

HANSENÍASE: RESUMOS

HANSENIASIS ABSTRACTS

BACTERIOLOGIA E IMUNOLOGIA

BACTERIOLOGY AND IMMUNOLOGY

BAROCCI, S.; NOCERA, A.; CHIARLA, W. Studio degli antigeni HLA in pazienti affetti da lebra lepromatosa. *G. Ital. Dermatol.*, 114(10) :501-504, 1979.

In its lepromatous variety, leprosy is characterized by marked depression in cell-mediated immunity. Recent studies of the HLA system have shown numerous disease situations associated with particular histocompatibility antigens; as these antigens may play a part in the development of immune responses, it was decided to undertake a study of HLA antigens in patients with lepromatous leprosy. 27 patients, 18 male and 9 female, all Italian Caucasians and suffering from lepromatous leprosy, were typed for HLA antigens and compared with 165 healthy individuals; HLA antigens were measured by means of the Terasaki microlymphocytotoxicity technique using 117 mono and polyspecific anti sera for the identification of 52 HLA antigens belonging to A, B and C loci. The frequencies of three antigens, BW 38, BW 52 and B7 proved to be significantly increased in patients with leprosy compared to the controls, values after Yates correction being respectively $p < 0.005$, $p < 0.01$ and $p < 0.025$.

Authors' summary

BECELLI, L.M.; HADDAD, N.; PAGNANO, P.M.G.; MELCHIOR J.R.E.; FREGNAN, R.C. Reactivity of leprosy patients and unaffected persons to different concentrations of armadillo's lepromin in comparison to human lepromin. Preliminary findings of a double blind trial. *Acta. Leprol.* (75):1-6, 1979.

The object of the study is to compare the reactivity of leprosy patients and unaffected persons to armadillo's lepromin (160, 40 and 20 million bacilli/ml) and human lepromin (40 million bacilli/ml). After this it should be possible to indicate the concentration of armadillo's lepromin (A) most suitable for testing unaffected persons, determining the classification and prognosis of leprosy cases, and for epidemiological studies and future vaccine trials. Thus the present investigation has great practical importance for leprosy control and for research purpose.

Authors' abstract

BULLOCK, W.E. Immunology and therapeutics of leprosy. *Ann. Intern. Med.*, 91(3) :482-484, 1979.

The rapidly accruing knowledge of immunoregulatory mechanisms and of immunopathology in leprosy provides confidence that major advances will be made in the immunotherapy of this disease, which for so long has afflicted so many. The lessons learned from this paradigm of chronic granulomatous infection will be valuable in approaching chronic infections caused by other facultative or obligate intracellular pathogens which, with leprosy, constitute a vast and exciting frontier for research.

From the editorial

for the serodagnosis of leprosy. *Int. J. Lepr.*, 47(3):477-483, 1979.

Acetone-killed *Mycobacterium leprae* separated from infected armadillo liver tissue without the use of proteases were treated with 0.2 M lithium acetate, 20 mM EDTA, pH 8.8 solution, and the concentrated antigen extract was analyzed by Ouchterlony immunodiffusion. The antigen extract gave a single immunoprecipitate when reacted with pooled lepromatous leprosy (LL) patients sera made highly specific for *M. leprae* by adsorption. Apparently identical precipitates were produced by reacting the antigen extract with sera of each of 15 treated LL patients, 5 of 7 patients with tuberculoid leprosy, and 3 of 4 *M. leprae* infected armadillos. Serum from 1 of 16 persons immunized with BCG and from none of 15 patients with chlamydial urethritis or brucellosis reacted with the antigen. Identically prepared extracts of *M. smegmatis*, *M. phlei*, *M. vaccae*, *M. duvali* and *M. diernhoferi* gave no immunoprecipitates with sera from LL patients or infected armadillos. Preliminary characterization indicates the antigen is protein since antigenicity was destroyed by pronase and/or heat treatment. The relative specificity of the protein antigen for *M. leprae* and the presence of antibody to this antigen in patients with leprosy suggest a possible role for this antigen in the serodiagnosis of leprosy.

Authors' summary

CAUZZI, N.J.; CORONA, C.J.; LONDNER, M.V.; MORINI, J.C. Immunologic skin titration in leprosy patients and contacts.

Int. J. Lepr., 47(1):13-17, 1979.

A method of studying delayed-type hypersensitivity was developed with specific antigen in leprosy patients and contacts, measuring the dose-response curve at different lepromin concentrations. This "immunologic titration" is highly efficient for discriminating the degree of hypersensitivity reactions among the groups tested. With respect to the Fernandez reaction, the results obtained showed that there was a similar behavior in all groups studied, except in the tuberculoid group which had a more intense response, four times higher than that yielded by contacts of lepromatous patients. In the Mitsuda reaction, a similar behavior was also found among the different groups, except with respect to the reactivity intensity of contacts of lepromatous patients. Here it was demonstrated that this group had a significant depression in response to *M. leprae* antigen when compared with that from the other

groups, independent of the degree of consanguinity or closeness to bacilliferous cases. In order to explain this immunosuppression in contacts of lepromatous patients, a hypothesis is proposed. It is suggested that changes could occur in *M. leprae* derived from lepromatous patients, diminishing their capacity to produce an adequate immune response.

Authors' summary

CHIRON, J.P.; DENIS, F.; MAUPAS, Ph.; LANGUILLON, J. Infection par le virus de l'hépatite B chez les hanséniens. I. Détection de l'antigène et de l'anticorps de surface du virus de l'hépatite B par radio-immunologie. *Bull. Soc. Med. Afr. Noire Lang. Fr.*, 22(2):174-182, 1978.

The frequency of surface antigen of hepatitis B virus (HBs Ag) and the corresponding antibody (anti-HBs) has been researched in 553 patients with leprosy and 100 Senegalese blood donors. This study has been carried out by radio-immunoassay. HBs Ag has been found in the serum of 25.5 % of the hanseniens as against 12 % of the controls whereas the presence of antibodies (anti-HBs) has been shown to be 44.1 % and 38 % respectively. HBs Ag and/or anti-HBs markers have been revealed in 67.1 % of the leprosy patients sera. The lepromatous forms more frequently possess HBs Ag and/or anti-HBs (74.6 %) than the tuberculoid forms (62.9 %). No significant statistical differences with regard to sex, ethnic groups or mode of life have been discovered.

Authors' summary

COHEN, S.S. Comparative biochemistry and drug design for infectious disease: protein should be targets for chemotherapeutic agents. *Science*, 205(4410):964-971, 1979.

Little is known of the biochemistry of *Mycobacterium leprae*, whose growth is best achieved at present in the armadillo. In the following discussion it will be assumed that the organism possesses many biochemical features characteristic of other *Mycobacterium*. In concentrating on the cell wall polysaccharide, I shall consider a pentose sugar whose presence should be easily identifiable in the bacterial fractions obtainable from the infected armadillo.

It was noted earlier that the cell walls of prokaryotic organisms are very different from those of eukaryotes, and provide sites for selective chemotherapy. For example, these structures in prokaryotic organisms frequently contain polymers such as teichoic

acid and peptidoglycan, as well as simple substances, such as muramic acid and diaminopimelic acid, which have not been found in the walls of eukaryotic cells. Among the latter in many bacteria is also found 2-ketodeoxyoctonate (KDO), which is synthesized from another strictly prokaryotic metabolite, D-arabinose 5-phosphate. D-Arabinose 5-phosphate is produced from ribulose 5-phosphate by the action of phosphoarabinoisomerase, an enzyme which has not been detected in mouse fibroblasts or in yeast. Bacteria blocked specifically in the synthesis of KDO are killed during growth.

Mycobacterium, as well as *Corynebacterium* and *Nocardia*, lack KDO but synthesize a cell wall polysaccharide, about half of which consists of D-arabinose. This prokaryotic pentose is therefore not terminal but occurs within the chain, and by analogy to known mechanisms of polysaccharide synthesis, is derived from a nucleoside diphospho-D-arabinose. The origin of such a compound probably requires the conversion of D-arabinose 5-phosphate to D-arabinose 1-phosphate, which after reaction with a nucleoside triphosphate will preside the immediate precursor for polysaccharide synthesis. Thus the synthesis of the cell wall polysaccharide of organisms of three important genera would appear to require four enzymes specific to these bacteria. If it is supposed that the cell wall polysaccharides of these organisms are important in the development of their pathogenic properties, we might well have four proteins to consider as possible targets for a specific chemotherapy, if the hypotheses described above are confirmed.

From the article

CONVIT, J. Development of an active vaccine against hanseniosis as an immediate high priority objective. *Star*, 38(4):5-6, 16, 1979.

The impact of the development of a vaccine against Hanseniosis would influence not only area related to this disease, but would also affect that of other parasitosis. Malaria, trypanosomiasis, leishmaniasis, would be the new and important problems to solve. Finally, we would like to mention the social and human aspects involved in the development of a vaccine against Hanseniosis. Present-day society, should understand the importance of an action which would imply the development of an effective control measure that might serve as basis for the hope that in a few decades one of the most ancient diseases which have afflicted humanity will be placed under control.

From the article

ESTEVEZ, M.E.; SEN, L.; VADEZ, R.; BALI3A, L.M. Defective blood mononuclear phagocyte function in patients with leprosy. *het. J. Lepr.*, 47(4) :575579, 1979.

Patients with lepromatous leprosy possess a defective lymphocyte function *in vivo* and *in vitro* that is less evident in the tuberculoid form. Data concerning their macrophage ability to digest *Mycobacterium leprae* are controversial. The purpose of this study was to determine whether monocytes from patients with either tuberculoid or lepromatous leprosy were altered in their enzyme systems, that is myeloperoxidase-dependent and myeloperoxidase-independent systems. The ability of adherent blood monocytes to ingest and kill *Candida pseudotropicalis* after 30 and 60 min of incubation with yeast cells was tested. Mononuclear phagocytic cells from patients with either principal form of leprosy functioned similarly to normal monocytes in phagocytosis while their fungicidal activity for *C. pseudotropicalis* was statistically significantly altered and was more evident in the lepromatous than in the tuberculoid type. The results indicate that peripheral blood monocytes from patients with leprosy possess an impaired enzymatic candidacidal activity.

Authors' summary

FABER, W.R.; LEIKER, D.L.; CORMANE, R.H. Immunofluorescence studies in reactional leprosy with relevance to treatment. *Arch. Dermatol. Res.*, 261 (3) : 323-330, 1978.

Twenty-three biopsies of skin lesions of patients with various types of leprosy, showing a recent reaction, were examined by means of immunofluorescence (IF) methods. The patients were divided into two groups according to the number of inflammatory cells, staining with various FITC-labelled anti-immunoglobulin antisera, in representative areas of the biopsies. It was found that the presence of these cells was correlated with a good response to thalidomide treatment.

Authors' summary

FABER, W.R. & LEIKER, D.L. Immunofluorescence studies across the leprosy spectrum. *Arch. Dermatol. Res.*, 262(1): 45-53, 1978.

Forty biopsies from skin lesions of untreated (24) and treated (16) leprosy patients, representing the whole leprosy spectrum, were examined by means of

immunofluorescence (IF) methods. Only few or no cells staining with FTC-labelled antihuman immunoglobulin antisera were found in the lesional skin of all patients examined. Sparse IgM-deposits along the basement membrane of the epidermis were observed in a few borderline lepromatous and lepromatous patients. Complement deposits along the basement membrane of the epidermis and in the vessel walls were found in tuberculoid as well as in lepromatous patients. Complement and in a lesser number IgGdeposits were observed around sweat glands and sometimes around sweat gland ducts and other skin appendages. Autofluorescing macrophages were noted in patients at the lepromatous side of the leprosy spectrum; approximately half of these patients showed complement deposits in an around these cells.

Authors' summary

GIRDHAR, B.K. & DESIKAN, K.V. Results of skin tests with five different mycobacteria. *Lepr. India, 50(4):555-559, 1978.*

A comparison of intradermal response to injection of Dharmendra type of coded antigens, prepared from different species of Mycobacteria by Prof. G.P. Talwar has been made over 3 weeks period. The results are reported.

Authors' abstract

GOIHMAN-YAHR, M.; RODRIGUEZ ZOCHOA, G.; ARANZAZU, N.; PINARDI, M.E.; GÓMEZ, M.E.; OCANTO, A.; CONVIT, J. *In vitro* activation of neutrophils by suspensions of *Mycobacterium leprae*. *Int. J. Lepr., 47(4):570-574, 1979.*

Activation, defined as an increase in the proportion of cells that reduce nitroblue-tetrazolium *in vitro*, is present in neutrophils from patients with reactional lepromatous leprosy but not in neutrophils from patients with non-reactional lepromatous leprosy. Neutrophils from patients with all forms of leprosy are equally well activated by endotoxin *in vitro*. We have now shown that *in vitro* activation induced by *Mycobacterium leprae* suspensions is of comparable magnitude in neutrophils from patients with all forms of leprosy (including lepromatous and reactional lepromatous leprosy). There is no intrinsic neutrophil energy in patients with lepromatous leprosy vis-à-vis *M. leprae* as pertains to activation. Spontaneous activation in reactional lepromatous leprosy is likely due to an indirect mechanism, probably of immunologic nature, and not simply to the

presence of circulating *Mycobacterium leprae* in the blood.

Authors' summary

GOIRENA DE GANDARIAS, F.J.; MONGE JODRA, V.; PÉREZ PÉREZ, B. Presencia del HBsAg en una población de enfermos leproso. *Rev. San. Hig. Pub., 52(11-12):1467-1478, 1978.*

The presence of Hb,Ag in 206 sera from leprosy patients (173 inpatients and 33 outpatients) has been studied. The frequency of positive in the first group was higher in lepromatous patients of both sexes in 8,27% and in tuberculoid patients the frequency descended to 2.63%, figure very close to that found in healthy population (1.66 %). In outpatients the only case occurred among the lepromatous patients with a frequency of 6.25%. These facts seem to show that these is a series of factors favoring the appearance of the disease: blood transfusions more frequent in lepromatous, more contacts in hospitalized patients and probably the higher persistence of, Hb,Ag in lepromatous patients due to the higher incidence among them of hepatic troubles.

Authors' abstract

GOVIL, D.C. & BHUTANI, L.K. Delayed hypersensitivity skin reactions to lepromin and antigens prepared from four other mycobacteria. *Lepr. India, 50(4):550-554, 1978.*

Antigens prepared from five mycobacteria viz. *M. leprae*, *M. vaccae*, *M. phlei*, *M.W.* and *ICRC bacillus* were used for assessing cross reactivity between different antigens on sixteen patients with different forms of leprosy. *ICRC bacillus* and *M.W.* gave the best correlation with *M. leprae*.

Authors' abstract

HORGERZEIL, L.M. & PRABHUDASS, N. Delayed hypersensitivity skin reactions to lepromins prepared from *M. leprae* and selected cultivable mycobacteria. *Lepr. India, 50(4):560-565, 1978.*

Lepromins prepared from *M. lepras* and from selected cultivable mycobacteria were tested in 50 leprosy patients. Preparation M.W. showed the best correlation with true lepromin, especially in the group of TT patients.

Authors' abstract

KATO, L. Cholesterol dynamics in macrophages implication for the bacteriology and pathology of leprosy. *Acta Leprol.*, (76):36-47, 1979.

M. leprae in the host multiplies abundantly in macrophages rich in cholesterol. Host-grown leprosy bacilli have an extremely high cholesterol content and in this respect they occupy a unique place among procariotic cells. *M. leprae* takes up cholesterol from the environment and it is not clear whether it can synthesize cholesterol and if so from which precursors. Mycobacteria can be grown from leprosy tissues in primary cultures only in the presence of cholesterol. These strains quickly adapt to *in vitro* substrates and are able to synthesize cholesterol from still-unknown chemical entities, which are also sources of carbon and energy. These still unknown substrates will probably have to be discovered before cultivation of these elusive microorganisms is achieved and we approach a better understanding of the chemical mediators in the cellular defence and/or pathology of

leprosy.

Authors' summary

KATO, L. & KIM, C.H. *Mycobacterium leprae*: atypical and unclassified. *Acta Leprol.*, (75):49-54, 1979.

Once *M. leprae* is grown on artificial media in the test tube, it might prove to have a great variety of characteristics quite different to those expected from our knowledge of *M. leprae* isolated from the susceptible host. The cultures might be slow or fast growing, pigmented or colorless, pathogenic for the armadillo, or not; they might produce limited disease in the foot pad of mice, or the contrary. The *in vitro* *M. leprae* culture might or might not provoke a lepromin reaction; the culture might grow at a lower or higher temperature. It is well documented that mycobacteria show great differences in elasticity and adaptability to cultivation conditions. It is absolutely certain that once grown in a test tube, *M. leprae* will behave as an atypical species. However, each individual culture of *M. leprae* obtained *in vitro* will have the same drug sensitivity pattern as in the lepromatous leprosy patient from whom it was cultivated.

Authors' summary

LAI A FAT, R.F.M.; CHAN PIN JIN, J.; VAN FURTHER, R.; HARBOE, M. *In vitro* synthesis of anti-mycobacterial antibodies in biopsies from skin lesions of leprosy patients. *Infect. Immun.*, 27(2) : 297-301, 1980.

To demonstrate local synthesis of anti-*Mycobacterium leprae* antibodies, biopsies from skin lesions of leprosy patients were cultured *in vitro* in a medium containing ¹⁴C-labeled lysine and isoleucine, and the culture fluids were analyzed by crossed immunoelectrophoresis with intermediate gel and autoradiography. The results show that anti-*M. leprae* antibodies were synthesized *in vitro* in the biopsies from the skin lesions of leprosy patients and that the specificity of the locally produced antibodies varied from patient to patient.

Authors' abstract

MARTÍNEZ-PALACIOS, B.N. Chemotaxis in leprosy. *Dermatologia*, 22(1):26-36, 1978.

Plasmatic factors of chemotaxis were looked for in 25 leprosy patients and in 25 nonleprosy persons by a modified Boyden's technique. Stimulation was done by *S. albus*, *M. leprae* and *M. lepraemurium*. The results of this work have not confirmed the observations of Ward about the existence of an inhibitor of chemotaxis in leprosy patients. *M. leprae* and *M. lepraemurium* were not able to stimulate liberation of chemotaxis factors into the plasma of these patients nor in healthy persons. This perhaps explains the persistence of this infection in human beings.

Author's summary

MCCORMICK, G.T. & SANCHEZ, R.M. Pyridine extractability of acid-fastness from *Mycobacterium leprae*. *Int. J. Lepr.*, 47(3):496-499, 1979.

Various mycobacteria were tested for their ability to retain acid-fastness after treatment with pyridine: a) *Mycobacterium leprae* separated from organs of 20 experimentally infected armadillos (which were sacrificed); b) *M. leprae* separated from a biopsy of a lepromatous patient; c) direct smears of lepromatous tissues from armadillos; d) eighteen cultivable mycobacteria obtained from the American Type Culture Collection (ATCC); e) cultivable mycobacteria separated from the lymph nodes of a wild-caught armadillo and also the same organism grown in culture and Skinsnes alleged *M. leprae* culture. A loss of acid-fastness was observed microscopically from *M. leprae* separated from experimentally infected armadillo tissues, *M. leprae* separated from a lepromatous patient biopsy, and

M. leprae found in direct smears prepared from infected armadillo tissues. The eighteen cultivatable mycobacteria from ATCC, cultivatable mycobacteria separated from the tissue of a wild-caught armadillo (and also grown in culture) and Skinsnes' alleged *M. leprae* culture retained their acid-fastness. Testing of pyridine extractability of acid-fastness combined with those of D-DOPA oxidase testing proved to be extremely reliable in our laboratory in differentiating *M. leprae* from other mycobacteria.

Authors' summary

MOHAGHEGHPUR, N.; TABATABAI, II.; MOHAMMAD, K.; RAMANUJAM, K.; MODABBER, F.Z. Histocompatibility antigens in patients with leprosy from Azarbaijan, Iran. *Int. J. Lepr.*, 47(4) :597-600, 1979.

The distribution of 24 histocompatibility antigens in 88 Azerbaijani patients with leprosy was determined and compared with those of 125 normal, ethnically matched individuals. HLA-BW% was increased in frequency among the Kurdish patients as compared to the controls; HLA-A₂, however, displayed decreased frequency in patients with the lepromatous form of the disease. Among the Turks, diminished frequency of HLA-BW₃s was noted in the total patient population. None of these comparisons, however, reached statistical significance when corrected for the number of antigens tested. Across the two ethnic groups, differences in the frequencies of HLA antigens between the patients and the controls were only marginal.

Authors' summary

MUSTAFA, A.S. & TALWAR, G.P. Early and late reactions in tuberculoid and lepromatous leprosy patients with lepromins from *Mycobacterium leprae* and five selected cultivatable mycobacteria. *Lepr. India*, 50(4):566-578, 1978.

Skin reactions have been measured in tuberculoid and lepromatous leprosy patients with Dharmendra and Mitsuda type of lepromins prepared from *M. leprae*, *Mycobacterium w*, *ICRC bacillus*, *M. phlei*, *M. vaccae* and *M. gordonae*. In tuberculoid patients *Mycobacterium w* gave the closest response to *M. leprae*, however, in lepromatous and borderline lepromatous cases, this bacteria produced greater response than *M. leprae*.

Authors' summary

MUSTAFA, A.S. & TALWAR, G.P. Five cultivatable mycobacterial strains giving blast transformation and leukocyte migration inhibition of leukocytes analogous to *Mycobacterium leprae*. *Lepr. India*, 50(4):498-508, 1978.

Fifteen cultivatable mycobacteria and BCG have been screened for antigens resembling those of *M. leprae* in two cell mediated immunity tests, namely the antigen driven blast transformation of peripheral leukocytes and leukocyte migration inhibition assays carried out with cells from a panel of tuberculoid leprosy patients. Five strains of mycobacteria were singled out for their ability to give reactions analogous to *M. leprae* in these test systems. Three of these are previously known strains namely *M. vaccae*, *M. phlei* and *M. gordonae*. The fourth was the strain cultivated at the Indian Cancer Research Centre Bombay from leproma nodules, and the fifth, a hitherto undescribed strain of fast growing mycobacteria coded in these studies as *Mycobacterium w*.

Authors' abstract

NUTI, M.; TARABINI, G.; PALERMO, P.; TARABINI, G.L.; THAMER, G. Leprosy and hepatitis B virus markers: incidence of HBsAg and HBeAg in Somalian patients. *Int. J. Lepr.*, 47(4) :580-584, 1979.

Serum samples from 222 Somalian patients, 135 with the lepromatous form of leprosy and 87 with the tuberculoid form of the disease, were examined for the presence of the surface antigen (HBsAg), the "e" antigen (HBeAg), and their corresponding antibodies (anti-HB and anti-e). HBsAg was present in 24.4% of the LL cases and in 11.5% of the TT patients while anti-HB was found respectively in 46.6% and 58.6%. The e-antigen was not found in any case of leprosy; anti-e was detected in 8.1% of the LL patients and in 3.5% of the TT cases. The rate of HBV seropositivity (HBsAg plus anti-HB) was the same in the LL patients (71.1%) and in the TT patients (70.1%) and that could reflect the conditions of life in their closed community. The analysis of results obtained in Somalia has shown the presence of a difference in the distribution of HBsAg among leprosy patients, with an increased antigenemia in the lepromatous form which was statistically significant ($p < 0.05$). No differences, however, were found between the leprosy patients and healthy controls.

These observations seem to indicate that patients with lepromatous leprosy do not have

an increased susceptibility to infection by hepatitis B virus.

Authors' summary

NGUYEN, H.T.; TRACH, D.D.; MAN, N.U.; NGOAN, T.H.; DUNIA, I.; LUDOSKY-DIAWARA, M.A.; BENEDETTI, E.L. Comparative ultrastructure of *Mycobacterium leprae* and *Mycobacterium* cell envelopes. *J. Bacteriol.*, 138(2) :552-558, 1979.

The structural properties of the cell envelopes of *Mycobacterium leprae* and *Mycobacterium lepraemurium* were investigated by freeze-fracture, freeze-etching, and negative-staining techniques. Freeze-fracture split the cell wall and exposed the internal features of the peptidoglycolipid mycosidic filamentous network. The cell membrane was also split into two asymmetric faces. The external fracture face was characterized by linear arrays of intramembranous particles, whereas the protoplasmic fracture face showed randomly distributed clusters of particulate entities. Comparative analysis of the ultrastructural features observed in *M. leprae* and *M. lepraemurium* indicated that the organization of the cell envelope in these two species differed particularly with respect to the amount and complexity of the superficial peptidoglycolipid and mycosidic integument, which is poorly developed in the mycobacterium responsible for human disease.

Authors' abstract

PRABHAKARAN, K.; HARRIS, E.B.; KIRCHHEIMER, W.F. Metabolic inhibitors of host-tissue origin in *Mycobacterium leprae*. *Lepr. India*, 51 (3) :348-357, 1979.

It is not clear why host-derived bacteria are metabolically inert, compared to organisms grown *in vitro*. o-Diphenoloxidase is the only metabolic property proven to be present in *Mycobacterium leprae* separated from infected human as well as animal (mouse and armadillo) tissues. However, highly concentrated suspensions of *M. leprae* obtained from the organs of experimentally infected armadillos showed little or extremely low o-diphenoloxidase, while the organisms bound ¹⁴C-labeled dopa. When these preparations were diluted, they readily oxidized D-dopa to pigment. The activity remained unaltered by washing the suspensions with dilute alkali or acetone and ether, indicating that it is an intrinsic property of the bacilli. Treatment with different proteases relieved the inhibition, and resulted in a 100% stimulation of O-diphenoloxidase in the bacilli. Evidently, the *M. leprae* sus-

pensions obtained from infected tissues contain an inhibitory material which is protein in nature, and the metabolic inertness sometimes observed in host-grown bacteria may not be due to loss of enzymes or metabolites from the organisms.

Authors' abstract

PRASAD, H.K.; SINGH, A.K.; TALWAR, G.P. Ability of *M. leprae*, *Mycobacterium* W, and ICRC bacillus to produce macrophage activating factors from lymphocytes of leprosy patients. *Lepr. India*, 50(4):539-549, 1978.

Lymphocytes from tuberculoid and lepromatous leprosy patients were cultured for 24 hours with *M. leprae*, *Mycobacterium* w or ICRC bacillus. The supernatants from these cultures were tested for activation of human peripheral blood monocyte derived macrophage lysosomal acid phosphatase and betagluconidase (in some cases). 11 experiments were performed using different combinations of macrophages and donor lymphocytes. In 7 cases both *M. leprae* and *Mycobacterium* w generated mediators from lymphocytes which activated macrophage enzyme to similar extent. The results with ICRC bacillus were concordant with *M. leprae* in 3 cases but discordant in 3 cases.

Authors' abstract

PRICE, J.; DAVIS, M.; RAMU, G. Comparison of the reaction to Dharmendra antigen in the normal skin and in the lesion of leprosy patients. *Lepr. India*, 51(1):87-95, 1979.

In this study, 0.1 ml of Dharmendra antigen was injected intradermally into the normal skin and lesions of 35 leprosy patients. The response was measured at 24 hrs., 48 hrs. and 21 days. It was found that the maximum response to Dharmendra antigen occurred at the end of 24 hrs. and started wanning by 48 hrs. In tuberculoid leprosy, there was significantly greater response in the lesion as compared with the nearby normal skin. It has been suggested that this could reflect an increased immunological activity at the site of the lesion. In the borderline tuberculoid cases with annular lesions, Dharmendra antigen was injected into the peripheral infiltrated area and into the apparently normal centre of the lesion, and a greater response was found at the centre. This might be the site of a previous lesion. The late reaction at the end of 21 days did not show much significant difference.

Authors' abstract

SAHA, K. & AGARWAL, S.K. Immune deficit in patients with lepromatous leprosy: its nature and relation to genetic factors, spectrum, and duration of the illness. *Int. J. Lepr.*, 47(1): 1-6, 1979.

Cell-mediated immunity or hypersensitivity to *M. leprae* and other unrelated antigens, such as tuberculin and dinitrochlorobenzene, was studied in 73 leprosy patients of different histopathologic types. It was found that specific as well as nonspecific anergy intensified as the disease spectrum shifted from the tuberculoid toward the lepromatous immunologic pole. Within the lepromatous group, the impairment of cellular immunity became more pronounced as the bacillary load increased. It was found that the impairment of the cell-mediated immunity towards antigens other than *M. leprae* became more severe as the duration of the illness increased.

Late lepromin responsiveness, which is the hallmark of resistance of an individual to *M. leprae*, may be absent even before the onset of clinical illness. Its deficit seems to be primary and has a genetic predisposition.

Authors' summary

SAXENA, V.K.; SINGH, U.S.; SINGH, A.K. Bacteriological study of a rapidly growing strain of *Mycobacterium*. *Lepr. India*, 50(4):588-596, 1978.

Morphological, colonial and biochemical characteristics of a strain of mycobacteria, which exhibited antigenic cross reactivity with *M. leprae* as indicated by antigen driven blast transformation of leukocytes, leukocyte migration inhibition test *in vitro*, and delayed hypersensitivity skin test in leprosy patients, are described. It belongs to Runyon's group IV and can be distinguished from other known species of rapidly growing mycobacteria. It is non-pathogenic in mice. The strain has been tentatively named as *M. w*.

Authors' abstract

SENGUPTA, U.; RAMU, G.; DESIKAN, K.V. Assessment of Dharmendra antigen. *Lepr. India*, 50(4):599-609, 1978.

Dharmendra antigen has certain advantages over Mitsuda antigen and these have been enumerated. Consequently, a reappraisal of Dharmendra antigen has been done. A variation in the degree of lepromin reaction was noted when the tests were performed with different batches of Dharmendra antigen. This was found to be due to variation in the

bacillary content which was further confirmed by dilution experiments. Standardization of the antigen by bacillary count has been found to give better results. Dharmendra antigen prepared with a concentration of 160 million bacilli per. ml was found to give not only early lepromin reaction but also late reaction comparable to Mitsuda antigen. It was also found that with a concentration of 16 million bacilli per ml (one tenth the concentration of Mitsuda antigen), the results were consistent and reproducible.

Authors' abstract

SENGUPTA, U.; RAMU, G.; DESIKAN, K.V. Assessment of Dharmendra antigen. II. Standardization of the antigen. *Lepr. India*, 51(3):316-322, 1979.

Dharmendra antigen with different bacterial counts (16, 12.5, 10, 7.5, 5 and 2.5 million/ml) have been utilized for determination of skin delayed hypersensitivity in leprosy patients. It has been noted that antigen with 10 million acid fast bacilli (AFB)/ml mounts a standard early (24 hrs) as well as late (3 weeks) reaction in patients. Lepromatous patients do not show any skin reaction with this dilution. Thus, a standard Dharmendra antigen has been prepared using a considerably smaller number of organisms as compared to the International standards for Mitsuda antigen.

Authors' abstract

SENGUPTA, U.; SUDHIR SINHA; RAMU, G. Immunological assessment of sera of leprosy patients. *Lepr. India*, 51(1):4348, 1979.

IgG levels were significantly high in sera of all types of leprosy. House-hold contacts of lepromatous leprosy (LL) cases also showed significantly higher values for IgG when compared to that of control. Except polar tuberculoid (TT) cases and house-hold contacts other types of leprosy revealed a significant rise in IgA levels in their sera. IgM was only raised in borderline tuberculoid (BT) cases. C-reactive protein (CRP) was present in the sera of all types of leprosy. Highest positivity (97%) was shown by sera from erythema nodosum leprosum (ENL) cases. Rose-Waaler antibody (RA) was noted in BT, borderline leprosy (BL), LL and ENL cases. Significance of these findings is discussed.

Authors' abstract

SINHA, S.; SENGUPTA, U.; RAMU, G.; DESIKAN, K.V. Assessment of Dharmendra antigen. III. Comparative study with Mitsuda antigen. *Lepr. India*, 61(3):323-329, 1979.

Four fractions each from Dharmendra and Mitsuda antigen have been obtained by step-wise centrifugation and sonication of the antigen. These fractions have been assessed for their capacity of inducing skin delayed hypersensitivity response. While, it has been noted that all fractions of both types of antigens can induce a good early reaction, the late skin reaction is only mounted by intact bacilli of both types of antigen. When compared at a constant bacillary concentration, Dharmendra antigen has produced better early skin reaction than Mitsuda antigen, whereas the intensity of late skin reaction is almost equal with both the antigens. The hypothesis has been put forward that the early, as well as the late reaction are produced by the same antigen and this antigen is located in the protoplasm of *M. leprae*.

Authors' abstract

SYED MAROOF SAHIB, H. & VELLUT, C. Some observations on skin reactions induced by lepromin and four other mycobacterial antigens. *Lepr. India*, 50(4):579-587, 1978.

A study on skin reactions induced by *Mycobacterium leprae*, lepromin and four

other mycobacterial antigens was done on 47 leprosy patients of Hemerijekx Leprosy Centre, Polambakkam, as a first stage towards a vaccine approach. This paper deals with certain observations noted during the trial.

Authors' abstract

VELIATH, A.J.; BEDI, B.M.S.; BALASUBRAHMANYAN, M. Behaviour of macrophages to *Mycobacterium leprae*: a tissue culture study. *Lepr. India*, 51(3):330-335, 1979.

Macrophage culture was performed on 45 healthy adults who were initially categorised on the basis of their Lepromin reactivity using Dharmendra antigen. There were 25 individuals in the Lepromin positive group and 20 in the Lepromin negative group. The cultures were challenged with *M. leprae* and the macrophages studied at varying time intervals of culture. No difference was evident in the behaviour of cultured macrophages to *M. leprae* in both the groups. The Lepra bacilli were phagocytosed by the macrophages and retained essentially intact till the termination of culture. The Lepromin reactivity of a healthy individual was not reflected on the macrophage function *in vitro*. The observations suggested against the possibility of an intrinsic genetically determined macrophage defect in dealing with *M. leprae*.

Authors' abstract

PATOLOGIA. FISIOPATOLOGIA. BIOQUÍMICA

PATHOLOGY, PHYSIOPATHOLOGY, BIOCHEMISTRY

BATESON, E.M. & HARGRAVE, J.C. Nerve calcification caused by leprosy in Northern Territory aborigines. *Med. J. Australia*, 2(9):497-499, 1979.

Three cases of nerve calcification caused by leprosy (Hansen's disease) in Aboriginal patients from the Northern Territory of Australia are reported. This is a rare manifestation of the disease and is the result of direct involvement of peripheral nerves with abscess formation and is usually seen in tuberculoid or borderline types of leprosy.

Authors' abstract

BEDI, T.R.; KUMAR, B.; KAUR, S. Histopathologic study of clinically normal appearing skin in lepromatous leprosy. *Lepr. India*, 51 (1) :78-80, 1979.

Skin biopsies from clinically normal skin of the scalp, axillary and groin regions in 20 lepromatous leprosy patients revealed significant histopathological findings in up to 25 percent of the patients. The positive findings could, perhaps, be eshaneed by studying larger skin materials from these body areas. Indeed, no skin area appears to be immune from invasion by *Myc. leprae*.

Authors' abstract

CHACKO, C.J.G.; BHANU, T.; VICTOR, V.; ALEXANDER, R.; TAYLOR, P.M.; JOB, C.K. The significance of changes in the nasal mucosa in indeterminate, tuberculoid and borderline leprosy. *Lepr. India*, 51(1):8-22, 1979.

A study of nasal biopsies from 137 leprosy patients classified on the basis of clinical, microbiological and skin biopsy as Indeterminate, Tuberculoid, Borderline-tuberculoid and Borderline-leproma was undertaken. Changes suggestive of leprosy viz., nerve and smooth muscle inflammation with a few acid fast bacilli in a proportion of the biopsies were seen in all groups of patients examined. This suggests, that even in Indeterminate and Tuberculoid leprosy the disease becomes generalised by the time clinical manifestations appear in skin. Tuberculoid granuloma was seen in two nasal biopsies from Borderline-tuberculoid leprosy patients, one of which was located in the wall of a vein, suggesting the possibility of intravascular dissemination of the disease even in non-lepromatous leprosy. 33 of the patients were children 15 years and below and they also showed changes such as nerve and smooth muscle inflammation but bacilli were seen only in the Borderline group. These findings suggest involvement of the nasal mucosa early in the course of the disease as 70% of the children had the skin lesion for less than one year. The nasal mucosa offers favourable conditions for the growth of the organisms and is readily accessible to infection by droplets, and therefore, it could be one of the primary sites of involvement in leprosy.

Authors' abstract

CHEHATA, M. L' atteinte du nerf auditif dans la 16pre. *Ann. Oto-Laryng.*, 95(10-11):685-689, 1978.

A study of 260 male patients in the Alexandria leper colony showed that 15% of them had uni- or bilateral perception deafness. The lesion was of the retro-cochlear type and has to be related to lesions of the peripheral nerves.

Author's summary

ÇOLOGLU, A.S. Immune complex glomerulonephritis in leprosy. *Lepr. Rev.*, 50(3):213-222, 1979.

Twenty patients with lepromatous or borderline leprosy selected at random were investigated for evidence of immune complex glomerulonephritis. Light, immunofluorescence and electron microscopy findings suggested

that glomerulonephritis in leprosy results from the accumulation of immune complexes in glomeruli. Fluorescence and electron microscopy findings may be attributed to the fact that the deposits are less soluble immune complexes. A comparison was made between glomerulonephritis in the BSA-rabbit system and leprosy.

Author's abstract

CORUH, G. & McDUGALL, A.C. Untreated lepromatous leprosy: histopathological findings in cutaneous blood vessels. *NC J. Lepr.*, 47(3):500-511, 1979.

Skin biopsies from 100 patients with untreated lepromatous leprosy from Malaysia, India, Africa, and South America were examined with particular regard to pathological changes in intima, media, or adventitia of blood vessels and to the presence of leprosy bacilli in these layers. Bacilli were found in capillaries, venules, or arterioles in all cases, and in many instances they were present in endothelial lining cells or smooth muscle in large masses (globi). In several cases, solid-staining bacilli in endothelial lining cells were especially prominent. The findings are discussed in relation to a) the continuous bacteremia of lepromatous leprosy, b) the role of endothelial cells in phagocytosis, c) smooth muscle cells of the media as a site in which bacilli may persist, and d) the transmission of human leprosy by biting arthropods.

Authors' summary

DEVI, S. & STEWART-TULL, D.E.S. Detection of mycolic acid in leprosy tissue. *bd. J. Lepr.*, 47(3):484-486, 1979.

A method is described for the extraction of mycolic acid from lepromatous leprosy tissues and from tuberculous tissues and its identification by thin layer chromatography. Verification of the mycolic acid extracted and separated by thin layer chromatography was accomplished by infrared spectroscopy. Although the presence of mycolic acid in tissues is not, in itself, diagnostic for leprosy, its demonstration in biopsy tissues might be a useful additional qualitative test if used in conjunction with clinical evidence of the disease.

Authors' summary

IBRAHIEM, A.A.; AWAD, ILA.; METAWI, B.A.; RAMADA; T.A.Y. Pathologic changes in testis and epididymis of infertile leprotic males. *Int. J. Lepr.*, 47(1):44-49, 1979.

Thirty-two cases of male infertility in patients having leprosy were studied. One case was oligospermic and the remaining 31 cases were azoospermic. Pathologic changes in the testis and epididymis are described and illustrated. An important observation was the presence of obstruction in the tail of the epididymis in five cases and this obstruction was undoubtedly the cause of sterility in these five cases as the head of the epididymis was full of sperm and testicular biopsy was more or less normal. In the remaining 27 cases, the cause of sterility was testicular affection with fibrosis and hyalinization of the seminiferous tubules in most of the cases.

Authors' summary

JARIWALA, H.J. & KELKAR, S.S. Fluorescence microscopy for detection of *M. leprae* in tissue sections. *Int. J. Lepr.*, 47(1):33-36, 1979.

The fluorescence method was compared with the Fite-Faraco method for detecting acid-fast microorganisms in paraffin sections of cases of leprosy. Biopsies were obtained from 50 cases of leprosy covering all varieties and at varying stages of treatment. The fluorescence method was better than the Fite-Faraco method; 22 biopsies showing acidfast organisms in fluorescence microscopy and 20 in the Fite-Faraco method. Its superiority was evidenced in two cases in which the organisms were very scanty. Fluorescence microscopy can also be used to determine the Bacterial Index and the Morphologic Index of organisms. The Morphologic Index, however, was one and a half times higher than that obtained by the Fite-Faraco technic. The ease and speed of fluorescence microscopy appear to be a great advantage.

Authors' summary

KAPUR, T.R. & BHALE RAO, S.M. Post-traumatic tuberculoid leprosy. *Lepr. India*, 61(1):112-114, 1979.

Inoculation Tuberculoid Leprosy has been described by various leprologists off and on and this mode of onset has been established. A case of tuberculoid leprosy over thumb, appearing after trauma in an Army recruit is described with the review of the literature.

MARKS JR., S.C. The cellular basis for extremity bone loss in leprosy. *Int. J. Lepr.*, 47(1):26-32, 1979.

Osteoclasts and osteolytic osteocytes have been observed in the majority of 60 samples of bone taken from five patients with lepromatous or tuberculoid leprosy. These results are interpreted to mean that bone loss in patients with leprosy is an acceleration of a normal cellular process and not the result of avascular necrosis. The acceleration of bone resorption could be due to local release of products from *M. leprae* or host cells, a hypothesis testable by organ culture methods. The presence of lymphocytes and mononuclear cells in bone samples in this and previous studies is discussed with respect to recent evidence of a role for lymphoid cells in bone resorption.

Author's summary

PARVEZ, M.; SHARDA, D.P.; JAIN, A.K.; BHARGAVA, N.C.; MISRA, S.N. A study of platelet adhesiveness in leprosy. *Lepr. India*, 51 (3):363-368, 1979.

Platelet adhesiveness was studied in fifty patients of leprosy and fifteen healthy individuals who served as control group. Platelet adhesiveness as determined by glass bead apparatus, showed a trend towards elevation in patients of leprosy, being maximum in reactional phase, statistically also the increase being highly significant (p value less than 0.001). The observed increase in platelet adhesiveness may be due to marked tissue destruction and vasculitis seen in leprosy patients.

Authors' abstract

RAMU, G. & DESIKAN, K.V. A study of scrotal biopsy in subsided cases of lepromatous leprosy. *Lepr. India*, 51(3):341-347, 1979.

Scrotal biopsies were obtained from 38 cases of lepromatous leprosy who were clinically subsided and had negative skin smears. Twenty six (68.4%) of these cases revealed bacilli in the dartos muscle. None except one showed a specific lesion in the dartos. Bacilli obtained from 2 out of 7 cases multiplied in the mouse foot-pad. Bacilli were found to be persisting in the dartos muscle despite prolonged treatment before as well as after clinical subsidence of the disease. The persisting bacilli in this situation could be a cause of relapses.

Authors' abstract

VARMA, S.C.; KUMAR, R.; BHARGAVA, N.C.
Histopathological study of liver in leprosy.
Indian J. Dermatol. Venereol. Leprol.,
44(2):108-109, 1978.

Fifty patients with lepromatous leprosy

were studied. Involvement of liver was observed in 90 per cent of the cases. Fatty degeneration was seen in two cases only. Amyloid deposit was not seen in any of them.

Authors' summary

HANSENÍASE EXPERIMENTAL, LEPRA ANIMAL EXPERIMENTAL HANSENIASIS, ANIMAL LEPROSY

ALEXANDER, J. & CURTIS, J. Development of delayed hypersensitivity responses in *Mycobacterium lepraemurium* infections in resistant and susceptible strains of mice. *Immunology*, 36:563-567, 1979.

C57B1 mice are relatively resistant to a moderate subcutaneous infection with *Mycobacterium lepraemurium* while BALB/c mice are much more susceptible. Cutaneous delayed hypersensitivity reactions which develop in the first 3 weeks of infection were compared in these two strains of mice. Both strains gave a peak of delayed hypersensitivity between 6 and 10 days after infection which was followed by a period of low reactivity before the development, in the third week, of a stable persistent delayed hypersensitivity reaction. There was no difference between the strains in the size at 24 h of the delayed hypersensitivity reaction but the reactions differed in their kinetics. The low resistance strain, BALB/c, gave a Jones-Mote-type of response while the high resistance strain gave a response which could be described as a tuberculin-type reaction.

Authors' summary

BIRDI, T.J.; SALGAME, P.R.; ANTIA, N.H. The role of macrophages in leprosy as studied by protein synthesis of macrophages from resistant and susceptible hosts — a mouse and human study. *Lepr. India*, 51(1):23-42, 1979.

3H-leucine uptake by macrophages from Swiss white and C57BL mice before and after *M. leprae* infection was studied. A depression in 3H-leucine uptake after infection was observed only in Swiss white mice. 3H-leucine uptake was also studied in blood derived macrophages from normals, and LL and TT patients. A depression was obtained in 311-leucine uptake after *M. leprae* infection in macrophages from LL patients.

Authors' abstract

BULLOCK, W.E.; CARLSON, E.M.; GERSHON, R.K. The evolution of immunosuppressive cell populations in experimental mycobacterial infection. *J. Immunol.*, 120(5):1709-1716, 1978.

Immunosuppressor activity of considerable potency and complexity was generated during the course of chronic, progressive infection of C3H/Anf mice by *Mycobacterium lepraemurium*. From the 5th through 10th week after inoculation, spleen cells from infected mice mildly but reproducibly suppressed the direct plaqueforming cell response of normal spleen cell cultures to sheep erythrocytes. Suppression at this stage of infection was mediated by cells with macrophage-like characteristics. A marked increase in splenic suppressor activity at 10 to 11 weeks was associated with the appearance of a second suppressor cell subpopulation composed of T lymphocytes. The appearance of these cells was closely related in time to the onset of rapid splenic enlargement and a loss of cutaneous delayed type hypersensitivity to antigens of *M. lepraemurium* in mice at 10 to 11 weeks of infection. Suppressor cells were not present in peripheral lymph nodes until terminal infection at 22 to 25 weeks. Suppressor spleen cells depressed the T-dependent antibody response most severely, but there was also a direct effect upon B cells as shown by moderate suppression of responses to TNP-LPS and DNP-Ficoll. Spleen cells from 14-week-infected mice generated a soluble suppressor factor(s) that induces depression of moderate severity, however, the immunosuppression by intact cells was far greater.

Authors' abstract

CALDWELL, H.D. & BUCHANAN, T.M. Immunochemical and structural integrity of surface protein antigens of mycobacteria during separation from armadillo liver tissue. *Int. J. Lepr.*, 47(3):469-476, 1979.

Surface proteins of *Mycobacterium smegmatis* were iodinated using the lactoperoxidase method. Sodium dodecyl sulfate polyacrylamide gel electrophoresis demonstrated two major surface proteins in the radiolabelled *M. smegmatis*. Both surface proteins were released from *M. smegmatis* using the nonionic detergent Triton X-100. The major surface component was sensitive to pronase digestion and contained no detectable carbohydrate. The second radiolabelled component was found to be of low molecular weight, resistant to pronase digestion and stained positive for carbohydrate by the periodic acid/Schiff method. Triton X-100 solubilized radiolabelled surface proteins were antigenic as assessed by a radioimmune precipitation test. When surface labelled *M. smegmatis* was mixed with armadillo liver tissue and separated from tissue using a method formerly employed by the World Health Organization Immunology of Leprosy Program for the purification of *M. leprae*, as much as 50% of the surface proteins of *M. smegmatis* was either released or destroyed. In addition, another twenty distinct proteins were released from *M. smegmatis* after treatment with Triton X-100. Similar losses of proteins from *M. leprae* may also occur using this procedure for *M. leprae* purification. Separation techniques employing surfactants and enzymatic treatment should be carefully evaluated since proteins lost during these procedures may prove relevant to human immune responses to *M. leprae*.

Authors' summary

DAWSON, P.J.; RINGUS, J.C.; FIELDSTEEL, A.H. Neonatally thymectomized Lewis rats infected with *Mycobacterium leprae*. 2. Histopathologic and electron microscopic observations. *Int. J. Lepr.*, 47(4) :561-569, 1979.

We report the histologic and electron microscopic findings following intravenous inoculation of *M. leprae* into neonatally thymectomized Lewis rats, which were killed one to two years later. All organs appeared normal grossly. Histologic changes were confined to the footpads, snout, ears, tail, and testes, all of which were involved in every rat. The tissues were edematous and infiltrated by varying numbers of foamy macrophages. In the footpads muscle fibers were vacuolated, and small nerves showed degenerative changes. Large numbers of *M. leprae* were present in macrophages and striated muscle cells and smaller numbers in perineural cells and pericytes, as well as lying free in the tissues. Occasional intracellular bacilli were found throughout the reticulo-

endothelial system. Electron microscopy confirmed that the majority of organisms were within activated macrophages. Both intact and fragmented bacilli were contained within double-membrane bound vacuoles. Numerous *M. leprae* were lying free within the sarcoplasm of striated muscle cells. Virtually all of the intracellular organisms were degenerating.

Authors' summary

FOTEDAR, A.; MEHRA, N.B.; MUSTAFA, A.S.; TALWAR, G.P. Local reactions to intradermal instillation of *Mycobacterium w* and ICRC bacilli in mice. *Lepr. India*, 50(4) :520-533, 1978.

Local reactions have been recorded in the mouse, after intradermal administration of *Mycobacterium w* and ICRC bacilli in the mouse foot pad. The response obtained with live *Mycobacterium w* was higher than with ICRC bacillus employed in the same dose and form. Live *Mycobacterium w* given at 2×10^8 bacilli produced a transient thickness of the foot pad at 48 hours, a dip on day 8 and a notable rise again on day 12, which persisted up to 26th day of the observation period. Live bacilli produced a better reaction than autoclaved bacilli. Histology showed principally the infiltration of mononuclear cells at the injection site. Dose response studies indicate a low sensitization at 2×10^8 bacilli and a good response at 2×10^{10} bacilli. 2×10^8 bacilli produced a pronounced thickness of the foot pad from day 1 onwards with no inflexion seen in the foot pad response around days 8 and 12. *Mycobacterium w* given intradermally in the thigh evoked a positive recall reaction to *Mycobacterium w* sonicates injected in the foot pad. The time kinetic pattern of this response resembled that given by non-pathogenic mycobacteria.

Authors' abstract

HIRATA, T. Electron microscopic observations of intracytoplasmic membrane systems and cell division in *Mycobacterium lepraemurium*. *Int. J. Lepr.*, 47(4):585- 596, 1979.

The fine structures and the interconnections between the intracytoplasmic membrane systems and cell division of murine leprosy bacilli in liver tissue from mice infected intraperitoneally with *Mycobacterium lepraemurium*, Hawaiian strain, were studied in ultrathin serial sections at the electron microscopic level. Intracellular membranous organelles (mesosomes) were seen as vesi-

cular, tubular and/or lamellar structures. The formation of mesosomes appeared to be initiated by invagination and/or folding of the cytoplasmic membrane. A few dividing bacilli were observed. The lateral extension and the centripetal growth of the septal wall seemed to result from the original development of cytoplasmic membrane occurring at or near the leading edge of the nascent septum. After the septum formation was completely accomplished, the separation of two new daughter cells is assumed to occur. The mesosome was associated with the newly formed cytoplasmic membrane (septal wall). It was shown that both the cytoplasmic membrane and the mesosome played an important part in septum formation.

Author's summary

KIRCHHEIMER, W.F. Examination of North American armadillos for mycobacteriosis — a further report. *Lepr. India*, 51(1):60-64, 1979.

The assumption of the Gulf South Research-Armed Forces Institute of Pathology collaborators that armadillo became infected from patients does not account for the observation that this allegedly had occurred in an area where according to Enna *et al.*, no new cases of human leprosy were reported in the last 10 years. It also seems in conflict with the failure of South American investigators to discover 'natural' leprosy in 679 armadillos under conditions which make man to armadillo transmission far more likely than in the United States. The possibility also needs to be investigated that infection of wildlife might have originated from conditions which permitted experimentally infected armadillos and/or contaminated materials to reach the outside. Dharmendra's plea for a proper investigation by workers who have not been associated with one view or the other should be supported.

From the article

LEVY, L. & ANANDAN, J.A. Further studies of the action of antithyroid drugs on *Mycobacterium leprae*. *Proc. Soc. Exp. Biol. Med.*, 158:582-585, 1978.

Methimazole, an antithyroid drug, and thiambutosine, an antimicrobial active against *M. leprae* in the mouse, were both found to inhibit multiplication of *M. leprae* in the mouse foot pad when administered in concentrations too small to inhibit thyroid function of the mice. Moreover, methimazole inhibited multiplication *in vitro* of a number of culti-

vable *Mycobacteria*. Although the antimicrobial and the antithyroid effects may be exerted through a common mechanism, it appears that methimazole nevertheless possesses direct antimicrobial properties.

Authors' summary

MUSTAFA, A.S. & TALWAR, G.P. Delayed hypersensitivity skin reactions to homologous and heterologous antigens in guinea-pigs immunized with *Mycobacterium leprae* and four selected cultivable mycobacterial strains. *Lepr. India*, 50(4):509-519, 1978.

Guinea-pigs were immunized with *Mycobacterium leprae* in saline and with autoclaved preparations of *Mycobacterium w*, ICRC bacillus, *Mycobacterium phlei* and *Mycobacterium vaccae*. A group of animals were also immunized with live *Mycobacterium w*. All animals were challenged after one month of injection with Dharmendra and Mitsuda lepromins from *M. leprae* and other mycobacteria. Induration produced in response to the challenge antigens have been recorded on different days. All bacteria produced delayed hypersensitivity response in guinea-pigs to challenge with homologous mycobacterial preparations and *M. leprae*. In most cases, the early reaction was higher with homologous antigens as compared to *M. leprae* antigens. The late reactions to homologous and *M. leprae* antigens were however of comparable order especially in animals immunized with *Mycobacterium w*, and ICRC bacillus. Animals immunized with *M. leprae* gave low late reactions with preparations from *Mycobacterium phlei* and *Mycobacterium vaccae*.

Authors' abstract

MUSTAFA, A.S. & TALWAR, G.P. Enlargement of draining lymph nodes in mice by four selected cultivable strains of mycobacteria. *Lepr. India*, 50(4):534-538, 1978.

Mycobacterium phlei, *Mycobacterium vaccae*, ICRC bacillus and *Mycobacterium w* were injected intradermally in thigh of swiss strain of mice and the enlargement of the draining lymphnode vis-a-vis the contralateral glands was recorded at 4 weeks. *Mycobacterium w* was the most effective in causing the enlargement of lymph nodes with an almost hundred per cent positivity index. The bacteria produced the enlargement in both live and killed state.

Authors' abstract

RANI KUMAR; VAIDYA, M.C.; KESHWANI, N.H.
In vivo response of mast cells to lepromatous serum. *Lepr. India*, 51(1) :49-53, 1979.

Adult healthy mice of pure line Institute strain were given, into the foot pad, an intradermal injection of normal human serum in group A and lepromatous serum in group B. In both groups, the animals were killed at varying time intervals. Serial paraffin sections of the foot pad skin 5-7 μ thick, were cut and stained with haematoxylin and eosin, toluidine blue, acridine orange and para-bromaniline. On comparing the two groups, in group B the response of mast cells was more prompt, pronounced and persistent. The increase in the number of cells was accompanied by explosive degranulation around nerves, blood vessels and muscles. This response became less by 15 days but did not disappear completely. There were still few intact cells in the dermis. Histamine, heparin and 5-Ht showed a corresponding rise. The importance of the findings is discussed.

Authors' abstract

TANAKA, Y. Partial inhibition of the growth of *Mycobacterium lepraemurium* in C3H mice immunized with cell wall skeletons. *Int..1. Lepr.*, 47(3) :487-494, 1979.

C3H mice stimulated with *M. lepraemurium* cell wall skeletons (LM-CWS) were challenged with viable *M. lepraemurium*, and delayed-type hypersensitivity (DTH) to picryl chloride was measured. In one type of experiment the mice were challenged at the time when stimulation of cell-mediated resistance by means of LM-CWS was undertaken. The major purpose was to investigate principles pertaining to immunotherapy. In contrast to the loss of a detectable DTH response to picryl chloride, development of murine leprosy was partially suppressed. In the second type of experiment

weeks before challenge with *M. lepraemurium*. Findings were: a) that nonspecific DTH as measured by sensitization and challenged with picryl chloride was activated before the infection with *M. lepraemurium* and b) that the DTH which developed was associated with partial protection against the growth of lepromata. The murine leprosy which developed in C3H mice stimulated with LM-CWS was progressive after some delay.

Authors' summary

WATERS, M.F.R.; BAKRI, I.; REES, R.J. W.; McDOUGALL, A.C. Experimental lepromatous leprosy in the white-handed gibbon (*Hylobatus lar*): successful inoculation with leprosy bacilli of human origin. *Br. J. Exp. Pathol.*, 59(6):551-557, 1978.

Leprosy bacilli of human origin were inoculated into a white-handed gibbon by the i.v. and i.p. routes, and also locally into ears, testis and around an ulnar nerve. The animal was observed closely during a period of nearly 15 years and did not exhibit any clinical evidence of cutaneous or neurological disease. At death, a wide range of tissues was taken for bacterial counts and histological examination, and a disseminated and progressive infection was demonstrated. Acid-fast bacilli were found in many sites; their morphological appearance, distribution in nerves, and pattern of multiplication in mouse foot-pads, and also the presence of anti-mycobacterial antibody in the serum and, the absence of specific lymphocyte transformation were all in keeping with an infection by *Mycobacterium leprae*, at an early lepromatous stage. This is probably the first fully documented report of experimental lepromatous infection in a primate. The findings are discussed in relation to the long incubation period of lepromatous leprosy and the difficulties of diagnosing the disease at an early stage in man.

Authors' summary

CLÍNICA, DIAGNÓSTICO

CLINICAL ASPECTS, DIAGNOSIS

ABDUL LATHEEF, K.; MOHANDAS, P. P.; JOY, M.I. Pseudoxanthoma elasticum: report of 3 cases with review of literature. *Indian J. Derm. Venereol. Leprol.*, 44(3) :162-165, 1978.

Three cases of pseudoxanthoma elasticum

are described. One case has features of Gronblad Strandberg syndrome with lepromatous leprosy. The other two cases are reported in siblings. A short review of literature is given.

Authors' summary

BOOPALRAJ, J.M. & MUTHUSAMI, T.C.
Squamous cell carcinoma arising from trophic ulcers. *Lepr. India*, 51(1) :74-77, 1979.

Squamous cell cancers arising from trophic ulcers in Leprosy is not so uncommon as it had been earlier thought of. It is probable that trophic ulcers by themselves are not likely to become carcinomatous unless there are certain other associated or complicating factors which make them more vulnerable to it such as underlying osteomyelitis or a calcaneal spur. Among trophic ulcers, heel ulcers appear more prone to malignant transformation.

Authors' conclusions

KAPUR, T.R. Study of non-lepromatous leprosy among Indian Armed Forces personnel. *Lepr. India*, 51(1) :81-86, 1979.

Clinico-histopathological study of 50 cases of Non-lepromatous leprosy among Indian Armed Forces personnel is presented. Maximum cases were of Tuberculoid (TT) type. Thirty four individuals were having single lesions. Posterior aspect of elbow and medial aspect of forearm were the favourite sites. Both Indian and Ridley and Jopling classification was studied while classifying the lesions. The individuals belonged to almost all the states of India. All of them denied the history of contact with a known case of leprosy. The highest prevalent age group was between 20 to 30 years. Two cases of Tuberculoid and 3 of Maculo-anaesthetic leprosy were without involvement of nerves.

Author's abstract

KAUR, S.; MALIK, S.K.; KUMAR, B.; SINGH, M.P.; CHAKRAVARTY, R.N. Respiratory system involvement in leprosy. *Int. J. Lepr.*, 47(1) :18-25, 1979.

Respiratory system involvement was studied in 25 leprosy patients, irrespective of age, sex, duration of disease and treatment. Nasal bleeding, cough, expectoration and nasal obstruction were present in 64%, 60%, 48%, and 48% of patients respectively. Sixty percent of the patients were cigarette smokers. Two views of chest skiagrams were taken which showed nodular shadows in upper and midzones in two LL patients. Nasal involvement was present in 88%, chiefly LL and BL patients. Nasal smears taken from four sites were positive for leprosy bacilli in

70.5% of the patients, *again* LL and BL variety. Anterior and posterior rhino- and laryngoscopic examinations were carried out under general anesthesia and biopsies were taken from the epiglottis, false vocal cords, and the right upper and lower bronchi. Laryngeal involvement was seen in 33% of the patients, chiefly of the LL and BL type. The vocal cords were the most common lesion site. Bronchial smears were positive for leprosy bacilli in three LL (25%) patients. Two epiglottic and one vocal cord biopsy showed foam cell and tuberculoid granuloma. Leprous granuloma was not seen in any bronchial biopsy. Acidfast bacilli were present in one right upper and lower bronchial biopsy but were absent in laryngeal biopsies. Coexistent pulmonary tuberculosis was present in two LL (8%) patients. No correlation was found between clinical, radiologic, sputum and bronchial smear positivity for acid-fast bacilli and histopathology of bronchial mucosa.

Authors' summary

MANZI, R.; MARZETTI, A.; GANOPOL, J.; SIMONOVICH, I.; ANTOLA, M. Lesiones ulcerosas en los pies de los hansenianos. *Tem. Lepr.*, (65/66) :1-44, 1978.

Prólogo, Definición y concepto. Antecedentes históricos. Sinonimia. Etiopatogenia. Diagnóstico y clasificación. Clasificación de las acropatías ulceromutilantes. Clasificación anatómico-clínica. Semiología y clínica del pié ulcerado. Exploración clínica. Tratamientos de las úlceras de piés neuropáticos anestésicos. Bibliografía.

MICHELSON, J.B.; ROTH, A.M.; RARING, G.O. Lepromatous iridocyclitis diagnosed by anterior chamber paracentesis. *Amer. J. Ophthalmol.*, 88(4) :674-679, 1979.

A 34-year-old man with a three-month history of intraocular inflammation after ocular trauma with a fir branch, had an acute unilateral fulminant iridocyclitis. The iris had a thick, gray, cheesecake membrane composed of nodular lepromata. The patient denied a history of Hansen's disease, despite the dermatologic and facial features that suggested the diagnosis. Anterior chamber paracentesis and scleral nodule biopsy demonstrated *Mycobacterium lepra*. The iridocyclitis resolved after treatment with dapson, corticosteroids, and rifampin.

Authors' summary

NIGAM, P.; DUBEY, A.L.; DAYAL, S.G.; GOYAL, B.M.; SAXENA, H.N.; SAMUEL, K.C. The association of leprosy and pulmonary tuberculosis. *Lepr. India*, 51(1):65-73, 1979.

The association of leprosy with pulmonary tuberculosis was seen 20 cases during January 1972 to October 1977. Of these 20 cases, 15 were of lepromatous, 3 of dimorphous and 2 of tuberculoid leprosy. Maximum number of cases were from 3rd decade of life with male to female ratio of 3 : 1. Patients were suffering from the disease for a very long time (8 cases of lepromatous leprosy with duration of illness 10-15 years). The symptoms of leprosy seemed to have preceded to the symptoms of pulmonary tuberculosis. Duration of tuberculosis in most of them was within 6 months (55%). The predominant presenting symptom was cough with expectoration (100%) and fever (80%). Anaemia (75%) and crepitations (60%) were the presenting physical sign mainly. Radiologically bilateral extensive pulmonary lesions were seen in 14 cases (70%). Sputum for acid fast bacilli was positive in 80% of cases. The general condition and nutritional status was poor and death was resulted in 4 cases (3 of lepromatous and 1 of dimorphous leprosy).

Authors' abstract

REA, T.H. & LEVAN, N.E. Lucio's phenomenon and diffuse nonnodular lepromatous leprosy. *Arch. Derm.*, 114(7):1023-1028, 1978.

The records of ten patients with Lucio's phenomenon showed clinical and histopath

ological changes similar to those described by others. Lucio's phenomenon is a syndrome distinct from erythema nodosum leprosum as indicated by an absence of fever, leukocytosis and tenderness, a failure to respond to thalidomide, and a restriction to patients with diffuse nonnodular lepromatous leprosy. Lymphopenia associated with splenomegaly in three patients and glomerulonephritis in one patient were unexpected findings of unknown relevance.

Authors' abstract

WESHLER, Z.; LEVIATAN, A.; GORDON, R.; KOPLOVIC, J. Development of Hodgkin's disease in a patient with leprosy. *Oncology*, 35:281-284, 1978.

We present a patient with leprosy who developed Hodgkin's disease of the nodular sclerosing type. There are two previous reports describing the combination of leprosy and Hodgkin's disease in a single patient. Hodgkin's disease was diagnosed 14 months after the complete disappearance of *Mycobacterium leprae* from the skin lesions, under treatment with DDS (diamino-diphenyl-sulfone). Hodgkin's disease was treated by irradiation and chemotherapy. Obstructive jaundice developed which resolved under treatment by irradiation of the hilar area of the liver, chemotherapy and hormones. During two years of immunosuppressive therapy, without DDS, no exacerbation of the leprosy occurred.

TERAPÉUTICA

THERAPY

ANAND, L.C. & RATHORE, B.S. Activity and effective serum level of repository sulphones (DADDS) in lepromatous leprosy. *Lpr. India*, 61(3):358-362, 1979.

35 cases of lepromatous leprosy were studied to evaluate the effective blood level and long depot action of acedapsone (DADDS). It was revealed that serum level of this drug

is maintained well above the minimum inhibitory concentration upto 60 days following single intramuscular injection. No significant untoward effects of the drug were encountered except one case of Erythema Nodosum Leprosum and six patients with mild reactional symptoms in the form of fever and arthralgia.

Authors' abstract

BALAKRISHNAN, S. & SHESHADRI, P.S. Influence of rifampicin on DDS excretion in urine. *Lepr. India*, 51(1) :54-59, 1979.

The plasma half-lives and urinary excretion levels of DDS were compared before and during concurrent administration of rifampicin in 23 cases of active lepromatous leprosy. The plasma half-life of DDS was found to be slightly less during rifampicin administration. The urinary excretion of DDS was found to be consistently enhanced in all the cases, particularly during the earlier phase of the therapy. This had no relation to the dose or the total duration of rifampicin therapy. The findings are discussed.

Authors' abstract

CHAUDHURI, S.; GHOSH, S.; CHAKRABORTY, T.; KUNDU, S.; HAZRA, S.K. Use of a common Indian herb "mandukaparni" in the treatment of leprosy. *J. Indian Med. Ass.*, 70(8) :177180, 1978.

From this short trial for one year it is observed that "Mandukaparni" (*Thankuni*) seems to be an effective drug in the treatment of leprosy. Clinical improvement is quicker with "Mandukaparni" in comparison with dapsone. Bacteriological improvement is comparable with dapsone. The drug is well tolerated by patients whereas with dapsone there is a possibility of reaction which appeared in 3 out of 10 cases. Further observations with these drugs will substantiate the findings in this series.

Authors' summary and conclusion

CHOWDHURY, S. & GHOSH, S. "Mandukaparni" in the treatment of leprosy: a preliminary report. *Lepr. India*, 51(1) : 103-105, 1979.

It appears that with Mandukaparni there is both clinical and bacteriological improvement, comparable with or better than that of D.D.S.

From authors' conclusion

HAGAN, K.J.; SMITH, S.E.; KIN MA GYI; MAUNG MAUNG LWIN; YI YI MYAING; KHIN MAW OO; TIN SHWE; KHIN MAUNG TIN; KHIN NYUNT THAN; THIDA HLA; WIN WIN KYWE. The reliability of self administration of dapsone by leprosy patients in Burma. *Lepr. Rev.*, 50(3) : 201-211, 1979.

A study of urinary dapsone/creatinine (D/C) concentration ratios has been per-

formed on 852 leprosy patients in the Rangoon and Mandalay regions of Burma. The results show that, by comparison with in-patients who are assumed to be compliant with their therapy, hospital out-patients and urban and rural clinic patients had overall compliance rates of only 74% and 24% respectively. In each group, substantial numbers of patients were identified who had taken no dapsone (DDS) tablets whatsoever. The findings are in line with similar studies performed in other countries and they indicate an urgent need to reassess the existing programme of treatment supervision particularly in the urban and rural clinic environments.

Authors' abstract

LANGUILLON, J.; YAWALKAR, S.J.; McDOUGALL, A.C. Therapeutic effects of adding rimactane R (rifampicin) 450 milligrams daily or 1200 milligrams once monthly in a single dose to dapsone 50 milligrams daily in patients with lepromatous leprosy. *Int. J. Lepr.*, 47(1) :3743, 1979.

The clinical, bacteriologic and histopathologic effects of adding Rimactane 450 mg daily or 1200 mg once-monthly to a standard dapsone regimen were practically identical in 30 lepromatous leprosy patients. Rimactane 1200 mg once-monthly in a single dose for six months could, on the basis of this trial, be therapeutically and economically an ideal and easily supervisable component of combination regimens for large scale, initial and intensive treatment of multibacillary (LL, LI and BL) types of leprosy. This trial has to a great extent solved the problems of rifampicin therapy in leprosy with regard to dosage, dose intervals and duration of the treatment, which have baffled leprologists for so many years. This has been the first controlled clinical trial to demonstrate the practicability and utility of a once-monthly single dose rifampicin schedule in the initial treatment of multibacillary forms of leprosy. It is suggested that a combination regimen comprising dapsone 50-100 mg daily (1.5-2 mg/kg body weight), Lamprene^a 100 mg on alternate days, and rifampicin 1200 mg once-monthly in a single dose for six months using long-term follow-up merits further investigation. This triple-drug regimen might prove optimally effective, reasonably safe and fairly economical for the initial treatment of patients with LL, LI and BL leprosy. Furthermore, this combination regimen could result in faster arrest of transmission, and may prevent the emergence of drug resistance.

Authors' summary

MOULDING, T.S. The potential uses of the medication monitor in the treatment of leprosy. *Int. J. Lepr.*, 47(4) :601-606, 1979.

A medication monitor has been developed that utilizes radioactive material and photographic film to record the intervals at which patients take medication. In the author's opinion, this equipment represents the most efficient means that has so far become available for determining how regularly outpatients take medication. A monitor for the tuberculosis regimen of isoniazid and thiacetazone has been made at a sufficiently low cost that it is practical to use it in routine treatment programs. An inexpensive system for immediate development of the film that can be used in the most remote locations is also available. Undoubtedly, with appropriate engineering work, a monitor for leprosy regimens could be made. The device has been used with tuberculosis patients and revealed that many patients were grossly irregular in taking their medication. It has been used to oversee medication used by tuberculosis patients and to select those who require either extra attention to improve medication ingestion or completely supervised, directly administered programs. In the treatment of leprosy, it could be used to study new drug regimens, the causes of noncompliance, and for the routine supervision of patients.

Author's summary

NAAFS, B.; PEARSON, J.M.H.; WHEATE, H.W. Reversal reaction: the prevention of permanent nerve damage comparison of short and long-term steroid treatment. *Int. J. Lepr.*, 47(1) :7-12, 1979.

Borderline leprosy patients with a reversal reaction were studied and short-term steroid treatment compared with prolonged steroid treatment using voluntary muscle testing (VMT) to assess the results. Prolonged steroid treatment was shown to be superior to short-term treatment and free of harmful effects. It is concluded that with the described antireaction treatment, permanent nerve damage can be prevented, provided that the reversal reactions is detected in time (within 3-4 months).

Authors' summary

PEARSON, J.M.H.; HAILE, G.S.; BARNETSON, R.St.C.; REES, R.J.W. Dapsone-resistant leprosy in Ethiopia. *Lepr. Rev.*, 50(3) :183-199, 1979.

During the 5 years 1973-1977, 254 patients suspected of developing dapsone-resis-

tant leprosy were seen in the Addis Abeba area. They were drawn from a pool of about 1500 registered patients with lepromatous leprosy, giving an incidence of about 3% per annum (among patients at risk). Fifty-one were proved resistant by mouse foot-pad tests, and 57 more by clinical trial. The remainder, who continued in trial treatment, conformed to the clinical pattern of those proved to be dapsone resistant. Only 2 patients were proved to be sensitive to dapsone. In addition, among 106 suspected cases from elsewhere in Ethiopia giving a "classical" history, 28 were proved resistant by mouse foot-pad tests, and only one was dapsone sensitive. Eleven out of 17 patients who relapsed having discontinued dapsone treatment were also found to have developed dapsone-resistant leprosy (7 by mouse foot-pad tests, and 4 more by clinical trial) : 2 were sensitive to dapsone. Mouse foot-pad testing for primary dapsone-resistant leprosy was performed in 29 patients. Fourteen lived in the Addis Abeba area; 5 of them were resistant. Fifteen came from elsewhere in Ethiopia; 11 were resistant. Dapsone-resistant leprosy has become so widespread in Ethiopia as to threaten the practical possibility of leprosy control by chemotherapy alone.

Authors' abstract

REYS FLORES, O. Tratamiento de la lepra. *Derm. Venez.*, 17(3/4) :1-49, 1979.

Entre los medicamentos usados en el tratamiento de la Lepra consideramos que la sulfona base, diamino-difenil-sulfona (DDS) sigue siendo la droga de elección, por su efectividad, fácil manejo y bajo costo. Por lo general es bien tolerada y debe ser administrada por el tiempo necesario para lograr una negatividad bacteriológica y una regresión total y estable de las lesiones, prolongando el tratamiento, como medida de consolidación, cinco (5) años o más en los casos Mitsuda-negativos y dos (2) ó tres (3) años en los casos Mitsuda-positivos. Los efectos tóxicos de la DDS son muchos, aunque poco frecuentes; entre ellos destaca la anemia. Los modelos experimentales de la pata del ratón y del armadillo constituyen un importante avance para el ensayo de drogas tóxicas en el tratamiento de la enfermedad. La riminofenazina es una droga de gran utilidad, empleada sola o combinada es una alternativa, especialmente en los casos reaccionales o cuando se sospecha resistencia a la sulfona. La rifampicina es, entre los antibióticos, la droga de mayor efectividad, su acción contra la bacteria es más violenta e intensa que la DDS, pero su costo limita su uso. La reacción

leprosa es una etapa clínico-evolutiva de la enfermedad habitualmente, de difícil manejo. La talidomida constituye la droga de elección, de una gran efectividad, provoca una rápida regresión de los síntomas; sus efectos teratogénicos deben ser tomados muy en

cuenta cuando se trate de mujeres en actividad sexual. Los corticoesteroides, por tener menor efectividad y mayor número de efectos secundarios indeseables, es la medicación de segunda elección.

Resumen del autor

CIRURGIA, FISIOTERAPIA, REABILITAÇÃO FÍSICA

SURGERY, PHYSIOTHERAPY, PHYSICAL REHABILITATION

BOURREL, P. Paralyse lèpreuse de l'opposition du pouce intérêt de la transplantation de l'extenseur propre de l'index. *Med. Trop.*, 39(1):57-90, 1979.

The transplantation of the extensor indicis to restore the opposition of thumb has been realized by two techniques: transplantation through the 2nd interosseous space with suture on the abductor pollicis brevis but the result was poor for the guide pulley resulting did not work well; transplantation with reflexion on the cubital side of the wrist which in 5 cases proved to be satisfactory. In medico cubital paralysis one must also cure the "cubital claw of the thumb". The surgical procedure, using a dispensable tendon, could be directly associated to the sutures of the proximal injuries of the cubital nerve as a temporary palliative.

Author's summary

KUPPUSAMY, P.; RICHARD, J.; SELVAPANDIAN, A.J. A study of causes of unemployment among agricultural labourers afflicted by leprosy. *Lepr. India*, 51(3):369-375, 1979.

116 patients consisting of 54 males and 62 females, all engaged in agriculture were interviewed to find out the cause of their unemployment. Deformity seemed to be the major factor responsible for the loss of job among them, which was prevalent among advanced age group (Males — 50, Females — 53.5). Since the measures to rehabilitate them are rather difficult, it is essential to educate them on the methods of prevention of deformities and their importance. If not, they invariably lose their job at an age when they cannot train themselves for a suitable alternative job to earn their livelihood.

Authors' abstract

GOPAL, P.K. Rehabilitation of leprosy patients. *J. Rehab. Asia*, 20(3):4-7, 1979.

The above said measures for the improvement of rehabilitation of leprosy patients should be considered seriously since there already exist quite a large number of dehabilitated patients. Dedicated services of personnel from various disciplines are required to rehabilitate the patients. If the community is changed in favour of leprosy patients, the disease could be controlled in the near future which would greatly help the rehabilitation of the affected persons.

Author's conclusion

OOMMEN, P.K. Ulnar nerve decompression by medial epicondylectomy of the humerus and a method of assessing muscle power status by totalling the muscle grading. *Lepr. India*, 51 (3) :336-340, 1979.

This paper advocates the principle of ulnar nerve decompression by medial epicondylectomy of the humerus in leprosy patients presenting with ulnar nerve neuritis and early muscle weakness of ulnar nerve supplied muscles. 16 medial epicondylectomies were done on 14 patients and a follow up showed relief of nerve tenderness and an improvement in the motor power status of the muscles as shown by total grading.

EPIDEMIOLOGIA, PREVENÇÃO

EPIDEMIOLOGY, CONTROL

DHARMENDRA. Development of an anti-leprosy vaccine — progress in. *Lepr. India*, 50(4):488-491, 1978.

At present there is a big lacuna in the methods of control and ultimate eradication of leprosy. This consists of the absence of any means of primary prophylaxis against the disease, as there is not available any prophylactic vaccine against the disease. For the vaccination, to begin with, thought was given to BCG because of its having some common antigenic fractions with the leprosy bacillus. This raised the hope that, in addition to protecting against tuberculosis, it might protect against leprosy also. Some trials with BCG seemed to indicate its usefulness for this purpose. However, the long term WHO trial with BCG for protection against leprosy proved that it has a very limited protective value against leprosy. Because of the importance of the matter, WHO has created a special project known as IMMLEP. In this connection, attention is being paid mostly to the production of vaccine from the leprosy bacilli isolated from the tissues of experimentally infected armadillos which provide a huge quantity of the leprosy bacilli.

From the editorial

EDELMAN, R. Malnutrition and leprosy — an analytical review. *Lepr. India*, 51(3): 376-388, 1979.

I agree with Skinsnes (1964) that the long incubation period of leprosy and its chronicity, once established, do enhance the possibility that acquired factors, such as malnutrition, could interpose and modulate the immune response. However, with all facts assembled, no convincing evidence exists for a strong modulating effect of malnutrition in human leprosy. A few observations show effects on morbidity of leprosy only under the most extreme condition of nutritional deprivation. Although careful nutrition assessments of leprosy patients have not been done, most leprosy patients seem not to be severely clinically malnourished, and it is not at all clear if mild to moderate malnutrition, such as growth retardation in children, affects the risk of infection or the course of their disease. My prejudice is that it either does not, or that the nutritional effect is overshadowed clinically by other and more force-

ful risk factors. However, research will be required to settle this issue more definitively.

Author's summary and conclusion

FERREIRA, N. & BARBOSA, A. Fontes de contágio na doença de Hansen. *Rovisco Pais: rev. port. doença Hansen*, 15/16 (2/único):193-198, 1976/1977.

O

n.º de fontes de contágio conhecidas extra-familiares é cerca de 3 a 4 vezes inferior ao número de fontes de contágio conhecidas familiares; considerando extra-familiares as fontes de contágio desconhecidas e juntando ao seu número, o de fontes de contágio extra-familiares conhecidas, e obtidas as médias das 2 séries, o conjunto é superior em perto de 20% ao de fontes de contágio familiares conhecidas, (59,6/40,4). Poderá portanto inferir-se que o contágio familiar é responsável em média por 40% dos casos e o extra-familiar por 60%.

Do artigo

GIMENEZ, M.M. Epidemiologia de la lepra. *Acta Leprol.*, (75):7-19, 1979.

La lepra cuya real magnitud se desconoce es, evidentemente, un problema prioritario de salud pública. La gran cantidad de casos activos sin controlar indica que la endemia se encuentra en plena expansión. La discontinuidad de las acciones de control de la lepra, por falta de apoyo político y económico, ha sido principal factor determinante del progreso de la endemia. El diagnóstico de la enfermedad en su etapa de comienzo y el tratamiento de los casos conocidos, en muchas regiones ha contribuido a una evidente disminución de la lepra. Las investigaciones epidemiológicas en áreas pilotos, posiblemente dilucidarán incógnitas de este complejo problema sanitario y contribuirán a un mejor conocimiento de los factores' determinantes de la endemia, motivo por el cual son fundamentales para el control de la enfermedad.

Conclusiones del autor

LOMBARDI, C. Situação da endemia da hanseniase no município de São Paulo, Brasil (1976-1977). *Rev. Saúde Publ. S. Paulo*, 13(4):281-298, 1979.

Descreve-se e avalia-se a situação da endemia da hanseniase no município de São

Paulo no biênio 1976/1977, caracterizando-a como problema de saúde pública, através da apresentação e discussão dos coeficientes de prevalência e de incidência, por local de residência nos diversos distritos e subdistritos e nas zonas Central, Intermediária e Periférica do município. Os recursos sanitários existentes são descritos e avaliados segundo os mesmos critérios de localização, tentando-se relacionar sua distribuição com a dos índices endêmicos verificados.

Resumo do autor

ORRU, A. La lepra in Sardegna. *Rassegna Medics Sarda*, 82(1):23-39, 1979.

Phoenician Leprosy was most likely brought to Sardinia by the Phoenician population. It spread prevalently through the area of Oristano along the south west side of the region and Carloforte Island. Since the beginning of this century, 195 cases in 43 different places were reported. Most of them in Sardinia were represented by autochthonous infection. Also, there has been a small number of sporadic cases from immigrants. Leprosy over the years has been reduced. Today only 10 foci of leprosy are active;

30 disappeared. *From author's summary*

PICOTO, A.J.S. & GRAVANITA, M.M.R. Combate à lepra em Cabo Verde. *An. Inst. Hig. Med. Trop.*, 5(1-4):333-336, 1977/1978.

Os números atrás apontados não são de modo nenhum tranquilizadores. A elevada percentagem de casos lepromatosos e em tratamento irregular no Fogo e em Santo Antão são a favor de um prognóstico reservado quanto à evolução futura da endemia se não se tomarem medidas. Por outro lado a grande percentagem de invalidez é clara quanto à repercussão devastadora que a doença *está* tendo ao mesmo tempo que histórias clínicas indicam que numerosos casos de reação leprosa passam sem diagnóstico e tratamento adequados. No Fogo e em Santo Antão em muitos pontos não encontramos os meios para o tratamento adequado destas situações. Também são muito fracas as possibilidades de promover a reabilitação dos doentes. O fato de a maioria dos casos ser de Lepra lepromatosa deixa poucas esperanças quanto à possibilidade de utilizar o BCG como medida profiláctica neste país. Entendemos portanto que a campanha deverá efectuar-se em moldes clássicos — diagnóstico e tratamento precoces prevenção da invalidez, reabilitação. Em conclusão pensamos que em Cabo Verde a Endemia Leprosa é grave no Fogo e Santo

Antão, que o controle funciona deficientemente nestas Ilhas, deixou de ser feito em Santiago e é precário em São Vicente.

Resumo dos autores

TALWAR, G.P. Towards development of a vaccine against leprosy. *Lepr. India*, 50 (4):492-497, 1978.

What are the characteristics that one should look for in search of the desirable organism? It should of course have antigens which cross-react with those of *M. leprae*. The resembling antigens should be those involved in cell mediated functions. The bacteria should have a potent immunizing capacity. Mere possession of common or cross-reacting antigens may not suffice. In view of the observations that lepromatous leprosy patients are negative to lepromin and do not have the ability to recognize some *M. leprae* antigens, it can be inferred that they are tolerant to these constituents. In the strategy to be evolved, it will be mandatory to seek ways and means to break this tolerance. One of the approaches that can be employed for this purpose is to couple the tolerant antigens to those against which there is no tolerance. The linking of 'se1F' proteins to "foreign" carriers or haptens can elicit an immune response to the tolerant antigens, as has been successfully achieved in our studies on anti-hCG, (Talwar *et al.*, 1976a & 1976b). Thus the requirement that we have framed for our desirable organism is not only the possession of cross-reacting antigens to *Mycobacterium leprae*, but *also* those which are *different*, and to which lepromatous leprosy patients can respond. It is hoped that with the associated immunogenic antigens, it may also be possible to generate immune response against the tolerant antigens.

From the article

TERENCIO DE LAS AGUAS, J. La lepra regresa a Europa. Editorial. *Rev. Leprol. Fontilles*, 12(3):285-289, 1979.

Este aumento de la lepra en Europa por la importación de casos del exterior debe tenerse en cuenta por un posible incremento en el futuro de los casos de lepra secundarios a los importados. Esto supone una nueva estrategia de lucha que consistiría primero en los países europeos con endemia hanseniana, terminar con ella y en los restantes países donde hay corrientes inmigratorias de países tercermundistas, considerar la necesidad del

personal médico en materia de lepra para detectar los posibles casos, el tratamiento de ellos y su rehabilitación y aspectos sociales

del problema, pues la lepra viaja otra vez hacia Europa.

Del editorial

PSICOLOGIA, EDUCAÇÃO, REABILITAÇÃO SOCIAL

PSYCHOLOGY, EDUCATION, SOCIAL REHABILITATION

APPEL, G.E. Social aspects of HD in Para State — Amazon Valley. *Star*, 38(4):2, 1979.

We prefer to call it — Hansen's disease. Two generations ago, the HD patient called himself — in Portuguese — "leproso", "leper". Now, our new patient who does not have to face the gauntlet of condemnation and segregation that his grandfather and greatgrandfather experienced, never uses that pejorative term. He may not be able to pronounce "Hanseniase", or Hansen's disease, but he will tell you quite simply that he has "a skin disease".

From the article

BHAGOLIWAL, A.; CHANDRA, J.; MISH-
RA, R.S. Some observations on default among leprosy patients. *Leer. India*, 51 (1):96-102, 1979.

It can be concluded that the retarding effect on attendance of the majority of reasons viz, carelessness, illiteracy and ignorance, prolonged treatment period, social stigma, whereby a patient tries to hide his illness from the community, religious ceremonies, false feeling of complete recovery and failure to accept the diagnosis can be minimised to a considerable extent through effective and constant interpersonal motivation and adequate health education.

From the article

BOUDREAUX, L. Appeal for terminology change rejected. *Star*, 38(4):1-13, 1979.

Radiating the light of truth on Hansen's disease has been the primary objective of "The Star" since its inception in 1941, and in this endeavor we have achieved more than a modicum of success, thanks to an ever-growing number of friends and staunch supporters. However, until or unless "Hansen's disease" is accepted throughout the medical world as the official term victims of the illness will remain social outcasts. It is quite

obvious that the International Leprosy Association has no intention of replacing the dehumanizing term "leprosy" with one that would restore dignity and social acceptance to the unfortunate victims of this illness. A significant step in the right direction was made when the odious word "leprosy" and all other derogatory references to the disease were removed from the U.S. Public Health Service Manual. We are still pinning our hopes on an announcement by the U.S. Department of Health, Education and Welfare in the November 1977 issue of "U.S. Medicine" HEW had planned to introduce a legislative package into Congress in 1978 which would include "Modernizing the terminology used in the Public Health Service Act to eliminate all use of the words 'leper' and 'leprosy', replacing them with 'Hansen's disease', which is the medically preferred term". If you share our views on terminology and want to help you should write to the Department of HEW, to your Senator or Congressman, or to all three, expressing your strong support for legislation such as that proposed by HEW.

From the article

GOPAL, P.B. Rehabilitation of leprosy patients. *J. Rehab. Asia*, 20(3):4-7, 1979.

The above said measure for the improvement of rehabilitation of leprosy patients should be considered seriously since there already exist quite a large number of dehabilitated patients. Dedicated services of personnel from various disciplines are required to rehabilitate the patients. If the community is changed in favour of leprosy patients, the disease could be controlled in the near future which would greatly help the rehabilitation of the affected persons.

Author's conclusion

GONZALEZ GALVAN, A. Aspectos sociales de la lepra. *Prensa Mid. Mex.*, 43(9-10): 261-263, 1978.

Paco se ha hecho para modificar los conceptos y actitudes erróneos respecto a la

lepra, por lo que debemos tratar de otorgar una rehabilitación psíquica y social a las personas que desafortunadamente contrajeron la enfermedad, para que vivan una vida más productiva y feliz en este mundo.

De las conclusiones del autor

KANDIAH, N.; RIJI, H.M.; PALAN, V.T. Current attitudes of the society towards leprosy and the changing role of the national leprosy control centre, Sungai Buloh, *Malaysia. Southeast Asian J. Trop. Med. Public. Health*, 9(1):103-111, 1978.

The study revealed that most people had heard about leprosy and a majority of them were not prejudiced against the disease. However, the Chinese showed a higher degree of prejudice than the non-Chinese, and this could be due to the incidence of leprosy being the highest among the Chinese and the majority with lepromatous leprosy are also Chinese (National Leprosy Control Centre, 1975-1976). On the basis of this, it could be expected that it would be more difficult to reduce the fear of disease among Chinese than in the other races. It was also found that the educational status of the respondents did not have an effect on the degree of prejudice. The degree of prejudice however did depend on age, where the older respondents seemed to be more prejudiced. The acceptance of leprosy patients undergoing treatment, into the community is low. This will hinder the modern method of treating leprosy on an out-patient basis, after the initial period of inpatient treatment in the leprosaria. A majority of the respondents knew about the existence of the NLCC but only a third knew that it catered to all types of illnesses in addition to leprosy. A significant number of people preferred to go to private clinics and hospitals rather than to NLCC for medical treatment, the main reason being fear of getting leprosy and the difficulty of access to the centre.

From authors' summary

MASSEY, E.W. Leprosy: Biblical opprobrium? *South Med. J.*, 71(10):1294-1295, 1978.

Leprosy is present in many parts of the world today, especially the tropics and sub-tropics, with estimates of 10 to 20 million cases. Incidence rates of 20 per 1,000 or greater exist in Africa and Southeast Asia, but rates in the Palestine vicinity are 0.1 to 1.9 per 1,000 population.' Syphilis is a universal disease, especially since about 1500 AD. The

stigma attached to leprosy is still present. Panic may follow admission of such a patient to a general hospital, and even for the person with arrested disease, employment is difficult to find. Patients with leprosy justifiably abhor the term "leper," for they are painfully aware that it implies much more than having a mycobacterial infection; many of them have suffered more from the ravages of the stigma than from the disease itself.

From the article

RAMU, G. Psycho-social aspects of leprosy in India. *Star*. 38(5):6-7, 11, 1979.

The psychological profile of leprosy patients has not been properly studied. It could however be indicated here that a particular type or types of personality profiles are not obtained in leprosy patients. The behaviour patterns are modified by circumstances-e.g., social and physical disabilities, deprivation of biological essentials, nutritional and emotional stress exceeding tolerance. The body, mind and the emotional state are aspects of the same human personality. An impairment of function of any one will adversely affect the harmony of the whole organism.

From the article

VARKEVISSER, C.M. Methodology of research into social aspects of leprosy control. *Lepr. Rev.*, 50(3):223-229, 1979.

Given the goal of optimal dapsone intake, social scientific research need to take into consideration both the socio-cultural and socio-medical settings in which dapsone is available. Various techniques can help reveal what factors determine prompt self-reporting and regular clinic attendance, and what factors retard them. In our project (Western Province, Kenya and Mwanza Region, Tranzania 1974-76) we combined a factor analysis of data on patient registration cards (limited in value because of the low quality of the data) with in-depth interviewing (patients, relatives, neighbours, false-alarmists, community leaders, traditional doctors). With a set of "test" statements, we measured prevailing community attitudes towards leprosy patients and then compared the results with our observations. At the same time we interviewed health personnel intensively, and observed patient-staff interactions. In-depth research is able to generate valuable suggestions for strengthening the leprosy services available, for training and retraining health personnel, and for educating patients and communities about leprosy control essentials.

Author's abstract

GENERALIDADES, HISTÓRIA

GENERAL, HISTORY

GUSSOW, Z. Notes on the history of leprosy in Louisiana. *South. Med. J.*, 72(6):600604, 1979.

In the late 1880s it became apparent in Louisiana that leprosy was endemic in the southern part of the state. Initially, the intention was to establish a leprosy hospital in the city of New Orleans, close to medical facilities, and where the bulk of the patients were to be found. The establishment, instead, of an isolated leper colony at the run-down plantation at Carville, 85 miles up-river, was

the result of community indifference, misunderstanding of the nature of the disease, and expected depreciation of property values. Fear of the disease was a secondary matter. The practice of locating residential facilities for the chronically ill at long distances from the centers of physician practice and medical research continues to this day. Interestingly, the arguments that permit this to happen have not changed appreciably from those of a century ago.

Author's abstract