BOOK REVIEW

Veeraraghavan, N. *Studies on Leprosy; Supplement 3.* Madras: Voluntary Health Services Medical Center, n.d., 53 pp., softbound, color illustrations.

Dr. Veeraraghavan has once again chosen to publish his research and hypotheses in a small (53 pages) book instead of in a scientific journal. The contents include an overview of his work from 1977 to 1988; the composition of his latest modified medium, V(L1), for the cultivation of *Mycobacterium leprae*; methodology and results for *in vitro* cultivation of armadillo-derived *M. leprae*; cultivation and drug susceptibility testing of human-derived *M. leprae*; new drug testing and drug and vaccine therapy. A final section compares a multidrug therapy versus dapsone plus a group of histamine antagonists.

Enthusiasm which might have been generated from the report of thousands of successful cultures of *M. leprae* must be tempered by both the inability of others to confirm earlier reports as well as the methodology employed or, in some cases, omitted. The author responded to previous criticisms of his use of semiquantitative growth analysis by doing extensive microscopic cell counts. However, actual data are only presented for short-term cultures with low-growth yields and statistical analysis is totally lacking. Decreases in cell counts (lysis?) during incubation in Dulbecco's medium is used both to obtain the "viable" count (remaining intact cells) and to validate that genuine growth is occurring in V(L1) medium. The mention of detectable growth at 0°C (optimal is 7°–10°C) invites further skepticism. Apparently, the author's repeated referral to the use of "the armadillo strain of *M. leprae*" or "the well-characterized strain of *M. leprae* used by the WHO in its IMMLEP program for the production of leprosy vaccine" is meant to assure the reader that the "cultivated" organism is, in fact, *M. leprae.* Considering that Dr. Veeraraghavan has used a single piece of armadillo tissue for these studies and employed inocula as high as 10^8–10^9/ml, the lack of rigorous screening for armadillo-derived mycobacteria (ADM) is a serious omission. This report would be considerably strengthened by applying the tentative identification criteria (see Microbiology Workshop Report, XIII International Leprosy Congress 1988, Int. J. Lepr. **57** Suppl. (1989) 301–302) to the subcultures.

Dr. Veeraraghavan postulates that the immunological defect in leprosy is due to the bacilli engendering an IgE response with the release of histamine and heparin from mast cells and histamine from basophils and platelets. The histamine then suppresses T lymphocyte activity which, in turn, suppresses macrophage activity. Histamine type 1 and 2 receptor antagonists are said to inhibit the growth of *M. leprae* cultures and to cause improvements in lepromatous patients clinically and bacteriologically. A patient is reported with lepromatous leprosy and 6+ bacterial index who became bacteriologically negative in approximately 5 years on a regimen of dapsone, hydroxytheophylline, theophylline, terbutaline, cimetidine, and mebhydrolin. Each of these drugs is said to be as effective against cultures of *M. leprae* as standard antileprosy drugs. Their *in vivo* activity is thought to be due to direct antibacterial plus immunotherapeutic effects. A number of other compounds with similar activities are mentioned. A small clinical trial is reported comparing dapsone, rifampin, and clofazimine with dapsone, hydroxytheophylline, theophylline, terbutaline, and pheniramine. Both groups appeared to improve. The size of the groups available for follow up were small, making any comparisons difficult. No compliance monitoring data are provided.

The book has 14 color figures presented with minimal legends. The first six are pictures of test tubes containing pellets under liquid. Figures 7-17 are color photographs of different aspects of the same patient taken in 1983 and 1988, showing nodular lepromatous lesions in 1983 and their disappearance in 1988. Tables list the effects of approximately 70 compounds on the *in vitro* cultures.

This work should be submitted to a scientific journal rather than being published as a private booklet. This work will suffer in credibility until and unless the cultivation

findings can be independently confirmed. Therapeutic implications drawn from *in vitro* findings in this unconfirmed system will also lack credibility. One or more of a variety of animal models are capable of demonstrating anti-*M. leprae* activity before undertaking 4-year clinical trials in humans.—Scott G. Franzblau and RCH