

Abstracts

[The Abstracts which follow are reprinted from the *Tropical Diseases Bulletin* through the courtesy of the Director, the Bureau of Hygiene and Tropical Diseases, London.]

1. Microbiology

9. GOYLE S, VIRMANI V (1979) 'In vitro' studies on biopsies from leprosy cases. *Indian Journal of Medical Research* 69 (June), 919-25.

Organotypic cultures of skeletal muscle, skin and subcutaneous fat were set up from biopsies of 4 patients with leprosy, and in successful cultures there was good growth of tissue elements and macrophages. Acid-fast bacilli were observed in the culture medium in all cases and maintained without morphological change for over a year. They were present also in macrophages, spindle cells [macrophages?] and muscle cells, and in the parent mass of a subculture. There were no organisms in control cultures and no growth on Lowenstein-Jensen medium.

D S Ridley

2. Immunology, pathology

10. STONER GL (1979) Importance of the neural predilection of *Mycobacterium leprae* in leprosy. *Lancet* ii (10 November), 994-6.

It is suggested that continuous leakage of bacilli into the circulation from a primary focus of intraneural infection may simultaneously initiate bacillary dissemination and the suppression of cell-mediated immunity. Both these features are essential for the development of lepromatous leprosy. Nerve involvement in leprosy, previously thought of as a diagnostic feature of the disease and as a complication of therapy, may represent an essential phase in the cycle of infection and reinfection by *Mycobacterium leprae*.

[This closely reasoned hypothesis warrants reading in full. It deserves careful weighing against what is currently known of the loss and gain in specific cell-mediated immunity in human leprosy patients and also in experimental leprosy due to *Mycobacterium leprae* and in rat leprosy infection due to *Mycobacterium lepraemurium*.]

M F R Waters

11. LAGRANGE PH (1979) Active or passive acquired resistance after *Mycobacterium lepraemurium* infection in C57BL/6 and C3H/HeN mice. *Annales d'Immunologie* 130C (4), 561-79.

C57Bl/6 mice and C3H/HeN mice, known respectively as responders and non-responders to infection with *Mycobacterium lepraemurium*, were tested for specific and non-specific resistance after primary infection.

After subcutaneous infection, C57Bl mice controlled *M. lepraemurium* multiplication during the first weeks of challenge infection. They produced non-adherent lymph-node cells which transferred (a) delayed hypersensitivity to specific antigen and transient resistance to challenge to normal recipients; (b) a more prolonged resistance to cyclophosphamide-treated normal recipients. They developed also a non-specific resistance to infection with *Listeria monocytogenes*, and a potentiated delayed hypersensitivity response to sheep red blood cells after immunization with the heterologous antigen.

C3H mice, infected subcutaneously, could not resist challenge infection. They produced non-adherent lymph node cells which transferred only delayed hypersensitivity to normal recipients and, which could not transfer any specific resistance to challenge to either normal or cyclophosphamide-treated normal recipients. They were less resistant to non-specific challenge with *L. monocytogenes* than

C57Bl mice; and infection did not potentiate delayed hypersensitivity to sheep red blood cells.

In both mouse strains, preimmunization with low doses (10^4 and less) of mycobacteria given intravenously was very inefficient and with high doses (10^6) facilitated growth of challenge mycobacteria.

The author suggests that the two mouse strains (1) differ in the type of cellular hypersensitivity they develop; (2) produce different types of T lymphocytes so that C57Bl mice can recruit and activate macrophages while C3H mice cannot.

[The role of macrophage activation in controlling infection was not investigated.]

P Preston

12. CURTIS J, TURK JL (1979) Mitsuda-type lepromin reactions as a measure of host resistance in *Mycobacterium lepraemurium* infection. *Infection and Immunity* 24 (2), 492–500.

'The footpad reaction to autoclaved whole *Mycobacterium lepraemurium* organisms (MLM lepromin) in high-resistance (C57BL) and low-resistance (BALB/c) mice was studied. Infected C57BL mice gave a prolonged footpad response persisting for 4 weeks after skin testing with high and low doses of lepromin. This was accompanied by mononuclear cell infiltration. Uninfected C57BL mice gave no response. The majority of infected BALB/c mice gave no increase in footpad thickness. However, a high proportion of infected and control BALB/c mice tested with the high dose showed mononuclear cell infiltration which resembled that in C57BL mice. The low dose caused little infiltration in infected or control BALB/c mice. The course of infection in the two strains was different. Dissemination of organisms from the infected footpad was minimal in C57BL mice 5 months after infection. In BALB/c mice, dissemination to the draining lymph node and to some extent to the liver had occurred by 5 months. The draining lymph node of BALB/c mice showed histological evidence of local antibody formation, which was not found in C57BL mice. On

the basis of these findings, it was possible to fit murine leprosy in these two strains into a classification similar to that used for human leprosy.'

13. REA TH, RIDLEY DS (1979) Lucio's phenomenon: a comparative histological study. *International Journal of Leprosy* 47 (2), 161–6.

'To study further the pathogenesis of Lucio's phenomenon, we have made a comparative histological study of 11 patients with Lucio's phenomenon and 12 with ENL.

'Confirming the findings of others, Lucio's reaction could be distinguished from ENL by epidermal necrosis and by necrotizing vasculitis manifesting necrosis in the walls of superficial vessels and severe, focal endothelial proliferation of mid-dermal vessels. Furthermore, in Lucio's phenomenon large numbers of AFB were found in evidently normal and in swollen or proliferating endothelial cells.

We hypothesize that patients with Lucio's phenomenon have an exceptionally deficient defence mechanism, allowing unrestricted proliferation of AFB in endothelial cells, facilitating contact between bacterial antigen and circulating antibody and leading to infarction; also, this nadir of resistance allows unimpeded dissemination of AFB, accounting for the clinical features of diffuse non-nodular leprosy. Thus, an explanation is offered for the restriction of Lucio's phenomenon to patients with diffuse non-nodular lepromatous leprosy.'

[AFB = acid fast bacilli.]

14. KOYA G, ARAKAWA I (1979) [Pathology of the spinal cord in leprosy] *Japanese Journal of Leprosy* 48 (1), 27–36 [In Japanese] English summary.

15. SHEPARD CC, DRAPER P, REES RJW & LOWE C (1980) Effect of purification steps on the immunogenicity of *Mycobacterium leprae*. *British Journal of Experimental Pathology* 61 (4), 376–379.

'In studies aimed at the development of an antileprosy vaccine for use in man, *Mycobacterium leprae* suspensions were pre-

pared from livers of experimentally infected armadillos. The 2 methods of purification in chief use, carried out after irradiation of the tissue with 2.5 megarads of gamma irradiation from ^{60}Co , involved treatment with 0.1N NaOH for 2 h at room temperature, trypsin and chymotrypsin digestion for 24 h at 37° , and separation in a 2-phase liquid polymer (dextran: polyethylene glycol) system. All vaccines were autoclaved and injected intradermally in mice. Earlier studies have shown that heat inactivation does not interfere with the immunogenicity of *M. leprae*. Immunogenicity was measured by foot-pad enlargement (FPE) after challenge with heat-killed *M. leprae* suspensions or by protection against infectious foot-pad challenge. The results indicated that the irradiation and 2-phase separation did not decrease immunogenicity but the NaOH treatment and enzyme digestion did.'

16. ROJAS-ESPINOSA O, APONTE-VÁZQUEZ J, CRUZ OG, ESTRADA-PARRAS & ORTIZ Y (1980) **Phagocytosis in leprosy. III. Defective adhesive and endocytic abilities of circulating leukocytes in lepromatous leprosy.** *International Journal of Leprosy* 48 (2), 159–166.

3. Clinical

17. DHARMENDRA (1978) **Leprosy. Vol. 1.** pp. xxvi + 732. Shri Mohanlal B. Kothari, Kothari Medical Publishing House, Acharya Donde Marg, Parel, Bombay 400 012, India.

The appearance of Volume 1 of *Leprosy*, edited by Dr Dharmendra, is an event in the world of medical publishing. Let it be said at the outset that this volume bears little resemblance to the slimmer works that preceded it, valuable though these were. It is an entirely new production, and the editor has called on the collaboration of 31 leprologists and social workers, most of whom have commendably high reputations beyond their native countries. In point of fact, most of the contributors are nationals from India itself or have spent a large part of their working lives in India, whereas only 5 contribute from their experience outside India.

The first volume, then, may be regarded as a worthy exposition of leprosy from a land that has the unenviable distinction of having the greatest number of leprosy sufferers. This fact will do much to account for the value of the book, and also its Indian 'flavour'.

As might be expected, the sections on clinical manifestations, diagnosis and differential diagnosis are well done, excellently descriptive and authoritative; they present a very good review of the established disease, as seen in India. In the section (pp. 319–51) on classification, the details of historic battles fought largely around the Indian claims appear somewhat irrelevant to workers conversant with modern ideas on immunology and host-parasite relations.

The section on treatment (pp. 355–682) is reasonably up to date, but more cognizance could have been taken of recent work on the advantages of administering dapsone in high doses from the beginning of treatment, uninterrupted during episodes of acute exacerbation.

There is an abundance of clinical photographs in this volume, mostly in black and white; their definition and contrast are not always above criticism.

All in all, though, this first volume is a commendable and workmanlike production, a safe guide and a useful handbook for doctors working in leprosy. Despite its largely Indian origin and emphasis, it should appeal to a larger audience.

S G Browne

18. BARTON RPE, McDOUGALL AC (1979) **The paranasal sinuses in lepromatous leprosy.** *Leprosy in India* 51 (4), 481–5.

The paranasal air sinuses of 16 patients in Dichpalli, south India, with untreated lepromatous leprosy were investigated. 15 of these patients complained of nasal symptoms such as crusting and airway obstruction, but pain was not a feature. On examination, all 16 had clinical evidence of nasal involvement; nose-blow specimens collected from 14 patients were positive

for acid-fast bacilli (AFB) and all 16 showed radiological evidence of sinus involvement (details are presented separately, Barton, *Journal of Laryngology and Otology*, 1979, 93, 597). Biopsies of maxillary sinus mucous membrane were taken from 2 patients and were positive for AFB; in 1 of these biopsies there were numerous bacilli in the lamina propria, globi were plentiful, and the morphological index was 20. These microscopical findings are shown in a black-and-white photograph.

The authors give details of the surface area and the temperature of maxillary sinuses; they stress the importance of sinus involvement in lepromatous leprosy and recommend further studies.

W H Jopling

19. KAPOOR P, YELLAPURKAR MV (1979) Strategy of early detection of infectious leprosy patients and the role of medical personnel. *Leprosy in India* 51 (4), 486-96.

20. AKHTAR M, ALIMA & MACKEY DM (1980) Lepromatous leprosy presenting as orchitis. *American Journal of Clinical Pathology* 73 (5), 712-715.

'Two patients with lepromatous leprosy presenting initially because of lepromatous orchitis are reported. These cases are unusual because they were diagnosed as lepromatous orchitis at a stage when no other evidence of leprosy was present. Generalized skin lesions characteristic of lepromatous leprosy subsequently developed in one of these patients. It is suggested that lepromatous orchitis should be actively considered in the differential diagnosis of orchitis and infertility.'

These two cases from the Department of Pathology and Internal Medicine, King Faisal Specialist Hospital and Research Centre, Saudi Arabia, are mainly of interest because of the claim that lepromatous orchitis was found 'at a stage when no other evidence of leprosy was present.' The

clinical and laboratory findings are not, however, completely reassuring on matters such as the examination of peripheral nerves and eyes, anaesthesia, and the results of multiple-site slit-skin smears. Many leprologists of experience may wonder if such data, perhaps accompanied by a skin biopsy at the outset, would have revealed more a widespread involvement of the body by a lepromatous process.

A C McDougall

4. Therapy

22. SHWE T, LWIN K, THWE K (1978) The efficacy and tolerability of rifampicin in Burmese patients with lepromatous leprosy. *Hansenologia Internationalis* 3 (1), 30-41.

'Seventy-one Burmese adult patients with lepromatous leprosy were treated with various regimens of rifampicin monotherapy, 450 mg daily for 60 days or 900 mg once weekly for 12 weeks or 450 mg daily for six months. Of the patients, 18 had relapsed after stopping DDS therapy, 20 were intolerant of DDS, 18 were DDS resistant and 15 had received no previous treatment.

Rifampicin produced a 75% reduction in the size of skin nodules in two thirds of the patients and a complete disappearance of nodules in the others. After one month drug treatment the MI fell to zero but the BI remained unchanged. The once weekly regimen was as effective as the daily treatment. Four patients had to be withdrawn due to ENL reactions.'

23. FFYTCHÉ TJ (1979) Cataract surgery in leprosy patients. *Journal of the Royal Society of Medicine* 72 (11), 826-30.

Due to lack of space Book Reviews and further Abstracts have been retained for the next issue. *Editor*