ABSTRACTS

Predvatelnie Itogi Lechenya Bolynikh Leproi, Preparation CIBA-1906 (DPT) (*First Results of Treatment of Leprosy with the Preparation Ciba*-1906 (DPT), N. N. TORSUYEVA, Sbornik Nauchnikh Rabot Po Leprologii i Dermatologii, No. 16, 1962, Rostov-on-Don, pp. 40–44.

The author administered this drug to 49 patients of ages 21 to 90 years, with different forms of leprosy. Treatment lasted 2 years, and the drug was found to be effective, because after 5 months of treatment there was a marked clinical improvement in every case. Tolerance was good: there were no complications nor exacerbation of neuritis. Ciba-1906 is a very important anti-leprosy drug, for it is endowed with activity equal to that of the sulphones.

Sostoyaniye i Perspektivi Borbi c Leproi h Rostovskoi Oblasti (*The Progress and the Outlook of the Antileprosy Campaign in the Rostov-on-Don Region*). P. S. GREBENNIKOV and K. K. KHARABADJAKHOV. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don, pp. 3–8

There are 298 leprosy patients registered in the region. Of these 55.3% are treated in the dispensary and live at home, and 107 patients have already completed their treatment. Yearly an average of 9 new leprosy patients are registered and 11 cured cases leave the leprosarium. In the past 14 years the number of new leprosy cases has diminished considerably, and the percentage of lepromatous has reduced from 68 to 50% and the percentage of leprosy patients with initial manifestations has risen from 67 to 77%.

The Infectivity and Mode of Spread of Leprosy. M. F. R. WATERS. The Med. J. of Malaya, **16,** No. 4, June 1962, pp. 251–259. 21 refs.

The author has studied the former opinions of many authors and draws the following conclusions. Until a satisfactory serological test for leprosy is devised, the study of the epidemiology of leprosy will remain difficult and controversial. However, it seems clear that leprosy patients comprise the only known source of infection, and the chief risk lies in smear-positive cases, though the tuberculoid case is not free from risk. Direct contact with a leprosy patient is probably the chief method of transmission, and the more prolonged and intimate the contact, the greater is the risk of infection. It may not be that prolonged intimate contact is necessary in every case. Individual susceptibility to the disease varies greatly. There is a high incidence of childhood leprosy in many highly endemic areas. The infectiousness of patients is rapidly reduced by the specific treatment. From country to country the epidemiology varies. Careful local surveys with good follow-up are needed. The control of leprosy

depends on careful case-finding surveys, along with persistent treatment of those found, and follow-up of contacts.

ACTH, Cortisone and Prednisone in the Treatment of Lepra Reaction. L. S. GARUS. Collected Scientific Papers on Leprology and Dermatology. No. 16, 1962. Rostov-on-Done, pp. 73–77.

He treated 33 patients with lepra reactions with these corticosteroids during 5 years. Each showed itself very effective, especially against febrile reactions, but relapse could not be prevented. The reaction generally declined to a less severe form, and tended to regress in a fairly short time under the influence of repeated injections of the corticosteroids.

Immunological and Allergic Reactions in the Sulphone Treatment of Leprosy. D. K. KANELE. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don, pp. 78–82.

In a group of 46 lepromatous patients given sulphone treatment for two years and observed thereafter for eight years, positivization of the Mitsuda reaction was only noted in 1 patient, but 5 tuberculoid patients with 2 negatives to lepromin before treatment turned strongly positive under the influence of the sulphones, The change in the Mitsuda reaction was not observed in the lepromatous after treatment for five years to eight years. Lepromatous patients not tuberculous do not react to tuberculin, whereas 50% tuberculous leprosy patients are negative to tuberculin. The leprosy infection alone in absence of the bacillus of Koch is incapable of provoking a para-allergy to tuberculin.

Trial of Local Treatment of Leprosy by Injections of 50% *Sulphetrone in the Nasal Mucosa.* G. I. CHIZHE. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don, pp. 51–53.

The injections of 50% sulphetrone were given into the nasal mocosa once in 5 days for a month in 32 lepromatous patients. Of these 23 were rendered negative after a month of treatment. Six months later, bacilli were found in each one of these patients, but they disappeared when a series of injections were repeated. This method could be used as an adjunct to the general treatment of leprosy.

The Lepra Reaction and Erysipelas. E. P. BUKING. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don, pp. 61–65.

In 386 patients observed by the author over ten years, 125 showed erysipeloid reactions. These manifestations were noted especially in older women, with grave or multiple lesions, often with perforating ulcers and osteomyelitis. In analysing his Table of these cases of lepra reaction the author concludes that these 'pseudo-erysipelas' reactions

are provoked by a secondary infection in weakened and cachectic subjects. In these cases, penicillin injections had to be given.

The Influence of the Lepra Reaction (Paralepromatous Fever) in the Prognosis of Lepromatous Leprosy. E. P. BUKING. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don, pp. 66–71.

The author reviews the literature and analyses the evolution of lepromatous leprosy in 289 patients observed for ten years. He divides them into three groups, (1) without lepra reactions, (2) with mild or short lepra reactions, (3) with severe or long reactions. He shows that in the third group it tends strongly to progressive aggravation, more so than in the patients of the other groups.

Contribution to the Study of Proteic Fractions in the Serum of Leprosy Patients. N. N. TORSUYEVA. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962, Rostov-on-Don, pp. 86–89.

The author has studied the sera of 22 leprosy patients and 6 patients with arteriosclerosis, using a modified paper electrophoresis method. The serum of leprosy patients contains less albumen than of healthy subjects or those suffering from arteriosclerosis. On the other hand the serum globulin level is higher in leprosy and especially in the lepromatous form. The albumin globulin ratio does not go beyond normal values in tuberculoid leprosy and in arteriosclerosis. It is below normal in lepromatous and undifferentiated leprosy.

The Treponeme Immobilisation Test in Leprosy. A. V. FLORINSKY, *et al.* Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don, pp. 90–97.

Simultaneously in 242 leprosy patients the authors carried out the Nelson test and the following serological reactions, Wassermann Test with two nonspecific antigens and a cardiolipin antigen; and Kahn and Sachs-Vitebsky flocculation reactions. The authors conclude from these tests that the Nelson test allows of deducing the existence of serological reactions specific in leprosy patients. Since this test gave positive results in 2·8 % of cases of leprosy not attacked by syphilis this confirms the opinion of certain authors who have also noted positive nonspecific results of the test in leprosy. One cannot consider the treponeme immobilisation test to be absolutely specific. The test reads positive especially in lepromatous patients.

Proteinuria in Patients with Leprosy in Malaya. J. A. MCFADZEAN. Transact. of the Roy. Soc. of Trop. Med. and Hyg., **56**, No. 5, Sept. 1962, pp. 404–406.

The early morning specimens of urine were tested from 99 leprosy patients admitted to a leprosarium in Malaya. There was some degree of proteinuria in 73 %, and in most patients the proteinuria was intermittent. The same patients after residence in the

leprosarium for 3 to 4 months on a first class diet, and also after 6 to 12 months, showed a decrease in the incidence and intensity of the proteinuria. Protein deficiency in the diet before admission may well have been the cause of it.

The Skin Reactions of Leprosy Patients to the Intradermal Inoculation of Mycobacterial Antigens. J. A. MCFADZEAN. Transact. of the Roy. Soc. of Trop. Med. and Hyg., **56**, No. 5, Sept. 1962, pp. 407–410.

The author injected 48 leprosy patients in Malaya intradermally with lepromin, tuberculin, antigens derived from BCG, *M. fortuitum*, *M. rhodocrous*, *M. marinum*, *M. phlei* and *M. Smegmatis* and found no correlation between the reactions to lepromin and those to any other antigens. There was a significant correlation between the reactions to tuberculin at 72 hours and those to *M. marinum* at 72 hours, and when the reactions at 72 hours to tuberculin were compared with the reactions at 21 days to *M. marinum*.

The Serological Reactions of Syphilis in Leprosy. G. V. MERTSLIN and V. K. LOGINOV. Collected Scientific Papers on Leprology and Dermatology, No. 16, 1962. Rostov-on-Don.

With the sera of 202 leprosy patients the authors carried out the Wassermann Reaction, using the fixation of complement according to MERTSLIN and the SACHS-VITEBSKY reaction. They observed positive and weakly positive results in 7 patients out of 17 not treated. In 120 patients previously treated they noted 4 positive reactions and 21 weakly positive. Almost all these reactions, save one, were non-specific. All the evidence showed that they were caused by changes in the lipid and globulin content of the serum. At the present time these pseudo-positive reactions are noted less often than during the pre-sulphone era.

The Appearance of Dead Leprosy Bacillus by Light and Electron Microscopy. R. J. W. REES and R. C. VALENTINE. Internat. J. of Leprosy, **30,** No. 1, 1962, pp. 1–9.

The authors made preparations of leprosy bacilli and stained them by the Ziehl-Neelsen method and examined them first by the light microscope and then with the electron microscope. They found by comparing the same individual bacilli that the material which stains red is in the cytoplasm of the bacilli and not in the cell wall, and that every bacillus which appears irregularly stained under the light microscope is shown by the electron microscope to be completely degenerate and dead. There is a close agreement between the proportion of degenerate forms of human leprosy bacilli as shown by the electron microscope, and irregularly staining bacilli with the light microscope.

Before undertaking these comparative studies the authors studied with Ziehl-Neelsen the staining properties of *M. phlei* and *M.*

lepraemurium and found that suspensions containing very large numbers of cell walls do not stain with carbol-fuchsin, and concluded that the constituent of mycobacteria which binds the carbol-fuchsin resides in the cytoplasm and not in the cell wall.

In their subsequent studies on *M. leprae* and *M. lepraemurium* they found a high correspondence between the electron-dense material inside the cell wall and the carbol-fuchsin-staining moiety. The irregular staining of the degenerate form of the bacillus can only be identified by the light microscope when there is sufficient residual cytoplasm to outline the bacillary shape, but their studies clearly demonstrated for the first time that irregularly-stained forms can be identified exactly with degenerate forms seen with the electron microscope, which are likely to be non-viable. All forms of irregularly-stained bacilli whether defined as 'fragmented' or 'granular' or 'beaded' can be considered dead organisms. The observation of DAVEY, T. F. (1960) is therefore supported and is of great importance in experimental chemotherapy and prognosis.

The Culture and Experimental Transmission of M. leprae in Monkeys. A. MUKHERJI. Preliminary Report presented to Indian Medical Assoc., Lucknow, Dec. 1958 and Indian Science Congress Assoc. Jan. 1958. 4 illustrations, 5 references.

The author cultivated *M. leprae* on a medium containing extract of *M. phlei*. The material consisted of 2 g. of tissue from human lepromatous patients, taken from the ears and macerated, mixed with a quantity of water, and digested with 0·1 g. of papain at 60° C for 18 hours. To this were added the well-beaten contents of two fresh eggs, 6 cc. of Douglas broth, and 0·1 g. of asparagin previously dissolved in a little water. Also a 96-hour culture of *M. phlei* 1 g. was well ground with sea sand and mixed with a little water and digested with 0.1 g. papain for 18 hours at 60° C and Seitz filtered. This filtrate was added to 25 ml. of solution of Lowenstein-Jensen medium and well-beaten contents of four eggs. Lepromatous tissue was inoculated in these media and showed signs of bacterial growth about 7–10 days and in some cases not until 4 or 5 weeks. Also of 12 monkeys about 1 g. of lepromatous tissue was inoculated in suspension in 5 intraneurally along the ulnar nerve. Lesions developed in the nerve and the skin of the face, clawing of the hand on the injected side, and the presence of acid-fast bacteria thought to be *M. leprae*. In one monkey both hands and both feet were grossly clawed. The author considers that true leprosy infection was transmitted to the monkeys. Control monkeys who had received only inoculations of *M. phlei* along the ulnar nerves showed nothing abnormal.

The Epidemiology of Leprosy: Present Status and Problems. J. A. DOULL. Internat. J. of Leprosy, **30,** 1, 1962, pp. 48–66 (55 refs.).

The author describes the early epidemiological opinions of HIRSCH 80 years ago and says our knowledge has extended greatly

since then. There is more and more convincing evidence of the contagiousness of leprosy. The evidence is strongly indicative of *M. leprae* being the etiological agent, even though direct proof is still lacking. Much has been learned of the clinical varieties and their relative importance, and the lepromin test is proving a very helpful indication of the individual resistance against the disease. From field studies come an emphasis on the importance of household associations in sustaining the infection, and the importance of sex and age. Much further study is required, but we now have a good working hypothesis.

A New Concept of the Pathogenesis of Leprosy. P. GHOSAL. Indian J. of Dermat. **7**, 2, pp. 1–19.

The author is mainly concerned with the host reaction to leprosy after the entrance of the bacilli through the skin, and resistance by the histiocytes, and describes an allergic reaction against the antigenic protein, an immunity reaction against the lipoid, and a lepromatous reaction against the active bacilli. He describes the meaning of these.

Leprosy Research Programme of WHO is given in The Medical Research Programme of WHO 1958–1961. Report by the Director General, Geneva, 1961. pp. 26–27.

1. *Introduction.* The Leprosy Unit was set up in November 1958. A Scientific Group on Leprosy Research was convened in February 1959 which reviewed the gaps in our knowledge and recommended a wide programme of research. The recommendations of the Study Group were reviewed in the first session of the ACMR. Several projects aimed at obtaining the transmission of human leprosy to laboratory animals and at the growth of *M. leprae* in culture media, have been initiated and some trials of leprosy drugs as well as studies of leprosy prevention, and epidemiological investigations, are now in progress.

2. *Research on the Microbiology of Leprosy* has been given first priority because the transmission of *M. leprae* to laboratory animals and the cultivation of this micro-organism would enable many problems to be solved, and would have considerable impact on leprosy research and leprosy control.

To this end, WHO has:

(i) organized the regular supply of iced biopsies of human leprosy to laboratories interested in the cultivation and transmission of human leprosy to laboratory animals;

(ii) supported research on the transmission of human *M. leprae* to different rodents;

(iii) supported cytological research on the standardization of lepromin and on the serology of leprosy.

3. *Trials of New Leprosy Drugs*, with control groups of patients treated with DDS, have been planned; the collaboration of four centres has been obtained to undertake these trials, on a uniform

basis; statistical analysis has been started on work previously carried out in chemoprophylaxis of leprosy.

The results of the drug trials will provide WHO with definite criteria for the efficacy and tolerance of the many new anti-leprosy drugs and may lead to certain changes in the conduct of mass campaigns against leprosy.

The WHO Leprosy Advisory Team assessing leprosy mass campaigns in progress, confirmed the efficacy of DDS; after one year's treatment, many of the regularly treated lepromatous cases showed definite improvement, clinically and bacteriologically, and after five years' treatment more than 80 per cent of the lepromatous patients were bacteriologically negative. The remaining 20 per cent of bacteriologically positive cases were generally intolerant or reluctant to have regular treatment.

4. *The Epidemiology of Leprosy* has been investigated. Since 1959, WHO has established a Leprosy Advisory Team to assess different leprosy control campaigns in progress and, at the same time, to carry out epidemiological investigations by examination of the whole population by means of the random sampling method. The team has collected reliable information on the prevalence of leprosy, lepromatous rate, prevalence of different types of the disease and its distribution by race, sex and age. It has also collected for the first time information on the frequency and degree of disabilities, also classified by race, sex, age and clinical forms of the disease.

5. *The Problem of Leprosy Disabilities, their Prevention and Treatment*, has also received attention and a Scientific Meeting on Rehabilitation in Leprosy took place in Vellore in November 1960.

As a self-supporting project, WHO obtained the collaboration of a Swiss private organization in the implementation of a pilot project in the Republic of Cameroun, to ascertain the possibility of linking rehabilitation campaigns with leprosy mass campaigns.