regarding leprosy. The very term "tuberculoid," first used definitively in 1898 in reference to leprosy by Jadassohn, by itself speaks to this interrelationship and derivative understanding.

The point need not be further pursued. It illustrates the well known fact that understanding of one disease process often illuminates other problems of pathogenesis and understanding. It is here noted primarily to highlight the thesis that leprosy is a unique immunopathologic disease model

the understanding of which has now progressed along a broad front to the point where its study should be recognized as potentially far more contributive to immuno-pathologic understanding than is generally recognized. Contemplation of facts known about leprosy from direct observation and from comparative-immunopathology suggests that we do, in fact, know more about leprosy than we think we do. Testing the developing concepts regarding leprosy as potentially contributive to other disease understanding is in itself a valid method of checking and perhaps advancing these concepts.

A number of remarkable features of leprosy suggest themselves as potentially provocative of contributions to understanding. The flow of intergraded and graduated histopathologic and immunologic responses presented by the spectrum of leprosy, extending from tuberculoid to lepromatous poles via the range of intermediate responses (dimorphous, borderline) is scarcely matched in other disease. The failure of lepromin to develop as a useful diagnostic test is too often regarded as a failure rather than being regarded as a response that may say something about the infectious granulomata which is not stated by the tuberculin test. The lipid storage phenomena of lepromatous leprosy should speak to current efforts at seeking genetic markers for that susceptibility which leads to lepromatous rather than tuberculoid manifestations. The variant histopathologic morphologies of reactional tuberculoid states as contrasted with, for example, erythema nodosum le-

prosum, should provoke considerable interest in leprosy as an immunologic model encompassing within its spectrum variant immunologic mechanisms. Reasons for these variations might in themselves lead back to a better understanding of the remarkable immunopathologic spectrum under consideration. Years past provided speculation about, and search for, "first infection" leprosy and a "primary complex" like unto the manifestations seen in tuberculosis. Since clear-cut analogous manifestations were not evident in leprosy the concepts were largely abandoned, perhaps prematurely. The very reasons for absence of analogous models would seem instructive and possibly provocative of conceptual thought too readily abandoned. As related to mechanisms of deformity the leprosy model presents an unequalled mass of study opportunity now that luetically induced Charcot joint is less often seen. Recent thinking suggests that the long-held concepts of neurotrophic pathogenetic

mechanisms may be inadequate and inexact. Questions concerning lesion lodgement and the remarkable neural involvement in leprosy may well have answers relating to other problems of less common occurrence such as rabies, tetanus and poliomyelitis as well as to general problems of peripheral nerve circulation and metabolism.

ILA president-emeritus Robert Cochrane, in his world-wide travels has often remarked, with perhaps pardonable over-enthusiasm, that if one understands leprosy one understands medicine—well, perhaps not *all* of medicine, but at least a major portion of it! Surely there is an element of truth in this assertion. Therefore, contributive elements from the developing understanding of leprosy will, from time to time, be sought and explored in this context as part of the milieu of these editorial pages. Such efforts will not be presented as oracles of truth, but will be proffered as attempts to provoke and crystallize further thought.—O. K. SKINSNES