

Abstracts

1. MICROBIOLOGY

94. KATO, L. & ISHAQUE, M. A simplified hyaluronic acid based culture medium for mycobacteria isolated from human lepromata. *Int. J. Lepr.*, 1976, v. 44, No. 4, 431-434.

“Acid-fast bacilli multiplied in liquid culture media containing hyaluronic acid when inoculated with mycobacteria from a lepromatous leprosy nodule. The culture was readily subcultured at 10 day intervals in the homologue media, but failed to grow in the Dubos, Middlebrook and Lowenstein media. These findings confirm the results of Skinsnes *et al.* (1975). Identification of this culture is not yet available, however it gives positive immunofluorescence with authentic anti-*M. leprae* serum. The obtained culture also grows as a chromogenic culture at 34°C on a simple medium prepared from trypsin digested human umbilical cord, yeast extract powder and glycerol. This medium can be sterilized in an autoclave, but filter sterilized sheep, bovine or horse serum must be added aseptically as an essential ingredient. The medium does not differ considerably from the hyaluronic acid medium proposed by Skinsnes *et al.*, but it is easier to prepare, it is inexpensive and permits a logarithmic growth within 7 days of the so far unidentified culture isolated from leprotic nodules.”

95. LEVY, L. & MERIGAN, T. C. Inhibition of multiplication of *Mycobacterium leprae* by polyinosinic-polycytidylic acid. *Antimicrob. Agents Chemother.*, 1977, v. 11, No. 1, 122-125.

“Contrary to the results of an earlier study in which polyinosinic-poly-cytidylic acid [poly(I:C)] administered intraperitoneally to mice had no effect on multiplication of *Mycobacterium leprae* in the mouse footpad, the local administration of poly(I:C) every 12 h for 15 doses during logarithmic multiplication was found both to inhibit bacterial multiplication and to produce high tissue levels of interferon (IF). Local administration of poly(I) alone inhibited multiplication of *M. leprae* to almost as great a degree without at the same time producing a measurable IF titer in the footpad tissues. Mouse IF and ‘mock’ IF both inhibited bacterial multiplication to the same degree, but administration of only the former resulted in a measurable IF titer. Polyadenylic-polyuridylic acid administered locally neither inhibited multiplication nor induced IF; fetal calf serum, administered in the same concentration as found in the preparations of IF and mock IF, was modestly inhibitory, without inducing IF. Thus, the local administration of poly(I:C) appears to have inhibited multiplication of *M. leprae* independently of IF induction.”

96. MUROHASHI, T. & YOSHIDA, K. [Drug sensitivity test of *M. leprae* using liquid media.] *Lepro*, 1976, v. 45, No. 1, 1-8. [In Japanese.]

The English summary appended to the paper is as follows:—

“Drug sensitivity was examined using semi-synthetic liquid media on two strains of *M. leprae* isolated from nodules of L-type leprosy patients. The results revealed that L-Jul-74-1 strain was sensitive to both DDS and Rifampicin, and L-Feb-75 strain was sensitive to all of DDS, Rifampicin and Isoniazid. According to the information of the leprosaria, to which the host patients of these strains belong, the administration of DDS to the former case and Rifampicin

to the latter, respectively, resulted in the rapid and remarkable improvement of clinical symptoms, in good agreement with the above mentioned test results. It was revealed, further, that the drug sensitivity of *M. leprae* could be determined by this *in vitro* test method as early as about 3 months' incubation at 37°C. Drug sensitivity test using liquid culture media will facilitate the selection of adequate drugs to be administered to the concerned leprosy patients."

97. MATSUO, Y., & OTSUNOMIYA, S. **Attempts at cultivation of *Mycobacterium leprae* in cell cultures.** *Jap. J. Microbiol.*, 1976, v. 20, No. 5, 471-473.

Mycobacterium leprae failed to multiply in a mouse cell culture system which had proved successful for the cultivation of *M. lepraemurium*. However, in 2 out of 14 experiments, *M. leprae* was proved by subsequent mouse inoculation to have survived for 54 and 70 days. Technical details are given of the culture system, which is based on footpad cells.

D. S. Ridley

98. BALAKRISHNAN, S. & DESIKAN, K. V. **Blood and tissue levels of diamino diphenyl sulphone (DDS) in experimental mice.** *Indian J. Med. Res.*, 1977, v. 65, No. 2, 201-205.

"Blood and tissue levels of diamino diphenyl sulphone (DDS) in 24 experimental mice receiving diets containing 0.01% DDS, were estimated. An average concentration of 1.2 µg/ml of DDS was found in the blood. The concentration of DDS in the liver was about twice that in blood. In the spleen, the level of DDS was slightly higher than in blood but the muscles contained much less. The drug was detectable in the nerves at a concentration almost equal to that in the blood. The clinical implications of these findings in the treatment of leprosy are discussed."

99. LEVY, L. **The activity of a thiadiazole on *Mycobacterium leprae*.** *Proc. Soc. Exp. Biol. Med.*, 1976, v. 153, No. 1, 34-36.

"A new broad-spectrum antimicrobial, 2-amino-5-(1-methyl-5-nitro-2-imidazolyl)-1, 3, 4-thiadiazole, reported inactive against *Mycobacterium tuberculosis*, inhibited multiplication of *M. leprae* in the mouse footpad when administered orally to the mice. The dose-response curve was very steep: 0.2 g% of the drug exhibited considerable activity, whereas 0.05 g% was only modestly active in one experiment and inactive in another. This drug appears to be one of the few that is bactericidal for *M. leprae*."

100. HASTINGS, R. C., RICHARD, V., JR, CHRISTY, S. A. & MORALES, M. J. **Activity of ascorbic acid in inhibiting the multiplication of *M. leprae* in the mouse foot pad.** *Int. J. Lepr.*, 1976, v. 44, No. 4, 427-430.

"Ascorbic acid was fed to mice in concentrations of 0.05%, 0.15%, and 0.45% w/w in the diet. Six months after inoculation of *M. leprae* into the foot pads, there were significantly fewer acid-fast bacilli harvested from animals receiving 0.15% and 0.45% w/w ascorbic acid than from control mice. On the other hand, *M. leprae* did multiply in mice fed ascorbic acid while no multiplication at all was observed in animals fed dapsone, clofazimine or rifampin. No toxic effects of ascorbic acid were noted in these mice."

101. SHEPARD, C. C., YOUMANS, A. Y. & YOUMANS, G. P. **Lack of protection afforded by ribonucleic acid preparations from *Mycobacterium tuberculosis* against *Mycobacterium leprae* infections in mice.** *Infection & Immunity*, 1977, v. 15, No. 3, 733-736.

"Mycobacterial ribonucleic acid preparations from H37Ra, an attenuated strain of *Mycobacterium tuberculosis*

bacterium tuberculosis, provide their usual marked protection against *M. tuberculosis* challenge; however, they provided no protection against *Mycobacterium leprae* challenge. Suspensions of intact H37Ra were not effective against *M. leprae*. Suspensions of BCG gave their usual distinct protection against *M. leprae* challenge.”

2. BIOCHEMISTRY, PATHOLOGY, IMMUNOLOGY

102. REA, T. H., LEVAN, N. E. & TERASAKI, P. I. **Histocompatibility antigens in patients with leprosy.** *J. Infect. Dis.*, 1976, v. 134, No. 6, 615-618.

“The frequencies of distribution of 25 histocompatibility antigens were determined in 92 Mexican patients with leprosy and compared with those in 315 Mexicans who did not have the disease. No statistically significant differences were found between the patients and the controls in regard to histocompatibility antigens, and subgroups with a significant difference could not be identified by division of the patients according to the density of *Mycobacterium leprae* or the presence or absence of cell-mediated immunity directed against antigens of *M. leprae*.”

103. PARMASWARAN, M., GIRDHAR, B. K., DEO, M. G., KANDHARI, K. C. & BHUTANI, L. K. **Macrophage function in leprosy.** *Int. J. Lepr.*, 1976, v. 44, No. 3, 340-345.

“The macrophage function in patients with leprosy was assessed by estimating histochemically the acid phosphatase activity in skin biopsies and by assessment of phagocytic and lytic capability of *in vitro* cultured macrophages derived from peripheral blood monocytes, challenged with live *M. leprae*.

“Acid phosphatase was demonstrated in skin biopsies of different groups of leprosy patients classified according to the Ridley and Jopling scale. The degree of acid phosphatase positivity was correlated with clinical spectrum, Bacterial and Morphologic Indices and treatment status.

“Peripheral blood monocytes from patients with leprosy, either tuberculoid or lepromatous, were cultured in monolayers and challenged with *M. leprae*. The phagocytosis and lysis of mycobacteria by macrophages was observed at different time intervals from the 1st to the 28th day. The morphology of the macrophages in different types of leprosy was also studied.

“The results suggest that macrophages from patients with either tuberculoid or lepromatous leprosy are not themselves capable of lysing live *M. leprae*.

“Live *M. leprae* injected into the foot pad of Wistar strain of rats evoked similar responses on the tenth day, in normal and protein deficient animals.”

104. ANDERS, E. M., MCADAM, K. P. W. J. & ANDERS, R. F. **Cell-mediated immunity in amyloidosis secondary to lepromatous leprosy.** *Clin. Exp. Immunol.*, 1977, v. 27, No. 1, 111-117.

“Cell-mediated immunity in lepromatous leprosy patients with and without amyloidosis has been studied. Amyloidosis occurred mostly in patients with a history of recurrent erythema nodosum leprosum (ENL) reactions. For this reason, 2 control groups of leprosy patients were included, one having a history of recurrent ENL and the other little or no ENL. The lack of responsiveness to lepromin *in vivo* and *in vitro*, characteristic of lepromatous leprosy, was not altered by the presence of amyloidosis or a history of ENL. No significant difference between the patient groups was observed in the response to PPD *in vitro*, but skin reactivity to PPD was significantly lower in the patients with amyloidosis than in those without amyloidosis. In contrast, the PHA responses of patients with amyloidosis were significantly higher than those of control patients without a history of ENL, but not significantly different from those of control patients with a history of recurrent ENL.

“Lepromatous leprosy patients who develop amyloidosis thus appear to belong to a group, susceptible to repeated attacks of ENL, whose PHA responses are higher than those of other lepromatous leprosy patients. The lower skin reactivity to PPD observed in the amyloid group may reflect a general impairment in delayed cutaneous hypersensitivity.”

105. THOMAS, M., JOB, C. K. & KURIAN, P. V. **Susceptibility to leprosy and serum atypical pseudocholinesterase.** *Int. J. Lepr.*, 1976, v. 44, No. 3, 315-318.

“The pseudocholinesterase levels and the nature of the enzyme as shown by the dibucaine number (D.N.) were estimated in 720 controls and 420 lepromatous leprosy patients, and 301 tuberculoid leprosy patients. There was no statistical difference in the esterase levels between leprosy patients and normal controls. But the distribution of D.N. was significantly different in the leprosy patients compared to the normal population studied. The D.N. below 40 indicates the samples with the atypical pseudocholinesterase—the presence of which is genetically determined. The distribution of samples with D.N. below 40 was significantly higher in the lepromatous leprosy patients compared to the normal population or tuberculoid leprosy patients. It is proposed that since there is a greater incidence of the atypical enzyme in lepromatous leprosy cases, the presence of this enzyme or the deficiency of the typical enzyme may make a person more susceptible to leprosy.”

106. DATE, A., THOMAS, A., MATHAI, R. & JOHNY, K. V. **Glomerular pathology in leprosy. An electron microscopic study.** *Am. J. Trop. Med. Hyg.*, 1977, v. 26, No. 2, 266-272.

“Electron microscopic examination of renal biopsies from 19 patients with leprosy who had edema, proteinuria, or hematuria showed a proliferative glomerulonephritis in 12, amyloidosis in 2, and no lesion in 5. The proliferative glomerulonephritis was of different patterns: diffuse with or without exudation, focal, or mesangial. Subendothelial and/or subepithelial deposits were seen in 5 biopsies. Of the patients with glomerulonephritis, 3 had a reduced total serum complement level, 5 had erythema nodosum leprosum, 5 had evidence of recent streptococcal infection, and 2 had microfilariae in the peripheral blood. The significance of these findings is discussed.”

107. KAUR, S., WAHI, P. L., CHAKRAVARTI, R. N., SODHI, J. S., VADHWA, M. B. & KHERA, A. S. **Peripheral vascular deficit in leprosy.** *Int. J. Lepr.*, 1976, v. 44, No. 3, 332-339.

Trophic changes in leprosy have always been attributed to nerve degeneration. This paper reports on studies of their vascular component, including clinical nutritional changes, histopathological changes and, in particular, brachial arteriography, in 35 patients, and posterior tibial arteriography in 1 patient. Arteriographic abnormalities, including occlusion, narrowing, tortuosity, dilatation, post stenotic dilatation, irregularity and incomplete filling of the lumen with radio-opaque material, were seen in more than 2 vessels in 50% of the arteriograms in wrist and palm; digital arteries showed abnormality in more than 75% of patients. The ulnar artery was more frequently involved (74%) than the radial (50%). Superficial and deep palmar arches were equally affected. There was no predilection for one form of leprosy to show arterial changes more than others. This careful study clearly demonstrates the frequency of vascular changes in the extremities in leprosy and, in the opinion of the authors, these must play an important role in causing mutilations and deformities.

T. F. Davey

108. CARAYON, A., LANGUILLON, J. & GIRAUDEAU, P. Névrites réactionnelles micro-angiopathiques dans la lèpre borderline. [**Micro-vascular lesions in peripheral nerves appearing in the course of acute reaction in borderline leprosy.**] *Méd. Afr. Noire*, 1976, v. 23, No. 11, 681-690.

The authors review the pathology of damage to the peripheral nerves that appears during reactional episodes in patients suffering from borderline leprosy and suggest that much of the damage is due to lesions in the blood vessels (vasa nervorum) surrounding the nerve trunks and penetrating intraneurally. They thus consider that the lesions are on a par with auto-immune phenomena, as in Guillain Barré's neuropathy, periarteritis nodosa and rheumatoid arthritis.

The commonest history of these cases is for an initial downgrading reaction to be followed—usually after a period of anti-leprosy treatment—by a reversal reaction. The localization of the lesions in the nerve trunks is usually distant from the classical sites of predilection and may affect nerves that are less frequently damaged in leprosy, for example, the radial, the median (in its lower path) and the internal popliteal. The enlarged nerve is usually soft on palpation, the consistency being due to the presence of localized oedema.

Clinical suspicion of the occurrence of this type of neuropathy is based on the unusual localization, the late appearance of the lesions, an association with pre-existing nerve lesions of classical type, the insidious and painless progression of the nerve damage, and the presence of submaximal electrophysiological changes, notwithstanding the degree of motor and sensory deficit. Because no branches leave the nerve trunk at the sites affected, the extent of the functional destruction may long remain unsuspected.

The result of the lepromin test and the histopathological picture are consistent with the hypothesis of a microvasculitis affecting the media of the small vessels. Complement and immunoglobulin are deposited in these situations, together with immune complexes.

The authors favour limited surgical intervention for precise indications, with operative endoneurolysis in selected cases to relieve pressure on nerve fibres and to accelerate nerve conduction velocity. They even suggest removal of a segment of irreversibly damaged nerve in order to remove a local source of antigenic material. They recommend long-acting sulphonamides with adequate doses of corticosteroids to control the acute manifestations.

In their view, high doses of anti-leprotics (dapsone or sulphonamides) may safely be given to patients who have no sign of nerve damage, but where there are indications of pre-existing damage, then drugs may precipitate a serious exacerbation.

S. G. Browne

109. NAIK, S. S., TANKSALE, K. G. & GANAPATI, R. Study of urinary nitrogenous constituents in reactions of leprosy. *India. J. Med. Res.*, 1977, v. 65, No. 2, 193-200.

“Nitrogen intake through vegetarian diet was studied in uncomplicated hospitalised leprosy patients and patients in different stages of reactions. The protein intake in hospitalised leprosy patients was more than in an average Indian diet. It was reduced in reaction cases of leprosy in accordance with the severity of the episode. Total nitrogen excreted through 24 h urine was studied in leprosy patients along with urinary nitrogenous constituents, such as urea, uric acid, creatinine, creatine, α -amino acid nitrogen, hydroxyproline. These urinary constituents were found to increase in accordance with the severity of reaction. The excretion of α -amino acid nitrogen and hydroxyproline in urine was significantly increased in reaction of leprosy. It is suggested that these parameters along with hydroxyproline: creatinine ratio can be used to assess the severity, subsidence and onset of reaction in leprosy. Impairment in functions of kidney and adrenal cortex was observed during reactions of leprosy. The causes for the increased excretion of the nitrogenous constituents in reaction of leprosy have been discussed.”

110. CARNUS, H., LANGUILLON, J. & BAQUILLON, G. Etude de la sensibilité comparée à la tuberculine chez des lépreux lépromateux et tuberculoïdes, dans la région de Dakar (données préliminaires—février 1976.) [A study of comparative tuberculin sensitivity in patients with lepromatous or tuberculoid leprosy in the Dakar area.] *Bull. Soc. Méd. Afr. Noire Lang. Fr.*, 1976, v. 21, No. 3, 376-382. English summary (6 lines).

Having noted the considerable discrepancies in published work on the matter, the authors investigated tuberculin sensitivity (0.1 ml of tuberculin RT23, administered by intradermal injection), in 3 groups of patients with leprosy: 109 in-patients, 141 out-patients, and 162 inmates of a rural leprosy village. They compared the results among patients with either lepromatous or tuberculoid leprosy and a group of 176 healthy people from the outskirts of Dakar.

The study revealed no marked depression of tuberculin sensitivity, either among those with lepromatous leprosy or among those with the tuberculoid form. There were, however, suggestions of definite differences between the groups of patients with lepromatous leprosy, depending on the place where they were living. This observation calls for further study.

S. G. Browne.

111. SKINSNES, O. K. & HIGA, L. H. The role of protein malnutrition in the pathogenesis of ulcerative "Lazarine" leprosy. *Int. J. Lepr.*, 1976, v. 44, No. 3, 3346-358.

The systematic study of an experimental model, using Wiersung rats infected with *Mycobacterium lepraemurium*, leads the authors to suggest that Lazarine leprosy may result from enhanced lepromatous infection occurring as a result of protein malnutrition. The pathogenic mechanisms appears to be impairment of cellular immunity, probably enhanced by concomitant impairment of humoral antibody immunity, with lowered resistance to secondary infection. The tendency to ulceration is also the likely result of protein malnutrition.

T. F. Davey

3. CLINICAL

112. MCDUGALL, A. C. & SALTER, D. C. Thermography of the nose and ear in relation to the skin lesions of lepromatous leprosy, tuberculosis, leishmaniasis, and lupus pernio. *J. Invest. Derm.*, 1977, v. 68, No. 1, 16-22.

"The nasal and aural temperature patterns of 100 normal subjects have been investigated by infrared thermography, paying particular attention to possible errors of instrumentation and technique which may arise in such areas of complex morphology.

"Although by no means invariable, the pattern of thermograms confirms that certain areas which are relatively cool are often affected in lepromatous leprosy, tuberculosis, leishmaniasis, and lupus pernio. In lepromatous leprosy, low temperature appears to govern the localization of disease in most parts of the body, and the possible reasons for this are discussed. Thermography may have a place in the investigation of other skin diseases in which the distribution of lesions on the body surface is unexplained."

113. SEHGAL, V. N., AGGARWAL, D. P. & SEHGAL, N. Ocular leprosy. *Indian J. Med. Res.*, 1976, v. 64, No. 11, 1600-1606.

"Four hundred and thirty leprosy patients were studied for ocular involvement of which 229 were of tuberculoid, 69 of lepromatous, 69 of borderline, 63 of neuritic and 3 patients of

reaction of which 2 were lepromatous and 1 borderline leprosy. Ocular lesions were seen in 106 patients comprising 43 (18.7%) tuberculoid, 30 (43.4%) lepromatous, 15 (21.7%) each borderline and neuritic and 3 (4.2%) of reactions. Majority of patients with affliction of the eyes were in the age group of 20 to 59 years. The commonest clinical signs in different types of leprosy were madarosis and infiltration of the eyebrows and eyelids and were seen frequently in lepromatous leprosy. Conjunctivitis, episcleral nodules, interstitial keratitis, pannus, punctate keratitis and corneal opacities were also seen, but their occurrence was infrequent. The affection of the posterior segment of the eye was uncommon. The demonstration of *Mycobacterium leprae* in conjunctival scrapings and/or fluid in patients of lepromatous leprosy was of interest as it supports the earlier reports of direct invasion of ocular tissues in this type of leprosy."

114. MCDUGALL, A. C. & ARCHIBALD, G. C. **Lepromatous leprosy presenting with swelling of the legs.** *Br. Med. J.*, 1977, Jan. 1, 23-24.

This is a report from Oxford of an adult Pakistani male who sought medical advice because of oedema of both legs and was found, on examination, to have skin lesions of erythema nodosum leprosum (ENL). There was a past history of nasal blockage and epistaxis. Large numbers of leprosy bacilli were found in skin and nasal mucosa, and biopsies were diagnostic of lepromatous leprosy in reaction. The aetiology of oedema in leprosy is discussed.

[The important lesson to be learnt from this paper is that skin lesions of lepromatous leprosy can be preceded, often for years, by nasal symptoms and by oedema of the legs.]

W. H. Jopling

115. PAPY, J. J., LANGUILLON, J., PAPY-TEMIME, M. & COUNIL, C. Les multinévrites hanséniennes. Signes électrophysiologiques, infracliniques et diagnostic. [**Leprous polyneuritis: electrophysiological signs of subclinical and diagnostic importance.**] *Méd. Afr. Noire*, 1976, v. 23, No. 11, 693-696.

The great rarity of specific alterations in nerve trunks pathognomonic of leprosy induced the authors to search for a series of indications that would together make the diagnosis of leprosy most likely in patients in whom skin lesions were absent or equivocal. They selected patients with only a single nerve apparently damaged and proceeded to investigate the other main peripheral nerve trunks. In these 59 patients, they determined the following 3 values: qualitative electrodiagnosis, electromyogram and measurement of the motor conduction velocity.

They found that the motor conduction velocity was the most sensitive indication of nerve damage in the absence of any clinical evidence of such damage. They insist that examination of a length of nerve (e.g., the median) should be done segment by segment since examination of the whole nerve may not disclose considerable local damage. They adduce some evidence that the initial site of damage may be in the vicinity of the fibro-osseous tunnels along the course of the nerve. It is regretted that no investigative apparatus exists for the precise measurement of sensory loss; in leprosy, such loss generally precedes gross motor deficit.

As a matter of practical advice, the authors suggest that, when a patient presents with evidence of ulnar nerve damage in the absence of unequivocal indication of the cause, the nerve conduction velocity of the contralateral ulnar nerve and other nerve trunks should be investigated.

S. G. Browne

4. THERAPY

116. FIELDSTEEL, A. H. & LEVY, L. Dapsone chemotherapy of *Mycobacterium leprae* infection of the neonatally thymectomized Lewis rat. *Am. J. Trop. Med. Hyg.*, 1976, v. 25, No. 6, 854-859.

"In order to learn whether the neonatally thymectomized Lewis rat (NTLR) infected with *Mycobacterium leprae* could serve as a model for chemotherapeutic studies in a situation resembling that found in human lepromatous leprosy, NTLR inoculated with *M. leprae* either locally or intravenously 9 to 16 months earlier were treated for from 1.5 to 8.5 months with dapsone (4,4'-diaminodiphenylsulfone, DDS) incorporated in the rat chow in the concentration providing the minimal inhibitory concentration of the drug for *M. leprae* and in the 100-fold larger concentration. NTLR were killed at intervals; the *M. leprae* were counted and passed to mice. Treatment with the smaller dosage of dapsone neither killed *M. leprae* nor reduced the number of organisms in the bacterial populations, whereas treatment with the larger dosage both killed *M. leprae* and reduced their numbers. The rate at which the organisms were killed (i.e., rendered noninfective for mice) was much the same as that in patients treated with dapsone in comparable dosage. The dead organisms were removed from the rat tissues at a faster rate than encountered in patients. The NTLR may indeed be suitable for chemotherapeutic studies relevant to man. In addition, the more rapid disappearance of dead *M. leprae* from the rat tissues may facilitate the study of treatment regimens designed to eradicate persisting viable organisms."

117. HASTINGS, R. C., JACOBSON, R. R. & TRAUTMAN, J. R. Long-term clinical toxicity studies with clofazimine (B663) in leprosy. *Int. J. Lepr.*, 1976, v. 44, No. 3, 287-293.

"Fifty-one leprosy patients receiving long term clofazimine, have undergone systematic clinical laboratory testing in a search for any toxicity secondary to the drug. In approximately 220 patient-years of observation and in analyzing approximately 40,000 test results, no statistically significant changes in the direction of abnormality have been observed in SGOT, thymol turbidity, serum globulins, uric acid, alkaline phosphatase, white blood cell count or differential, hematocrit, hemoglobin, BUN, serum creatinine, serum cholesterol, serum albumin, serum potassium, serum calcium, stool for occult blood, routine urinalysis, or reticulocyte count. Statistically significant changes toward abnormality were found in fasting blood sugar and total serum bilirubin. These statistically significant changes in the direction of abnormality were of small magnitude, were not associated with related clinical signs or symptoms, and do not seem to be of major clinical significance. Despite the accumulation of relatively massive amounts of the drug in various tissues, clofazimine appears remarkably free of serious or life-threatening toxicity clinically. Although the skin and gastrointestinal side effects of clofazimine limit its usefulness, on the evidence to date, its advantages outweigh its disadvantages in those leprosy patients for whom it is indicated."

118. JACOBSON, R. R. & HASTINGS, R. C. Rifampin-resistant leprosy. [Correspondence.] *Lancet*, 1976, Dec. 11, 1304-1305.

This letter to the editor reports on a patient with sulphone-resistant lepromatous leprosy who experienced clinical and bacteriological relapse while on rifampicin monotherapy, the first case of rifampicin-resistant leprosy confirmed by mouse footpad studies. The spectre of multiple drug-resistant leprosy bacilli suggests the importance of multiple drug therapy as routine.

T. F. Davey

119. COURBIL, L., J., MERRIEN, Y. & CARAYON, A. Réactivation proximale des muscles intrinsèques des doigts les paralysies cubitales de la lèpre. [**Proximal reactivation of the intrinsic muscles of the fingers in cases of cubital paralysis of leprosy.**] *Bull. Soc. Méd. Afr. Noire Lang. Fr.*, 1976, v. 21, No. 4, 425-428.

"In cases of cubital paralysis of leprosy, the authors describe a technique for the reactivation of the intrinsic muscles, at the level of the palm of the hand, by sectioning the large palmar muscle at the wrist and its extension by four narrow strips of fascia lata.

"Concerning 12 cases, they analyse the technical problems posed by this operation and its results."

120. DIGOUTTE, J. P., ROCHE, J. C., BRULE, M. & GAILHBAUD, M. Traitement des lèpres lépromateuses par le B.C.G. itératif à dose croissante. [**Treatment of lepromatous leprosy with repeated increasing doses of BCG.**] *Bordeaux Méd.*, 1977, v. 10, No. 11, 703-706.

The English summary appended to the paper is as follows:—

"Following Ruscher's research on the treatment of leprosy by B.C.G. injected with increasing and repeated doses, a similar experiment was carried out on a group of 21 patients considered as being leprosy.

"The treatment with B.C.G. was always associated with a specific chemotherapy, comprised first of all of a daily absorption of 'Rifampicine,' followed by a treatment with 'Disulone' and with 'Lamprene'. Each patient received the B.C.G. injections every fortnight over a period varying from 15 to 18 months.

"Tolerance to the treatment was good. At most, a few necrotic lesions were observed at the point of injection, which rapidly disappeared.

"The clinical results are good, as out of our 21 patients, only 1 did not show any marked improvement, 14 were blanched, and 6 present only a few bacillae that are greatly altered. On the immunological plane, based solely on the interpretation of the Mitsuda, only 5 reactions proved to be positive.

"On the other hand, the histological results carry a more varied interpretation, as even after the colour-change of a Mitsuda, 3 out of 5 patients maintained an inter-polar aspect of their lesions upon the final biopsy.

"We have recently given patients with an indeterminate negative Mitsuda form the benefit of this therapy with encouraging results."

[See *Trop. Dis. Bull.*, 1974, v. 71, abstr. 2277.]

121. LOUVET, M., SAINT-ANDRÉ, P. & GIRAUDEAU, P. Traitement médical des maux perforants plantaires lépreux. (A propos de 34 observations.) [**Medical treatment of perforating ulcers of the foot in leprosy.**] *Méd. Trop.*, 1976, v. 36, No. 5, 429-433. English summary (7 lines).

Following a short clinical description of neuropathic plantar ulceration, all too commonly seen as a late complication of tuberculoid leprosy, the authors briefly refer to the aetiological factors (nervous, vascular and traumatic) and the appropriate treatment (neurolysis, periarterial sympathectomy and protection, respectively).

They then summarize the results obtained in an uncontrolled series of 34 patients suffering from plantar ulcers. In addition to bed rest, local treatment, and plaster of Paris immobilization, they considered that the administration by injection of extract of *Centella asiatica* (Madécassol) accounted for the good results obtained—healing of three-quarters of the ulcers in an average of 45 days. [This conclusion is not supported by the evidence given.]

[See also *Trop. Dis. Bull.*, 1960, v. 57, 252.]

5. EPIDEMIOLOGY AND CONTROL

122. KOTICHA, K. K. & NAIR, P. R. R. **Antileprosy measures in Bombay, India: an analysis of 10 years' work.** *Bull. Wld. Hlth Org.*, 1976, v. 54, No. 1, 67-77.

This is a valuable addition to the series of papers which reflect the vigorous campaign against leprosy being waged in a city where the problems are immense. Imaginative educational activities in leprosy are given great importance and are believed to be responsible for the fact that the majority of patients with early leprosy attend clinics on their own initiative. Case detection by screening schoolchildren for leprosy is useful and inexpensive, and it is intended to extend this to industry. Case holding is an even higher priority. Trials have confirmed the effectiveness of chemoprophylaxis with dapsone for contacts of infectious index cases in crowded households. Useful recommendations are made regarding urban leprosy control measures.

T. F. Davey

123. VERMA, O. P. **Some epidemiological features of leprosy in a rural area in Hooghly district.** *Lepr. India*, 1976, v. 48, No. 4, 371-381.

An intensive leprosy survey of 5 contiguous villages in the Hooghly District of West Bengal is reported, in an area where the prevalence of leprosy was thought to be negligible. Coverage was 92.8% (males 91.2%, females 94.8%). A leprosy prevalence rate of 4.5 per thousand out of 3314 people surveyed was obtained; over 60% of cases were in children of school age and 75% of cases had developed in the 2 years preceding the survey. Only 1 lepromatous case was found and the distribution of cases led to the conclusion that contact investigation on its own cannot suffice to bring to light either total cases or total people susceptible.

T. F. Davey

124. SEHGAL, V. N., REGE, V. L. & KHARANGATE, V. N. **Epidemiological and clinical pattern of leprosy in Goa.** *Lepr. India*, 1976, v. 48, No. 4, 382-390.

"A review of 1,053 patients of leprosy revealed its prevalence in the hospital population as 2.4 per thousand. The commonly affected age group was 20-39 in both sexes; males predominating females in 1.8:1. The sequence of frequency of clinical types of leprosy was tuberculoid, borderline, neuritic and lepromatous. Mostly the patients reported in the course of 2 years of awareness of the disease. The clinical features were classical and type specific."

125. BELDA, W. **Aspectos epidemiológicos da hanseníase no Estado de São Paulo, em 1974. [Epidemiological aspects of leprosy in the State of S. Paulo, Brazil, in 1974.]** *Hansenologia Int.*, 1976, v. 1, No. 1, 11-24. English summary.

The 1907 cases of leprosy registered during the year 1974 are analyzed according to regional distribution within the state, the locality in which the patient was living when the disease began and various socio-economic factors. Although São Paulo is one of the main foci of the disease within Brazil, the problem has attracted little administrative interest in the past and the treatment remains protracted.

Ann Grant

6. SOCIOLOGY AND REHABILITATION

126. MEHTA, J. M. **Occupational therapy in leprosy.** *Int. J. Lepr.*, 1976, v. 44, No. 3, 359-365.

“This paper presents a broad discursive assessment of the philosophy and practices of occupational therapy as related to leprosy. It stresses the role of society, self-care by the patient, integration, vocational training, rehabilitation and the amotivational syndrome, and presents some illustrative original innovations. In conclusion some new approaches are suggested.”

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