Lepr. Rev. (1974), **45**, 191-195

Abstracts

1. POWELL, S. & McDOUGALL, C. **Clinical recognition of leprosy: some factors leading to delays in diagnosis.** *Brit. med. J.* 1974, Vol. 1, 612.

Case histories of eight patients in the United Kingdom admitted to hospital for the diagnosis of leprosy are examined in detail to draw attention to sources of error in diagnosis which are easily made in countries where leprosy is not endemic. In this series, misdiagnoses included, syringomyelia, polyarteritis nodosa, allergy, mycosis, and erythema multiforme, and had led in two patients to treatment with cortico-steroids. All the patients did in fact present signs which should have led to a correct diagnosis, and the authors draw attention to the importance of nasal symptoms in patients with early lepromatous leprosy.

T. F. Davey

2. REES, R. J. W. & MEADE, T. W. **Comparison of the modes of spread and the incidence of tuberculosis and leprosy.** *The Lancet,* 12 January, 1974, 47.

An interesting comparison is made between the bacterial loads of *Myco. leprae* in single early morning nose-blows and 24 h collections of nasal discharge from patients with lepromatous leprosy, and loads of *Myco. tuberculosis* from 12 h collections of sputum from patients with open tuberculosis. Bacterial loads are of the same order in the two diseases. A comparison is also made between average annual age-specific and sex-specific attack rates for the two diseases in family contacts in two similar groups in areas of South India in close proximity. The rates in the two diseases are of the same order of magnitude, though actually higher for leprosy than tuberculosis in males aged 5-14. These important similarities are consistent with the possibility that modes of spread and routes of infection could be identical in the two diseases.

T. F. Davey

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3. HARTMAN, A. **The prevalence of leprosy at the coast of Kenya.** *E. Afr. Med. J.,* 1973, v. 50, No. 4, 181-8.

Twenty-one villages on or near the coast of Kenya, "selected at random", were visited by teams of teachers and students from the University of Nairobi, and the villagers examined for leprosy and "other diseases". "The object of our survey was not mentioned" and the author concludes that this method prevented "the hiding of suspect cases". In 4 villages the team first carried out a census. Of 8011 people examined, 62 were found to have leprosy, with ages ranging from 7 to 76. Twenty tribes or sub-tribes were identified and people with leprosy were found most frequently in the largest tribes; it occurred in some smaller tribes but not in others. In certain districts the prevalence was high (up to 1.5%) and more staff for leprosy clinics is recommended. The author estimates that, in a total coastal population of 800,126, there would be 6700 people with leprosy.

C. S. Goodwin

4. SAMUEL, D. R., GODAL, T., MYRVANG, B. & SONG, Y. K. **Behavior of *Mycobacterium leprae* in human macrophages *in vitro*.** *Infection and Immunity,* 1973, v. 8, No. 3, 446-9.

"Attempts have been made to cultivate *Mycobacterium leprae* in human macrophages *in vitro*. In 27 out of 55 experiments a two- to ninefold increase (mean 2.31 ± 1.46) in acid-fast organisms were observed over a period of 1.5 to 3 months of cultivation. No such increase was observed with heat-killed bacilli (mean fold increase 0.88 ± 0.19). Macrophages were necessary for obtaining increases. No multiplication was observed on artificial media. A close correlation between increases of acid-fast organisms and changes in viability as determined by the morphology of the bacilli (morphologic index) was found. The increases in acid-fast organisms could be inhibited by anti-leprosy drugs. It is concluded that multiplication of *Myco. leprae* may take place inside human macrophages *in vitro*. Multiplication appears not to be dependent on whether the macrophages are derived from lepromatous or tuberculoid patients or health individuals. Moreover, multiplication took place both at 33° and 37°C. The applicability of this method is at present limited by the restricted survival of human macrophages *in vitro*."

5. BULL WLD HLTH ORG., 1973, v. 48, No. 3, 345-54; *Ibid.,* No. 4, 483-91. **Immunological problems in leprosy research: 1 and 2.**

"This Memorandum reviews the present status of knowledge of the immunology of leprosy, with particular attention to development since the publication of a similar review in 1970. The different types of lepromin reaction and their significance in healthy contacts and in patients with tuberculoid and lepromatous leprosy are discussed. The immunological responsiveness of patients with leprosy is also considered, with special attention to *in vitro* methods for evaluating this response. . .

"Part 2 of this Memorandum covers possible mechanisms of altered immune response in leprosy (including a tentative scheme to explain the possible genesis of the lepromatous lesion); genetic, nutritional, and hormonal factors; the possibility of vaccination; attempts at immunotherapy; and areas in which further research is needed. A detailed protocol for evaluating the effect of transfer factor in leprosy is included as an annex."

(This memorandum was drafted by 17 experts in various aspects of leprosy research and immunology. There are 60 references.)

6. GODAL, T., LOFGREN, M. & NEGASSI, K. **Immune response to *Myco. leprae* of healthy leprosy contacts.** *Int. J. Lepr.,* 1972, v. 40, No. 3, 243-50.

Transformation of lymphocytes specifically by *Mycobacterium leprae* indicates an immune response and, in this study, was performed in parallel with BCG to assess the specificity of the reaction; lymphocytes incubated without any antigen were used as controls. In Addis Ababa, lymphocytes from 94 people were cultured: 16 were household contacts of patients with leprosy (group I), 36 had been workers among leprosy patients for more than one year (group II), 8 for less than one year (group III), and 22 had not been in household or occupational contact with leprosy patients (group IV). Twelve of the people tested were Ethiopian staff from a tuberculosis clinic (group V). The average response to BCG of lymphocytes from those in group IV was 7%, and to *Myco. leprae* was 0.51%, a "cross-reactivity" of 7.25%, while in group V the cross-reactivity was 14.7%. A response to *Myco. leprae* was found in the lymphocytes of one person in group IV, in 6 people in group III, in 84% in those in group II, and in 81% in group I. In group II the degree of lymphocyte transformation seemed to be related to the degree of contact. The authors discuss their findings at length, concluding that the absence of leprosy in the great majority of people attending patients with leprosy, and in household contracts, is due to the development of effective immunity, although this response does not

differ in degree from that of patients with tuberculoid leprosy. It is suggested that a response early after exposure to leprosy leads to immunity, but a delayed response may lead to disease.

C. S. Goodwin

7. THORSBY, E., GODAL, T. & MYRVANG, B. **HL-A antigens and susceptibility to diseases. II. Leprosy.** *Tissue Antigens,* 1973, v. 3, No. 5, 373-7.

"Thirty-nine leprosy patients (20 tuberculoid and 19 lepromatous) have been HL-A typed and compared to 36 non-leprosy individuals of the same ethnic group (Amharas). The most significant deviation was related to the W21 antigen, which was found only among leprosy patients (both tuberculoid and lepromatous), not in the control group. No deviation in antigen frequency was found to be specific to the lepromatous group."

8. SWIFT, T. R., HACKETT, E. R., SHIPLEY, D. E. & MINER, K. M. **The peroneal and tibial nerves in lepromatous leprosy. Clinical and electro-physiologic observations.** *Int. J. Lepr.,* 1973, v. 41, No. 1, 25-34.

"Clinical examination and segmental nerve conduction velocity studies of peroneal and tibial nerves were carried out on 25 patients with lepromatous leprosy and on 16 control subjects. Muscle atrophy and weakness occurred most often in the extensor digitorum brevis muscle (15 of 50 legs) and intrinsic foot muscles (12 of 50 legs), with lesser instances of weakness in other muscles. Nerve enlargement and nerve pain were common for the peroneal nerve and less common for the tibial nerve. Nerve conductions and latencies revealed significant slowing in the patients in the segment of the peroneal nerves from the popliteal fossa to the head of the fibula and in the latency from the ankle to the extensor digitorum brevis muscle. Tibial slowing occurred in the segment from the popliteal fossa to the ankle and in the latency from the popliteal fossa to the lateral head of the gastrocnemius. This study shows that clinical and electrical evidence of segmental involvement of both nerves is common in lepromatous leprosy, and points out the importance of performing nerve conduction velocity studies on the segment of the peroneal nerve between the popliteal fossa and the head of the fibula."

9. SU, D. W. P., YANG, H. Y. & SKINSNES, O. K. **The effect of neonatal thymectomy on *Mycobacterium leprae* infection in mice.** *Int. J. Lepr.,* 1973, v. 41, No. 1, 81-93.

"C_3H mice were thymectomized at birth and inoculated intraperitoneally with *Mycobacterium leprae.* The neonatally thymectomized and control sham-thymectomized and nonthymectomized mice were sacrificed at one month and bi-monthly through the tenth month. The total acid-fast bacillary content of their livers, spleens, lungs and kidneys were harvested and evaluated with respect to their total numbers and solid-form numbers. Neonatally thymectomized mice had higher total and solid-form bacterial counts than either the sham-thymectomized or nonthymectomized animals but both the total and the solid-form counts decreased after the sixth month. Thus, the animals recovered from the immunologic defect induced by neonatal thymectomy by the sixth month and this recovery is associated with an ability to alter the morphology of the bacilli to a form regarded as nonviable. The recovery of immune capacity was associated with redevelopment of follicles with profuse lymphocytes in the spleens of thymectomized mice after the fourth month. Oxytetracycline in the drinking water, in a concentration of 3 mg 100 ml, helps to prolong the lives of thymectomized mice and decrease the incidence of "wasting disease." The significant proliferation of solid-form bacilli in the viscera of the thymectomized mice during their period

of immunologic deficiency suggests that the lower tissue temperature postulated as necessary for the success of the proliferation of *Myco. leprae* in the mouse footpad may not be an obligate factor."

10. BECHELLI, L. M. *et al.* **Proposed method for estimating leprosy prevalence based on rates in children.** *Bull. Wld Hlth Org.,* 1973, v. 48, No. 4, 502-3.

An inexpensive and reasonably accurate indication of the prevalence of leprosy in a community is, according to the authors, to be gained by a survey of schoolchildren (aged 5–14 years), who are readily available for examination. In general, the total prevalence rate would be about 4 times as high as that found among children. The ratio remained the same after 10 years of leprosy control in central Burma.

S. G. Browne

11. FAZELBHOY, Z. A. **Leprosy control in Pakistan.** *J. Pakistan Med. Ass.,* 1973, v. 23, No. 5, 129-35.

This article mentions superficially many areas of Pakistan, with an indication of the prevalence of leprosy apparently based on either the numbers attending clinics or "random surveys". In 5 out of 34 areas in Karachi the prevalence ranges from 0.98 to 3.3 thousand, but in some small areas in other districts it is 40 thousand. Because rooms were not available in Government dispensaries, separate buildings have been built as leprosy clinics. Apparently most work among patients with leprosy is done by "voluntary agencies".

C. S. Goodwin

12. PRABHAKARAN, K. **A rapid identification test for *Mycobacterium leprae.*** (Correspondence.) *Int. J. Lepr.,* 1973, v. 41, No. 1, 121.

A drop each of phosphate buffer 0.5M, pH 6.8, and bacillary suspension "about 100 μg protein", and D-dopa solution "about 2 mg/ml in water, made up fresh" are placed in a cavity slide which is kept in a Petri dish with a moisture source overnight at 37°C. If a "deep purplish" colour develops which gradually turns black this indicates the presence of *Mycobacterium leprae.*

C. S. Goodwin

13. DASTUR, D. K., RAMAMOHAN, Y. & SHAH, J. S. **Ultrastructure of lepromatous nerves. Neural pathogenesis in leprosy.** *Int. J. Lepr.,* 1973, v. 41, No. 1, 47-48.

Interested workers will need to read the original of this detailed description of the ultrastructure of nerves in lepromatous leprosy, with its many electron micrographs. It is not suitable for abstraction, but some conclusions can be stated.

In three patients of lepromatous type and one of borderline type, *Mycobacterium leprae* constantly parasitized Schwann cells, endothelial and perineurial cells with equal facility, three cell types which have in common the possession of a basement membrane, although smaller numbers of organisms were found also in endoneurium and perineurium in cells without a basement membrane. Schwann cells, therefore, were not considered to be the sole target cell. It was confirmed that Schwann cells as well as myelin and axons might be heavily damaged. However, it was mainly the Schwann cells of non-myelinated fibres that were parasitized, and the axons not at all.

D. S. Ridley

14. MALAVIYA, A. N., PASRICHA, A., PASRICHA, J. S. & MEHTA, J. S. **Significance of serologic abnormalities in lepromatous leprosy.** *Int. J. Lepr.*, 1972, v. 40, No. 4, 361-5.

The sera of 50 Indian patients with lepromatous leprosy but without *erythema nodosum leprosum* were analysed. Hepatitis-associated antigen was found in 14%. Rheumatoid factor was detected in 26%, anti-thyroid antibody in 16%, antinuclear antibody in 26%, and C-reactive protein in 24% of the patients; these percentages are similar to those among patients with "autoimmune diseases". The authors suggest that depressed cell-mediated immunity in lepromatous leprosy may allow the development of autoantibodies.

C. S. Goodwin

15. NEBOUT, M. A propos d'un cas de lèpre tuberculoïde nodulaire chez un adulte africain porteur de scarifications rituelles. **(Report of a case of nodular tuberculoid leprosy localized, in an adult African male, on ritual scarifications.)** *Méd. Trop.*, 1973, v. 33, No. 5, 523-8. English summary.

The author reports the appearance of lesions of tuberculoid leprosy 3 years after ritual scarification of the forehead in an adolescent African male. The nodular lesions were initially confined to the lines of scarification, but subsequently extended to several areas of skin, particularly over the thorax. Histological examination of the nodules showed typical tuberculoid changes, and the response to standard treatment was good.

No conclusions can be drawn regarding the introduction of leprosy bacilli, but the occurrence of the visible lesion was obviously connected with trauma to the skin.

S. G. Browne