

## HANSENÍASE: RESUMOS HANSENIASIS: ABSTRACTS

### BACTERIOLOGIA, IMUNOLOGIA BACTERIOLOGY, IMMUNOLOGY

BARNETSON, R. StC.; BARNETSON, A.; PEARSON, J.M.H.; KRONVALL, G. Does nonspecific T-lymphocyte stimulation of B lymphocytes occur during reversal reaction in borderline leprosy? *Scand. J. Immunol.*, 5:287-291, 1976.

Serum immunoglobulins G, A, and M were estimated in 14 patients with borderline cases of leprosy at commencement of treatment and subsequently when they developed 'reversal reaction'. There was a significant increase in all immunoglobulin levels during the reaction, with a subsequent fall; the postreaction values for IgG and IgA were below the base-line figures. Additional investigations in six patients indicated that the rise was a nonspecific one, not brought about by an increase in antimycobacterial antibodies. It seems likely that the rise in immunoglobulins during reaction is due to nonspecific T-lymphocyte stimulation of B lymphocytes.

Authors' abstract

BEDI, B.M.S.; NARAYANAN, E ; SREEVATSA; KIRCHHEIMER, W.F.; BALASUBRAHMANYAN, M. Dispersal of *Mycobacterium leprae* by leprosy patients while breathing. *Ann Indian Acad. Med. Sei.*, 12:1-5, 1976.

Microscope slides were exposed to nasal and oral breaths of lepromatous leprosy patients to determine the dispersal of acid fast bacilli in the exhaled air during breathing. The slides were then stained and examined for acid fast bacilli (AFB) and the results compared with bacterial index, morphological index and bacteraemia of the patients. AFB could be demonstrated in "the breaths of patients, and they were more frequent in the oral and nasal breaths of patients with high bacterial index. Of the 59 persons having bacterial index of 4+ to 6+ oral breath was positive in 10 per cent and nasal breath in

15.4 per cent. Except two instances all positive nasal and oral breath cases had positive nasal swab smears. It is reasonable to assume that the AFB present in the nasal and oral breaths is *Mycobacterium leprae* in view of their origin from clinically and bacteriologically diagnosed lepromatous leprosy cases having no other mycobacterial infections. The morphological appearance of the bacilli and the relationship between the incidence of bacilli in breath and the patients skin slit further supports this assumption.

Authors' abstracts

BJUNE, G. Comparison of various preparations of *Mycobacterium leprae* and other mycobacteria by lymphocyte stimulation. *Int. J. Lepr.*, 46(4):386-93, 1978.

Peripheral blood lymphocytes were stimulated *in vitro* with different mycobacterial antigen preparations and responses were measured as incorporation of tritiated thymidine. Blood donors were 9 patients with lepromatous leprosy, 16 tuberculoid leprosy patients, and 6 healthy individuals with different degrees of exposure to leprosy. The results revealed a good correlation between the responses to *M. leprae* from human sources and bacilli from armadillos inoculated with human leprosy bacilli, although the latter were less potent stimulators.

From author's summary

CASTRO, I. M. & MATTOS, O. Estudo comparativo entre a "variante Fernandez" e o teste original de Mitsuda, visando aplicabilidade nas campanhas sanitárias contra a hanseníase. *Bol. Div. Nac. Dermatol. Sanit.* 87(2/4): 19-22, 1977.

Dentro de nossa limitação amostral, os resultados da inferência estatística não foram favoráveis à variante Fernandez como subs-

tituto do teste original de Mitsuda na hansenose semiótica.

#### Conclusão dos autores

CHIRON, J. P. *Infection par le virus de l'hépatite B chez les lépreux*. Tours, 1977. 126p. [These — Faculté des Sciences Pharmaceutiques de Tours]

Notre travail porte sur la wise en évidence de HBs Ag chez 562 lépreux sénégalais, par dosage radio-immunologique; it a été détecté chez 25,4% des lépreux étudiés contre 12% chez les donneurs de sang de notre population témoin. Il n'y a aucune différence entre les lépreux vivant en léproserie et ceux qui habitent dans leur village, ni entre les sexes. Nos résultats mentionnent une fréquence plus élevée de HBs Ag chez les lépromateux que chez les tuberculoides sans que cette différence soit statistiquement significative, comme c'est le cas dans les deux tiers des travaux portant sur ce sujet. La recherche des anticorps dirigés contre l'antigène d'enveloppe du virus de l'hépatite B est positive pour 44,1% des sérums de lépreux. La présence de l'un des 2 marqueurs du couple HBs Ag/anti-HBs est significativement plus élevée chez les lépromateux (74,6%) que chez les tuberculoides (62,9%). Aucune donnée bibliographique ne concerne les autres marqueurs HBe Ag, anti-HBe et anti-HBc chez les lépreux; de ce fait aucune comparaison avec nos résultats n'est possible. Pratiquement aucun lépreux, moins de 2%, n'est indemne de stigmates d'infection par HBV. Cette constatation est compréhensible en raison de la plus grande sensibilité des lépreux au virus, du taux de portage plus élevé que chez les témoins, du fait que les lépreux sont âgés (moyenne d'âge: 33 ans) et qu'ils ont eu toutes les chances d'être en contact avec HBV dès leur enfance.

Pour la population lépreuse étudiée, l'infection par HBV est: aiguë ou très récente dans 2,4% des cas (classe a); chronique dans 23% des cas (classe b) dont près de la moitié de chronique saïu; ancienne dans 41,7% des cas (classe c), à un stade difficile à préciser, faute de surveillance horizontale dans près d'un tiers des cas (classe d).

Pour les porteurs chroniques de HBs Ag, une biopsie hépatique aurait été intéressante à pratiquer pour préciser le diagnostic et la forme; malheureusement elle n'a pu être réalisée dans le cadre de ce travail.

Cette étude ne révèle aucune différence statistique quant à la fréquence du portage chronique entre les formes de lepre et particulièrement entre les formes polaires LL et TT; aucune des formes n'échappe à l'infection. Se le défaut d'immunité à médiation cellulaire se manifeste à regard des antigènes de *Mycobacterium leprae*

*bacterium leprae* chez les lépromateux, cette déficience ne semble pas s'étendre aux antigènes de HBV ou bien influer sur le portage chronique. Elle ne joue pas non plus de rôle sur le degré d'antigénémie ou le taux des anticorps comme cela a été décrit chez les lépreux pour d'autres infections virales où l'immunité à médiation cellulaire antivirale est touchée (EBV, vaccine). Nous ne disposons toutefois là que d'arguments indirects pour minimiser le rôle de cette immunité tissulaire dans l'infection par HBV: des tests cutanés ou leucocytaires réalisés avec HBs Ag complèteraient utilement l'investigation. Les lépreux peuvent réagir comme les autres individus à l'agression par HBV en développant une immunité humorale protectrice; le pourcentage de porteurs chroniques est cependant très élevé; pour expliquer ce fait on ne dispose pas encore de données satisfaisantes valables pour toutes les formes de lepre. Des stimulations antigéniques contrôlées avec des antigènes HBs Ag purifiés pourraient peut-être préciser la genèse des anticorps chez les lépreux. Les risques évolutifs liés au portage chronique sont difficiles à apprécier pour les lépreux; par contre pour leur entourage les hanaéniens constituent un réservoir de virus non négligeable.

#### Conclusions de l'auteur

CH'OGLE, J.B.; KHANOLKAR, S.R.; AN-TIA, N.H. T. & lymphocytes in the spectrum of leprosy. *Lepr. India*, 49(1): 36-43, 1977.

The percentage of T & B lymphocytes were estimated in 52 leprosy patients by 'E' and 'EAC' rosette techniques. The mean % values for 'T' lymphocytes were significantly lower in lepromatous group as compared with that of tuberculoid and borderline groups. Also, a significant difference was observed in the mean % values of T & B lymphocytes of the borderline and tuberculoid patients and of the normal control group. These findings were correlated with skin smears and leproskin testing.

#### Authors' abstract

CONVIT, J. & ULRICH, M. General ideas concerning a vaccine against leprosy: a basis for discussion during the Eleventh International Leprosy Congress. Editorial. *Int. J. Lepr.*, 46(1):61-63, 1978.

In summary, intradermal injection of the mixture of *M. leprae* and BCG produced favorable immunologic changes in the patients and contacts studied, suggesting the strong possibility of genuine efficacy of the mentioned vaccine. We recognize that living BCG may not be the ideal mycobacterial adjuvant

for use with killed *M. leprae*. This "ideal" adjuvant should have at least two characteristics: it should be widely distributed in nature, so that a large proportion of the population is sensitized, and it should be highly potent in adjuvant activity. An argument can also be made against the use of a living mycobacterium as an adjuvant. Virulence factors in mycobacteria have not been fully analyzed, but the possibility exists that many species are not pathogenic precisely because the stimulate extremely strong studies are under way in our laboratories to immune reactions and are therefore unable to establish themselves in the host. Further evaluate the possible efficacy of using a killed mycobacterium of this type together with *M. leprae* in vaccination procedures.

From the editorial

COUDERT, J.; MINJAT, M.; LU HUYNH THANH. Valeur de la réaction d'immunofluorescence dans la lèpre. *Med. Tropicale*, 87(4):437-45, 1977.

With 5 antigenic strains of *Mycobacterium* and a technical procedure which is related in detail, the authors have studied in immunofluorescence 1543 sera of leprosy patients and 134 reference ones. The value of this technic is appreciated in the diagnosis and in the detection of an impending reaction.

Authors' summary

DAVID, H. L. & CLEMENT, F.; MEYER, L. Adsorption of mycobacteriophage D29 on *Mycobacterium leprae*. *Ann. Microbiol.*, 129A (4):563-66, 1978.

*Mycobacterium leprae* adsorbed mycobacteriophage D29. The conditions required to obtain satisfactory adsorption are described.

Authors' summary

DESIKAN, K. V. Viability of *Mycobacterium leprae* outside the human body. *Lepr. Rev.*, 48(4):231-235, 1977.

It is important to recognise whether *Mycobacterium leprae* discharged from the body will remain alive after they settle down over articles of daily use, and if so the education of their viability. The common belief is that the organisms die soon after they are discharged from the body, particularly in tropical countries. In order to verify this concept, an experimental procedure has been designed using the mouse foot-pad model. It has been found that the organisms remain alive for more than 9 days. This finding has an important bearing on the epidemiology of leprosy.

Author's abstract

DHARMENDRA. Recent advances in microbiology in leprosy. Dr. Y. S. Narayana Rao oration award 1975. *Lepr. India*, 49(1):10-35, 1977.

Cultivation of the leprosy bacillus. Experimental Transmission. Aetiological relationship. Significance of variations in morphology and staining characters. Resistance of the leprosy bacillus to outside factors. Resistance of the organism and methods of transmission. Some comments on the above observations. Results with human and armadillo lepromins. Antigenic structure of the leprosy bacillus.

ESTRADA-PARRA, S.; ROJAS-ESPINOSA, O.; QUESADA-PASCUAL, F.; ORTIZ, Y.; CASTRO M. E.; PADIERNA, J.; JIMÉNEZ, L. Lepra de Lucía. IV. Perfil inmunológico. *Dermatología: rev. mex.* 22(2):175-181, 1978.

A group of patients suffering from diffuse lepromatous leprosy complicated with Lucía's phenomenon was studied. They showed severe impairments in several of their immunological parameters. The levels of the total serum proteins were elevated mainly due to an increase in the alpha-2 and gamma-globulin fractions. All of the immunoglobulin classes were elevated but the IgG and IgM classes were the most altered. The studied complement components (Ca and C<sub>3</sub>) were normal and the 50% hemolytic complement (CH<sub>50</sub>) was only slightly elevated. The C-reactive protein and rheumatoid factor(s) tests were positive in many cases. Thirty-three percent of the patients had circulating immune complexes as detected by their reaction with Clq, and all of them had circulating antimycobacterial antibodies. In general, the patients showed low numbers of T-lymphocytes (E-rosettes) and, in some cases, B-lymphocytes (EAC-rosettes) counts were elevated. A great majority of the patients gave negative LIF tests with lepromin as the antigen. The few cases in which the LIF test was positive could well be the result of a cross reactivity to *M. tuberculosis* antigens. The LIF test with PPD as the antigen and the response to the intradermal injection of PPD and other antigens were comparable to the results obtained in a normal group. These and other studies enable us to conclude that the patients with diffuse lepromatous leprosy have a specific depression in their cell-mediated immunity to the *M. leprae* antigens and that the Lucía's phenomenon could be the result of a type III, immune complexes-mediated, hypersensitivity.

Authors' summary

ESWARAIAH, G. & BALI, R. S. Palmar flexion creases and dermatoglyphics in leprosy patients. *Int. J. Lepr.*, 46(1): 56-60, 1978.

Palmar configurations of 115 male and 48 female leprosy patients were compared with 536 males and 426 female normal individuals of the same population. The data was derived from Nekararu (weavers) castes of Karnataka State, India. Among flexion creases, the single radial base crease (SRBC) especially showed more association with leprosy in both male and female patients than their respective controls. Among dermatoglyphics, only C-line types are significantly different in male leprosy patients as compared to their controls. The female patients also showed more C-absent lines than the control group. The susceptibility to bacterial infection may be due to some biologic deficiency which warrants continued investigation on a broader and more intensive basis.

Authors' summary

FABER, W. R.; LEIKER, D. L.; NENGERMAN, I. M.; ZEIJLEMAKER, W. P.; AMCHELLEKENS, P. Th. A. Lymphocyte transformation test in leprosy: decreased lymphocyte reactivity to *Mycobacterium leprae* in lepromatous leprosy, with no evidence for a generalized impairment. *Infect. Immun.*, 22(3):649-656, 1978.

Untreated leprosy patients were examined with respect to lymphocyte transformation in vitro after stimulation with mycobacterial and other microbial antigens, allogeneic lymphocytes, or nonspecific mitogens. Methods were used to circumvent technical variability. The results were compared with those obtained in controls matched for age, sex, race, an environment. No evidence was found for a generalized impairment of lymphocyte transformation in vitro, whereas a specific defect towards *Mycobacterium leprae* was demonstrable in lepromatous leprosy patients. The response to *M. leprae*, investigated in untreated and treated leprosy patients, decreased along the leprosy spectrum. Moreover, the results of the one-way mixed lymphocyte cultures showed that lymphocytes from leprosy patients had a normal stimulator and responder capacity, when they were tested against a panel of allogeneic lymphocytes. The influence of serum factors was investigated in untreated leprosy patients in the mixed lymphocyte culture. On average, tuberculoid as well as lepromatous sera showed a low-level depressive effect, but some sera showed a stimulatory effect. Therefore, a depressive effect of serum factors cannot be considered to be a

general feature of leprosy. The correlation between the Mitsuda type of lepromin skin test and the lymphocyte reactivity in vitro to *M. leprae* was studied, and a positive correlation was found.

Authors' abstract

GOIHMAN YAHR, M. Inmunidad humoral y lepra, la reacción lepromatosa, el leucocito polimorfonuclear y la lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROA. 4° Caracas, 1975. Washington, 1977. p. 45-48. (OPS. Publicación científica, n.º 344).

GUPTA, R. M.; GUPTA, S. C.; SINGH, G.; KHANNA, S. Immunoglobulins in leprosy. *Int. J. Lepr.*, 46(4):342-345, 1978.

It is proposed that persistently raised gamma globulins and immunoglobulin G, A and M levels observed in lepromatous leprosy patients could be caused by macrophage blockade hindering the suppressor T-cell mediated homeostatic control for immunoglobulins.

From authors' summary

GUPTA, S. C.; SINHA, S. N.; SHARMA, D.; BAJAJ, A. K.; BISHT, D.; MEHROTRA, T. N.; GUPTA, R. M. Serum proteins and immunoglobulins in leprosy. *Int. J. Lepr.*, 46(1):9-13, 1978.

Serum proteins and immunoglobulins were studied in patients suffering from various types of leprosy. A significant increase in total protein and decrease in albumin was found in all types of leprosy except borderline-tuberculoid. Gamma globulin was found to be increased in all types. An increase of alpha-2-globulin in lepromatous, a decrease of beta globulin in borderline-lepromatous, and a decrease of alpha-2 and increase of beta globulin in borderline-tuberculoid were observed. These changes do not seem to be of diagnostic importance. A statistically significant increase of IgG in borderline-lepromatous and lepromatous, IgM in all types of leprosy and IgA only in lepromatous was found. The increase of different immunoglobulins in leprosy, especially the lepromatous type, suggests a humoral response which was found to be directly proportional to the severity of the lesion.

Authors' summary

HANKS, J. Recientes avances en los aspectos microbiológicos de la lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROA. 4°, Caracas, 1975. Washington, 1977. p. 33-37. (OPS. Publicación científica n° 344).

HANKS, J. H. Physiology and cultivation of obligate intracellular mycobacteria. In: Leprosy: Cultivation of the etiologic agent immunology animal models. Proceedings of the Workshop on Future Problems in the Microbiology of *M. leprae*. Baltimore, Md., 1976. Washington, 1977. p. 1-10. (OMS/PAHO — scientific publication, n.º 342).

The problems involved in the cultivation of obligate intracellular mycobacteria, while complex, are not unsolvable. Contributions to their solution have come from many unrelated sources. Rapid progress toward the cultivation of *M. leprae* obviously depends on cooperation among three kinds of investigators: those familiar with the general properties of host-dependent microbes and of a given intracellular species, those familiar with the intricacies of physiology and nutrition, and those with an intimate knowledge of metabolic and biosynthetic pathways.

From author's summary and discussion

HARADA, K. & KASAI, T. Two methods of demonstrating leprosy bacilli in smears. *Int. J. Lepr.*, 46(2):167-171, 1978.

HASTINGS, R. C. Transfer factor as a probe of the immune defect in lepromatous leprosy. Editorial. *Int. J. Lepr.*, 45(3): 281-291, 1977.

Transfer factor specificity. Rationale for TF in leprosy. Possibilities for the fundamental lepromatous defect 1 — *M. leprae*, 2 — *The macrophage*, 3 — *The leprosy Ir gene*, 4 — *Control mechanisms*. Results of TF in leprosy. Implication of TF results for the site of the lepromatous defect. Implications for a leprosy vaccine.

From the editorial  
(vide Stoner, G. L., p.

162 and Hastings, R. C. p. 157).

HASTINGS, R. C. Transfer factor as a probe in the immune defect in lepromatous leprosy. Correspondence. *Int. J. Lepr.*, 46(2):220-221, 1978.

Thank you for allowing me to respond to the letter of Dr. Gerald L. Stoner of 9 March 1978, regarding the above. editorial. In an area as complex and controversial as the nature of the fundamental defect in lepromatous leprosy, one hardly expects a consensus and Dr. Stoner's comments are most appropriate in expressing alternate views. One can only agree with Dr. Stoner's desire for more critical evidence bearing on genetic factors influencing susceptibility to leprosy. The editorial in

question was certainly not intended to be interpreted as an *attempt* to present any original concepts regarding this time-honored view. Indeed in references 30 and 31 of the editorial, Dr. Rotberg's hypothesis is reviewed at some length; Dr. Beiguelman's work is reviewed in reference 33; and that of Dr. Godal *at al*, in reference 15 of the editorial.

Obviously this writer strongly disagrees with Dr. Stoner's statements that imply that nothing is known about the mechanism of action of transfer factor and hence its activity in lepromatous leprosy "tells us next to nothing about the nature of the immune defect". As referenced in the editorial, this writer feels there is adequate evidence to allow one to believe that transfer factor acts specifically and in the fashion indicated. If so, in light of the other possibilities for the fundamental defect in lepromatous leprosy, the results with transfer factor in leprosy appear relevant to this writer's judgment.

From the letter  
(vide Hastings, R. C., p. 157  
and Stoner, G. L., p. 162).

HIRATA, T. Electron microscopic observations of cell division in *Mycobacterium leprae* by means of serial ultrathin sectioning. *Int. J. Lepr.*, 46(2):160-166, 1978.

The division of *Mycobacterium leprae* in human skin was studied in the ultrathin sections at the electron microscopic level. A few dividing bacilli were observed. The division seemed to be accomplished by inward extension of both the cell wall and the cytoplasmic membrane into the cytoplasm of the bacillary cell to form a septum. The intracellular membranous organelle (mesosome) is assumed to play a role in division.

Authors' summary

HIRATA, T. Electron microscopic observations of intracytoplasmic membranous structures in *Mycobacterium leprae* by means of serial ultrathin sectioning. *Int. J. Lepr.*, 46(4):372-375, 1978.

The fine structures and interconnections between the cytoplasmic membrane and mesosomes of *Mycobacterium leprae* in human skin were studied in ultrathin sections. These intracellular membranous organelles were seen as laminated structures and as clusters of vesicles, which were trilaminar consisting of two electron-dense layers separated by an electron-transparent zone. The formation of mesosomes seems to be initiated by invagination and/or folding of the cytoplasmic membrane.

Author's summary

HIRAMALINI, S.; JOSEPH, N. A.; CHACKO, C. J. G. Concentration and persistence of bacilli in the fingers and toes of patients with lepromatous leprosy. *Lepr. Rev.*, 49(3):223-229, 1978.

*vide Clinica Clinical aspects*

HOPPE, J. E. & STIITGEN, G. Der Stellenwert von Hauttesten mit Gewebeextrakten insbesondere bei Lepra and Sarkoidose. *Immun. Infekt.*, 3:36-47, 1975.

The immunological aspects of lepra (India, Germany) and Sarcoidosis are presented under consideration of cutaneous reaction to lepromin and Kveim-extracts. Patients with lepra, erythema nodosum, sarcoidosis and different dermatoses have been tested with lepromin, Kveim-Antigen and tuberculin. The specificity of the results has been discussed. Patients with tuberculoid lepra did not react on *Kveim-test*, but patients with sarcoidosis can give positive reaction on lepromin. Patients with erythema nodosum without clinical signs of sarcoidosis are *Kveim* negativ and a positive lepromin-test is an exception. The positive *Kveim-test* is bound to a histological examination. The positive lepromin-test in non lepraendemic countries should be interpreted also by histological examination. Granulomatous dermatoses can show positive lepromintests, but the histological picture is different from the lepromin reaction in tuberculoid lepra. The positive reactions on tissue extracts are not combined with positive immunofluorescence results. Intracutaneous injection of lepra-bacilli in lepromin extract can be presented days to weeks after intracutaneous application in biopsies.

Authors' abstract

KATO, L. Cholesterol, a factor which is required for growth of mycobacterium from leprous tissues. *Int. J. Lepr.*, 46(2): 133-143, 1978.

Cholesterol is proposed as a possible growth factor for host grown *M. leprae* in the macrophages of the susceptible host and the same sterol as a growth factor for primary cultivation of mycobacteria from leprous tissues.

*From author's summary*

KATO, L. & ISHAQUE, M. *M. leprae* does not utilize DOPA. Correspondence. *Int. J. Lepr.*, 45(4):382, 1977.

KAKLAMANIS, E.; DROUGA, M.; KOUZOUTZAKOGLU, K.; KARALIS, D.; TRICHOPOULOS. Cellular immunity in

patients with leprosy. Circulating T lymphocytes and their response to PHA in leprosy. *Int. J. Lepr.*, 46(3):241-247, 1977.

The ability of peripheral blood lymphocytes from polar lepromatous (LL), borderline lepromatous (BL) and borderline tuberculoid (BT) patients to transform *in vitro* in the presence of phytohemagglutinin was found to be significantly reduced. A significant reduction in the percentage and absolute number of T lymphocytes was observed in LL cases. In BL cases the number of T lymphocytes was decreased, but the reduction was proportional to the reduction in the total lymphocyte population and was observed only in bacteriologically positive cases.

*From authors' summary*

KHANOLKAR, S. R.; AMBROSE, E. J.; CHULAWALA, R. G.; BAPAT, C. V. Autoradiographic and metabolic studies of *Mycobacterium leprae*. *Lepr. Rev.*, 49(3):187-198, 1978.

Highly purified suspensions of *Mycobacterium leprae* show a progressive increase in incorporation of [<sup>3</sup>H] thymidine and [<sup>3</sup>H] DOPA in short-term cultures as shown by scintillation counting. The intact bacilli are known to have a high permeability barrier. The experiments described suggest that [<sup>3</sup>H] DOPA becomes trapped within this barrier and oxidized inside the bacilli. Tests by pretreatment with diethyl dithiocarbamate (DDC inhibitor of DOPA), cold DOPA or hyaluronidase distinguish the uptake of [<sup>3</sup>H] DOPA by bacilli from the effects of connective tissue contamination. Similar increases in labelling of bacilli by scintillation counting of cultures, have been observed by autoradiography of the organisms. The scintillation method shows promise for rapidly identifying drug resistance in lepromatous patients relapsing while on treatment with dapsone (DDS), rifampicin, clofazimine or other anti-leprosy drugs.

Authors' abstract

LALITHA, V.S.; BAPAT, C.V.; DASTUR, D. K. Culture and phagocytic characteristics of Schwann cells *in vitro*. A possible model substrate for cultivation of *M. leprae*. *Int. J. Lepr.*, 46(3):266-272, 1977.

LEPROSY: Cultivation of the etiologic agent, immunology animal models. In: WORKSHOP ON FUTURE PROBLEMS IN THE MICROBIOLOGY OF *M. LEPRAE*. Baltimore, Maryland, 1976. Proceedings. Washington, 1977. 75p. (PAHO/WHO, scientific publication, n° 42)

MARTINEZ-PALACIOS, B. N. Quimiotaxis en lepra. *Dermatologia: rev. mex.*, 22(1): 26-35, 1978.

Plasmatic factors of chemotaxis were looked for in 25 leprosy patients and in 25 nonleper persons by a modified Bopden'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

MASUDA, A. Avaliação do sistema fagocítico mononuclear na hansenfase. São Paulo, 1977. 107p. [Tese — Escola Paulista de Medicina].

Introdução: I — Aspectos clínicos e histopatológicos; II — Aspectos imunológicos: A) Resposta humoral; B) Resposta celular; C) Mecanismo de resistência e patogênese; III — Objetivo e Planejamento; IV — Avaliação da função monocitária.

Material e Métodos: I — Pacientes e controles; II — Material de laboratório; III — Métodos. Análise e Apresentação dos Resultados — Discussão — Conclusões — Bibliografia.

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Monócitos de pacientes com hansenfase tuberculóide e virchoviana apresentam aumento de receptores para Cab e F. em relação ao grupo controle normal. Os receptores para F. da membrana dos monócitos de hansenianos tratados com látex não se recuperam após 30 minutos de incubação em meio de cultura, ao contrário do que ocorre com os monócitos de indivíduos normais. Monócitos de pacientes com hansenfase tuberculóide e virchoviana apresentam maior capacidade de redução do NBT do que a grupo controle normal.

A incorporação de glucosamina nos monócitos de hansenianos não difere do grupo controle normal. O nível de lisozima sérica em virchovianos é maior do que os observados em pacientes tuberculóides indivíduos normais. Os monócitos de pacientes virchovianos e tuberculóides apresentam diminuição da migração espontânea e da resposta quimiotática.

Os hansenianos apresentam deficiência na produção do fator quimiotático derivado de

linfócito, sendo mais acentuada em virchovianos. Plasmas de hansenianos inibem a atividade quimiotática de monócitos de indivíduos normais. Esta inibição é maior em plasma de virchovianos. Os soros de pacientes com hansenfase tuberculóide e virchoviana não inibem a atividade citotóxica de linfócitos mediada por anticorpo. Os níveis de proteína C-reativa são mais elevados em virchovianos do que em tuberculóides.

Considerando as conclusões obtidas nos itens anteriores, colocamos a hipótese de que os pacientes com hansenfase, principalmente os que desenvolvem o tipo virchoviano, apresentam ativação inadequada de monócitos que parecem estar contribuindo na patogênese da hansenfase.

Acreditamos que falhas nas interações com vários componentes necessários para uma resposta imunológica eficiente são os responsáveis pela permanência do *M. leprae* no organismo. Esta persistência do bacilo no organismo poderia ser a causa da formação de granulomas, que, por sua vez, originam vários distúrbios orgânicos observados nestes pacientes.

Conclusões do autor

MASSOUD, A.; NIKBIN, B.; NAZARI, G. R.; SYADAT, N. A.; ALA, F. A study of cell-mediated immunity and histocompatibility antigens in leprosy patients in Iran. *Int. J. Lepr.*, 46(2):149-153, 1978.

It is difficult to establish any precise relationship between HLA antigen and leprosy at this stage.

From authors' summary

MELSON, R.; NAAFS, B.; HARBOE, M.; CLOSS, O. Antibody activity against *Mycobacterium leprae* antigen 7 during the first year of DDS treatment in lepromatous (BL-LL) leprosy. *Lepr. Rev.*, 49(1): 17-29, 1978.

A specific radioimmunoassay was developed for demonstration and quantitation of antibodies against *Mycobacterium leprae* antigen 7 which cross-react extensively with a similar antigen in many species of mycobacteria, including BCG-antigen-60. The antibody activity against *M. leprae* antigen 7 showed only a slight tendency to decrease in 15 patients with lepromatous leprosy during their first year of treatment with dapsone associated with marked clinical improvement.

Authors' abstract

MENDES, E.; LEVY, L. H.; ULHOA CINTRA, A. B. Kveim-test in patients suspected of sarcoidosis and in leprosy patients in a geographically area not yet investigated. *Allergol. Immunopathol.*, 4:45-50, 1976.

The Kveim-test was studied in a geographical area (Sao Paulo, Brazil) not yet investigated, and leprosy patients were also tested. One hundred and forty seven patients from a general hospital who had had the possibility of sarcoidosis, as a differential diagnosis, were tested with a gveim suspension. Another group of 13 patients with clinical and histological diagnosis of leprosy (10 with tuberculoid leprosy lepromin-positive and 3 with indetermined leprosy) was also tested with Kveim suspension. Sixteen Kveim-tests (10 per cent) with sarcoid granulomatous reaction revealed histologically were considered positive. Three patients with sarcoidosis for more than 3 years gave negative Kveim-test. Four patients with positive Kveim-test had respectively lymphosarcoma, Crohn's disease, lung fibrosis and concurrent tuberculosis infection. Nine positive Kveim-tests (5.6 per cent) were coincident with sarcoidosis. Thirteen leprosy patients (ten tuberculoid) gave negative Kveim-test.

Authors' abstract

MEYERS, W. M.; WALSH, G. P.; BROWN, H. L.; REES, R. J. W.; CONVIT, J. Naturally acquired leprosy-like disease in the nine-banded armadillo (*Dasypus novemcinctus*): reactions in leprosy patients to lepromins prepared from naturally infected armadillos. *J. Reticuloendothel. Soc.*, 22(4):369-375, 1977.

Lepromins prepared from 6 armadillos with a naturally acquired leprosy-like disease in Louisiana were assayed in 146 leprosy patients with lepromatous and nonlepromatous leprosy. The patients resided in Ethiopia, Malaysia, Venezuela and Zaire. The classic pattern of Mitsuda reactions was observed. Whereas patients with lepromatous leprosy gave weak or negative reactions, those with nonlepromatous leprosy gave positive reactions. Because *Mycobacterium leprae* is the only microorganism known to give this pattern of response, these data indicate that the organism responsible for the naturally acquired leprosy-like disease of armadillos in Louisiana is closely related to, if not identical with, *M. leprae*.

Authors' abstract

MYRVIK, Q. N. Antigens and vaccines in leprosy. In: *Leprosy: Cultivation of the*

etiologic agent immunology animal models. Proceedings of the Workshop on Future Problems in the Microbiology of *M. leprae*, Baltimore, Md., 1976. Washington, 1977. p. 33-36. (OMS/PAHO, scientific publication, n0 342).

Many areas within the field of leprosy immunology remain to be explored. Some of the most salient of these include: 1 — The approach of using heat-killed *M. leprae* in an oil vehicle as a vaccine should be pursued. 2 — Selected normal persons who remain Mitsuda negative following two skin tests with lepromin should be experimented with for attempted conversion with the above-mentioned Vaccine. 3 — A purified protein preparation for eliciting the Fernandez reaction (tuberculin-type sensitivity) is urgently needed, for which a heated PPD-like preparation or cross-linked preparation should be prepared and tested. 4 — Quantitative parameters of CMI to leproprotein should also include specific blastogenic tests with the above antigens employing peripheral blood lymphocyte populations from vaccinees, tuberculoid subjects, lepromatous subjects, and individuals who have had inapparent infections. 5 — Determinations as to whether *M. leprae* liberates components that stimulate suppressor lymphocyte replication. 6 — Advisability of chemical modification of the immunogenic protein moiety in *M. leprae* to make it more immunogenic.

Author's suggestions

NAKAJIMA, S.; KOBAYASHI, S.; NOHARA, M.; SATO, S. HLA antigen and susceptibility to leprosy. *Int. J. Lepr.*, 45(3):273-277, 1977.

NARAYANAN, E.; SREEVATSA, A.; RAJ, A. D.; KIRCHHEIMER, W. F.; BEDI, B. M. S. Persistence and distribution of *Mycobacterium leprae* in *Aedes aegypti* and *Gules fatigans* experimentally fed on leprosy patients. *Lepr. India*, 50(1): 26-37, 1978.

vide Epidemiologia/Epidemiology

NISHIURA, M.; IZUMI, S.; MORI, T.; TAKEO, K.; NONAKA, T. Freeze-etching study of human and murine leprosy bacilli. *Int. J. Lepr.*, 45(3):248-254, 1977.

Morphologic features of the electron-transparent zone (ETZ) material around human and murine leprosy bacilli were examined by a freeze-etching technic. The ETZ around human leprosy bacilli is composed of

spherical droplets of hydrophobic material. These are always liquid at body temperature and they never show crystalline lamellar structure even at the temperature of liquid nitrogen. The ETZ around murine leprosy bacilli is composed of ribbon-like or membranous crystalline structures. This material is solid and crystalline at the body temperature of mice, and this solid material is the chief cause of the random arrangement of murine leprosy bacilli inside the cytoplasm of murine lepra cells. This crystalline structure has also been observed around murine leprosy bacilli grown on cell-free culture media.

*From authors' summary*

OKADA, S.; KOMURA, J.; NISHIURA, M. *Mycobacterium leprae* found in epidermal cells by electron microscopy. *Int. J. Lepr.*, 46(1):30-34, 1978.

Leprosy bacilli were found in a keratinocyte of the epidermis by the electron microscopic observation of the ultrathin section of a leproma. The possibility of discharge of leprosy bacilli from the skin should be considered even if the lepromatous patient does not have any ulceration.

*Authors' summary*

PRABHAKARAN, K. Criteria for establishing 0-diphenoloxidase activity. Correspondence. *Int. J. Lepr.*, 45(4):379-380, 1977.

PRABHAKARAN, K. Misconceptions about enzyme activity of *Mycobacterium leprae*. Correspondence. *Lepr. India*, 49(4):583-584, 1977.

Our conclusions were reached after years of thorough-going investigations; these conclusions still stand. Anyone who is interested is welcome to visit our laboratory; we will be glad to demonstrate that biochemically active preparations of *M. leprae* (not degenerated organisms) contain an enzyme which convert dopa and other diphenols to pigment.

*From the letter*

PRABHAKARAN, K. Rapid identification test for *Mycobacterium leprae*: certain precautions. *Star*, 37(111):2-3, 1978.

REA, T. H. & NG, W. G. Serum pseudocholinesterase variants in Mexicanborn patients with lepromatous leprosy. *Int. J. Lepr.*, 46(4):383-336, 1978.

No difference in the distribution of serum pseudocholinesterase variants could be found in lepromatous leprosy patients as compared with controls.

*From authors' summary*

REICH, C. V. Una reacción serológica para la lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA. 4°, Caracas, 1975. Washington, 1977. p. 38-44. (OPS. Publicación científica, n.° 344).

ROJAS-ESPINOSA, O. Phagocytosis in leprosy. 2. Production of superoxide by circulating blood leukocytes from lepromatous patients. *Int. J. Lepr.*, 46(4):337-341, 1978.

The ability of polymorphonuclear leukocytes from lepromatous patients to produce superoxide (O<sub>2</sub>) anion while phagocytizing latex particles was studied. The results were compared with those obtained in a group composed of normal individuals. No differences were found between lepromatous and normal groups. No differences were found either when the comparison was made between patients showing any form of leprosy reaction and patients without leprosy complications at the time of the study.

*From author's summary*

SAHA, K. & CHAKRABORTY, A. K. Immunologic aspects of lepromatous leprosy as related to the immunoglobulins of the external secretions: salivary immunoglobulins. *Int. J. Lepr.*, 45(3):261-265, 1977.

A significant reduction in salivary immunoglobulins in lepromatous leprosy is recorded as compared to normal subjects. Saliva of undernourished subjects and patients with oral malignant tumors, which were studied as controls, showed an appreciable rise in IgA levels in both. It is suggested that impairment of T cell function, which is associated with lepromatous leprosy, is not responsible for the observed low level of salivary immunoglobulins in lepromatous leprosy.

*From authors' summary*

SANSARRICQ, H. Research into the immunology of leprosy. In: Leprosy: Cultivation of the etiologic agent, immunology animal models. Proceedings of the Workshop on Future Problems in the Microbiology of *M. lepras*, Baltimore,

Md., 1976. Washington, 1977. p. 37-39. (OMS/PAHO, scientific publication, n° 342).

SKINSNES, O. K.; ANDERSSON KUBA, B.; CHANG, P. H. C.; KUWAHARA, T. *In vitro* cultivation of leprosy bacilli in hyaluronic acid-based medium. 2. Progress and developing concept of the role of hyaluronic acid suggested by culture and armadillo infection studies. *Int. J. Lepr.*, 46(4):394-413, 1978.

Progress is summarized relating to the verification, identification of *M. leprae* and understanding of the process of adaptation the pathogen passes through before *in vitro*-growth takes place. It is recognized that hyaluronic acid apparently does not serve as a source of energy but the possibility is presented that it plays a role in the reconstruction of *M. leprae* cell walls made "leaky" by constant intracellular life. This apparently occurs, in culture, initially by the development of coccoid forms which after a period of weeks finally give rise to acid-fast bacilli.

From authors' summary

SLOSAREK, M.; SULA, L.; THEOPHILUS, S.; HRUBY, L. Use of pyridine for differentiating *Mycobacterium lepras* from other mycobacteria in direct microscopy. *Int. J. Lepr.*, 46(2):154-159, 1978.

The loss of acid-fastness by *M. leprae* after two-hour pyridine extraction, reportedly a specific test for differentiating *M. leprae* from all other mycobacteria, was verified on different materials obtained from leprosy patients, histologic sections from a fatal post-BCG vaccination case and smears prepared from pure cultures of 32 strains of 18 different mycobacterial species. Under the conditions used, pyridine extraction led to complete loss of acid-fastness in *M. leprae* only in histologic sections of biopsy specimens from leprosy patients, whereas in direct smears from skin lesions containing *M. leprae* the number of acid-fast rods after pyridine extraction was either equal to or only slightly smaller than in control preparations.

From authors' summary

STONER, G. L. Ir genes and leprosy. Correspondence. *Int. J. Lepr.*, 46(2):217-220, 1978.

The evidence for genetic factors influencing susceptibility to leprosy needs to be examined more critically than was done by Dr.

Hastings in his editorial "Transfer Factor as a Probe of the Immune Defect in Lepromatous Leprosy" (IJL 45 [1977] 281-291). Dr. Hastings has adopted a new name ("the leprosy Ir gene hypothesis") for the old theory that lepromatous leprosy patients have a genetically-determined inability to mount a cell-mediated immune response to *M. leprae* Infection. At present, the new name adds little to the theory, except perhaps respectability, since Ir genes have been defined in relation to immune response to synthetic polypeptides in inbred strains of animals (1), but not yet in relation to disease susceptibility in man (9,18)<sup>1</sup>

More than 40 years ago Rotberg (e) postulated a genetic factor (the N factor) possessed by normal individuals which enabled them; to acquire strong Mitsuda reactivity upon natural exposure to *M. leprae* or in response to repeated lepromin testing. He suggested that persistently negative individuals who were susceptible to lepromatous leprosy lacked the "N factor". Then in the early 1960's Beiguelman (1) obtained data indicating that a negative Mitsuda reaction was somewhat more frequent among children whose parents were born negative. He suggested that the basis for this observation was a lyser or nonlyser macrophage, the nonlyser phenotype being inherited as a recessive trait (1). With advances in our understanding of the mechanism of cell-mediated immunity, the "genetic defect" theory has been put into more refined terms. The focus has now shifted to the T lymphocyte and the hypothesis has been advanced by Godal *et al.* (2) that a defective immune response (Ir) gene may be the basis for the defective T cell function.

What is the evidence for the leprosy Ir gene hypothesis? Transfer factor could be a useful probe of the immune defect in lepromatous leprosy were its mechanism of action known. However, as it is not, the fact that transfer factor is effective in the treatment of lepromatous leprosy tells us next to nothing about the nature of the immune defect. Other evidence in favor of the Ir gene hypothesis is equally tenuous. Current theory requires that an Ir gene should be linked to the HLA complex. Yet, as Dr. Hastings notes, there are no convincing associations of leprosy susceptibility with HLA antigens. Promising results were recently obtained from family studies which suggested that HLA-linked genes control the host response to *M. leprae* (e). However, while further studies by the same group (e) have confirmed this finding for tuberculoid leprosy, an association of lepromatous leprosy with HLA could not be confirmed.

Although there is little, if any, evidence available to support the leprosy Ir gene hypothesis, there is now substantial evidence against it.

From the letter  
(*vide* Hastings, R. C., p. 157)

TALWAR, G. P. Is the stage set for lymphoid tissue replacement in active lepromatous leprosy patients? Editorial. *Lepr. India*, 49(1):1-5, 1977.

TOURAINÉ, J. L.; KISZKISS, D. F.; CHOI, Y. S.; GOOD, R. A. T cells in immunodeficiencies as evaluated by an antihuman T cell serum. *Birth Defects*, 11:22-27, 1975. apud *Int. J. Leprosy*, 44(3):412, 1976.

ULRICH, M. La función de los linfocitos en la inmunología de la lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROA. 4.º, Caracas, 1975. Washington, 1977. p. 49-51. (OPS. Publicación científica, n.º 344).

WALTER, J.; TAMONDONG, C. T.; GAL-LEGO GARBAJOSA, P.; BECHELLI, L. M.; SANSARRICQ, H.; LWIN, K.; GYI, M. M. Note on some observations about the post-lepromin scar. *Lepr. Rev.*, 48(3):169-174, 1977.

The post-lepromin scar was studied in 764 leprosy patients of the former (1964-1975) WHO Leprosy BCG Trial in Burma, Mandalay area. A 160 million bac./ml lepromin was used. Scar formation was analysed in its relation to the different forms of leprosy, its frequency to the size of the Mitsuda reaction, to BCG vaccination, to the tuberculin reaction, and in some instances, in different age groups. 90.2% of the BCG vaccinated cases (336) showed post-lepromin scars whilst in the controls (410 cases) 80% had a scar. Five hundred and fifty-three (74%) of 746

cases had post-lepromin scars on first testing, and of the remaining 193 cases, 78 (40%) developed lepromin scars on subsequent lepromin testing. One hundred and fifteen patients (15%) remained scar negative throughout the period even after repeated lepromin testing (up to 6 tests). Ten of these constant scar-negative cases subsequently developed lepromatous and borderline forms; 38 were diagnosed as having indeterminate, 63 tuberculoid and 4 "Tr" leprosy.

It is tentatively suggested that the post-lepromin scar may be considered as an indicator for a stabilized immune situation, taking into account that 17-32% of the 2,5 mm late Mitsuda readings also leave post-lepromin scars. Further studies with weaker lepromins (20 or 40 million bac./ml) in leprosy patients and in apparently non-leprosy affected groups of populations are suggested.

Authors' abstract

Workshop on future problems in the microbiology of *M. leprae*. Baltimore, Maryland, 1976. Proceedings. Washington, 1977. 75p. (PAHO/WHO, scientific publication, n.º 342).

YUMNAM, I. S.; SEHGAL, S.; KAUR, S.; KUMAR, B.; RASTOGI, G. K. Evaluation of thyroid functions in leprosy. III. Circulating auto-antibodies against thyroid and nuclear components. *Lepr. India*, 49(4):495-499, 1977.

Sera from twenty six patients of various types of leprosy were tested for the detection of circulating auto-antibodies and nuclear components against thyroid using various methods. Four patients of lepromatous leprosy had higher levels of thyroid auto-antibodies by latex agglutination. Three patients showed the presence of antinuclear antibodies, two belonged to the TT and one to the LL group.

Authors' abstract

## PATOLOGIA, FISIOPATOLOGIA, BIOQUÍMICA

### PATHOLOGY, PHYSIOPATHOLOGY, BIOCHEMISTRY

CARAYON, A. Bilan de recherches physiopathologiques sur la névrite lepreuse: I. Role de la température, des microtraumatismes par elongation ou subluxation nerveuse et de la striation canalaire. *Med. Trop.*, 87(6):637-654, 1977.

Cold has a slight aggravating effect on leprosy which is observed in some countries as Iran, South Russia, North India and the Andean cordillera. The subluxation of the ulnar nerve has facilitating effect in the development of the neuritic damage in a

limited number of patients. The elongation is important for the production of the ulnar neuritis. The canalar structure is a major factor causing nerve damage in leprosy. It explains the segmentary localization of the principal damages of the leprosy nerves in the proximal areas situated above the tunnels. Intra-neural hypertension appears first and is responsible for the swelling of the nerve which gets entrapped inside the tunnel. A circulus viciosus is, then, created which maintains and aggravates the intra-neural hypertension.

Author's summary

CARAYON, A. Gamme lésionnelle des névrites hanséniennes (état actuel des acquisitions récentes et des orientations thérapeutiques). *Med. Trop.* 36(1):41-61, 1976.

A good advance has been made in the analysis of the various aspects of leprosy neuritis in relation to the clinico-pathological spectrum of the disease. This study is still impaired by the fact that biopsies are too often performed on small subcutaneous nerves and not on large sensitive-motor trunks at an elective site. The author gives a survey of the pathologic patterns generally accepted for this neuritis and describes some more questioned aspects concerning neuritis of L.L., E.N.L. or auto-immunological types.

From author's summary

CARAYON, A. Repercussions de la névrite lépreuse sur la conduction et la douleur nerveuses. *Med. Trop.*, 37(6):689-697, 1977.

A study of the nervous conduction with modern technics has lead to classify the nervous damages according to a new and histopathological way which seems more convenient than the *Seddon's* classification. It gives a better understanding of the hansenian neuritis and reasoned procedures for medical or surgical treatment are discussed.

Author's summary

CARAYON, A.; COURBIL, J. L.; BRUN, M. Modifications de l'hémodynamique dans les troncs névritiques hanséniens: hypertension-ischémie fasciculaire, part de la compression canalaire. *Med. Trop.*, 87(6):655-678, 1977.

Recent studies on the anatomical structure of the nervous trunks and their circulation give a better understanding of the role of extra or intra-neural compression in the

nervous involvement of the leprosy patients. The main processes concerned are the oedema due to local vascular hyper-permeability, the inflammatory condition, the venous compression and the arteriolar hypertension. The situation of each hansenian case in the Ridley-Jopling spectrum explains the more or less important role of each of these factors.

Authors' summary

CARAYON, A.; GIRAUDEAU, P.; DISY, P. La composante neuro-vasculaire dans les ulcères plantaires de la lèpre. Nouvelle approche, *Med. Trop.*, 38(4):453-478, 1978.

The role of neurovascular processes in the hansenian plantar ulcer is reviewed after 13 years of clinical studies and the various disorders giving this ulcer are described (extrinsic compression, vaso-constriction, paralytic vaso-dilatation and rarely a thrombotic obstruction). Reasoned surgery gave 179 recoveries without relapses in a group of 205 cases.

Authors' summary

CARAYON, A.; CAMAIN, R.; MAYDAT, L.; DISCAMPS, C. Les lésions vasculaires de la lèpre. (Leur responsabilité dans certaines atteintes cutanées, nerveuses et viscérales). *Med. Tropicale*, 37(4):457-472, 1977.

The various sites and forms of these vascular changes are studied: the vascularites may be acute and exsudative, or thrombotic, or hemorrhagic or necrotizing. Microangiopathies observed in ENL are more frequent than arteriolar and arterial vascularites.

From Authors' summary

CARAYON, A.; ROFFI, J.; MARTINE, J.; BRUN, M. Dereglements métaboliques dans la névrite lépreuse: action potentialisatrice bactéri-immunologique. *Med. Trop.*, 37(6):679-687, 1977.

Myelin is a good medium for a slow and quiet growth of *M. leprae*. But when, under bad local circulatory conditions, the myelin is disintegrated, lipides are released which facilitate a rapid multiplication of *M. leprae* and in the same time enhance the inflammatory processes. The proteinic constituents of the myelin when released may give way to an auto-immunological process. Tactics for medical and surgical treatment are inferred from these clinical and experimental studies.

Authors' summary

CASTRO, I. M. & COELHO, J. C. Coloração do *Mycobacterium leprae* e texturas nos cortes de parafina. *Bol. Div. Nac. Dermatol. Sanit.*, 37(2/4) :43-45, 1977.

A new staining technique for skin histopathology in leprosy is described. The method detects *Mycobacterium leprae* together with details of the leprotic lesion.

Authors' abstract

DÍAZ ALMEIDA, J. G.; TORRES, G.; ABREU, A. Deficiencia de glucosa 6-fosfato-deshidrogenasa en el enfermo de lepra: Informe preliminar. *Rev. Cub. Med.*, 14 (5) :687-691, 1975.

Se presents por primeira vez en Cuba un estudio preliminar sobre la deficiencia de glucosa 6-fosfato-deshidrogenasa (G6PD) mediante el método de Beuller modificado al sistema Kapa en enfermos de lepra del hospital antileproso de La Habana, con el objetivo de determinar la relación entre la deficiencia de G6PD y una menor capacidad defensiva del organismo frente al *M. Leprae*. Se constata que la deficiencia enzimática estuvo presente solamente en la forma lepromatosa y en pacientes con antecedentes de reacciones agudas a repetición.

Authors' abstract

DISCAMP, G. & CARAYON, A. Les lésions nerveuses dans la lèpre en fonction de la topographie et du calibre des nerfs: Etude histopathologique. *Med. Tropicale*, 37(4) : 473-478, 1977.

The caliber of the nerve does not modify the basic pathological process but the intensity and the distribution of the lesions are very different according to the caliber, the more or less superficial situation and the existence of microtraumatism in osteotendinous tunnels. In small dermic nerves and in small subcutaneous ones, lesions are severe and diffuse. They are segmentary and focal in nervous trunks. They are mainly situated near the blood vessels. In medium or large caliber nerves the granuloma or the reversal reaction are less dangerous for axons than in small caliber nerves.

Authors' summary

GALLO; M. E. N. Estudio histológico comparativo do lipídio na hanseníase e outras lesões granulomatosas. *Bol. Div. Nac. Dermatol. Sanit.*, 87(2/4) :5-18, 1977.

A AA. aplicou a técnica histológica do Sudão II a 60 lesões de Hanseníase pertencentes

às diversas formas clínicas e também a 12 lesões granulomatosas de etiologia variada: Blastomicose Sul Americana; Leishmaniose Sul Americana, Cromomicose, Rinoscleroma, Granuloma Anular, Tuberculose Cútis Indurativa, Tuberculide Pápulo Necrótica, Leishmaniose Difusa Anérgica e Infiltrado granulomatoso crônico compatível com Lues terciária.

Confirmou os achados anteriores referentes às preparações de Hanseníase, destacando a imagem típica do lipídio grumoso patológico da célula de Virchow e o falso positivo encontrado nos granulomas com edema da Hanseníase Tuberculóide Reacional. No grupo das Granulomatoses de etiologia não hanseniótica, registrou uma ocorrência inusitada: no caso de Leishmaniose Difusa Anérgica, a presença de lipídio com afinidade tintorial para o Sudão III, semelhante à encontrada na Hanseníase. Faz breves considerações sobre a origem da degeneração lipídica citoplasmática encontrada na célula de Virchow e nos histiócitos carregados de leishmanias.

Resumo da autora

GHA.RPURAY, S. M.; GHARPURAY, M. B.; KELKAR, S. S. Liver function in leprosy. *Lep. India*, 49(2):216-220, 1977.

Thirty eight patients of leprosy were classified on the basis of clinical and biopsy findings into 10 lepromatous (all reactional), 20 tuberculoid (7 in reaction) and 8 dimorphic (5 in reaction). The liver function tests — serum proteins, albumin/globulin ratio, fractions in paper electrophoresis, serum glutamic pyruvic transaminase (SGPT) and thymol turbidity tests — and the serum cholesterol was estimated in each patient. The abnormalities were a reversal of the albumin/globulin ratio in all the three groups and an increase in beta/globulin fraction in the lepromatous group, but total proteins were within normal limits. The thymol turbidity test showed moderately elevated levels in all three groups. SGPT was slightly raised in a few cases. Only a single patient with tuberculoid leprosy showed serum cholesterol to be over 250 mg per 100 ml.

Authors' abstract

HUBSCHER, S.; GIRDHAR, B. K.; DESIKAN, K. V. Discharge of *Mycobacterium leprae* from the mouth in lepromatous leprosy patients. *Lep. Rev.*, 50 (1) :45-50, 1979.

A bacteriological study of the mouths of 40 lepromatous patients, 35 of them untreated, has been undertaken. In each case a

mouth wash was done and acid-fast bacilli were counted in the washing. Surface smears taken from 3 sites (tongue, palate and gums) were examined for acid-fast bacilli. Inoculation of surface scrapings into Lowenstein-Jensen media was also performed. The results show that non-cultivable acid-fast bacilli were present in the mouths of 85% patients with a mean count of  $1.59 \times 10^6$  per mouth wash. The possible significance and the epidemiological implications of these findings in communities where spitting is a common habit, are discussed.

Authors' abstract

JOB, C. K.; CHACKO, C. J. G.; TAYLOR, P. M. Electronmicroscopic study of histoid leprosy with special reference to its histogenesis. *Lepr. India*, 49 (4):467-471, 1977.

Biopsies from 2 patients clinically diagnosed and confirmed by histopathological studies as histoid leprosy were examined using an electron microscope. The cells that form the nodule are found to contain far more solid bacilli and much less electron transparent substance than those in lepromatous lesions. They have the characteristics of both macrophages and fibroblasts. It is reasonable to conclude that they are histiocytes produced by local multiplication in response to stimulation by rapidly proliferating *M. leprae* rather than from accumulation of blood monocytes at the site of inflammation as in lepromatous lesions.

Authors' abstract

JOB, C. K.; VICTOR, D. B. I.; CHACKO, C. J. G. Progressive nerve lesion in a disease-arrested leprosy patient. An electron microscopic study. *Int. J. Lepr.*, 45(3):255-260, 1977.

An ulnar nerve biopsy from a patient with purely neural leprosy of the borderline tuberculoid group, who developed ulnar and median paralysis after 2.5 years of DDS therapy, was examined using light and electron microscopes. The nerve parenchyma was largely replaced by collagen fibres. There were many onion bulbs similar to those seen in hypertrophic neuropathies. Bizarre fibroblasts such as those seen in hereditary sensory neuropathy were also demonstrated. A few Schwann cells contained *M. leprae*. It is suggested that considerable proliferation of fibrous tissue may be a reactive phenomenon in response to the continued presence of fragmented *M. leprae* and their products. Ischemia following a marked progressive increase of intraneural collagen is an impor-

tant cause of atrophy of Schwann cells followed by segmental demyelination and necrosis of the axons in this healed leprosy patient. From authors' summary

JOHNY, K. V.; THOMAS, A.; BHAKTA-VIZIAM; DATE, A. Immune complex nephritis in leprosy. *Ann. Acad. Med. Singapore*, 4(2 suppl.):55-57, 1975.

In a study of 22 cases with lepromatous or borderline leprosy, six cases were encountered with endocapillary glomerulonephritis and no bacteriological or serological evidences of recent streptococcal infection. The presence of subepithelial discrete deposits in two cases on electron microscopy and complement consumption in one of them suggested immune complex deposition in the pathogenesis of the renal lesion. "The exact antigenic source is uncertain; a high load of lepra bacilli itself could be implicated.

Authors' summary

KARAT, A. B. A. & RAO, P. S. S. Haematological profile in leprosy: part I — general findings. *Lepr. India*, 49(2):187-196, 1977.

Haematological studies in 904 adult leprosy patients with different types of leprosy, in various stages of the disease and treatment are described. Haemoglobin, packed cell volume, serum albumin and serum iron are significantly lower among lepromatous leprosy patients as compared with non-lepromatous patients. The serum B12 levels were significantly higher among the lepromatous group. Acid fast bacilli have been demonstrated in skin smear negative leprosy patients with indeterminate and tuberculoid leprosy, suggesting occurrence of bacillaemia in these groups of patients.

Authors' abstract

KAUR, S.; MEHTA, S. K.; KUMAR, B.; CHAKRAVARTY, R. N.; SIDHU, H. K. Involvement of the gastrointestinal tract in leprosy. *Int. J. Lepr.*, 46(1):35-41, 1978.

Correlation was not found between type of leprosy, malabsorption and jejunal histology. A sizeable population in the tropics, even normally, has disturbances of absorption tests and jejunal mucosa. The percentages of abnormalities detected in the stomach and small intestine were not significant. It can thus be concluded that the gastrointestinal tract remains unaffected in leprosy.

From authors' summary

KAUR, S.; YUMNAM, I. S.; KUMAR, B.; BANERJEE, A. K.; RASTOGI, G. K. Evaluation of thyroid functions in leprosy. II. Histopathology of the thyroid. *Lepr. India*, 49(4):492-494, 1977.

Open thyroid biopsies from seven patients of bacilliferous leprosy were studied for lepro5 granuloma or amyloidi deposition. lepro5 granuloma or amyloid deposition. None of the patients had clinical evidence of thyroid involvement. Histopathology did not reveal any specific abnormality.

Authors' abstract

KHATTRI, H. N.; RADHAKRISHNAN, K.; KAUR, S.; KUMAR, B.; WAHI, P. L. Cardiac dysautonomia in leprosy. *Int. J. Lepr.*, 46(2):172-174, 1978.

Responses to various tests of cardiovascular reflexes were studied in 15 patients with leprosy. Heart rate was continuously monitored by electrocardiogram and blood pressure was recorded simultaneously. Three patients showed evidence of cardiac dysautonomia, showing involvement of both the sympathetic and parasympathetic systems. These three patients belonged to the bacilliferous group. Authors' summary

MARKS JR. S. C. & SUBRAMANIAM, K. The cellular basis for alveolar bone loss in leprosy. *Lepr. Rev.*, 49(4):297-303, 1978.

Maxillary alveolar bone biopsies from 7 patients with lepromatous, borderline or tuberculoid leprosy and 6 patients without leprosy were examined microscopically to identify cellular sources of bone loss. Osteoclasts and osteolytic osteocytes were found in greatest numbers in 3 patients with lepromatous leprosy who also had the greatest loss of alveolar bone. These cells were scarce or absent in bone biopsies from the patients with borderline or tuberculoid leprosy and from the patients without leprosy. These data are interpreted to mean that osteoclasts and osteolytic osteocytes represent the cellular basis for alveolar bone loss in leprosy.

Authors' abstract

MASANTI, J. G.; MARTINO, O. A.; CRO-  
%ATTO, J. O.; BERNARD, J. C.;  
PÉREZ CHADA, R. D.; MÉNDEZ DE  
FALCON, M. A. Correlación anatomoclínica en la lepra lepromatosa. *Temas Leprol.*, 20(62):3-54, 1977.

Los autores realizan un estudio retrospectivo con material clínico y necropsico de 51 enfermos internados en el Sanatorio "Bal-domero Sommer". Los datos reecogidos y pertenecientes todos ellos a pacientes lepromatosos, fueron procesados en base a la siguiente clasificación: No complicados; residuales; reaccionales; con infección crónica y reacción con infección. Se destaca la prevalencia en este grupo de los enfermos de edad avanzada sobrellevando frecuentes y severas complicaciones de larga duración. Las lesiones específicas fueron encontradas en el 30% de los casos, siendo el hígado el órgano más afectado. La amiloidosis resultó una complicación frecuente entre los enfermos con brotes reaccionales, acompañados o no de infección crónica, siendo el bazo, riñón e hígado los órganos más comprometidos en orden de frecuencia, aunque el parenquima renal mostróse como el más danado. La lepra lepromatosa no complicada no se acompañó de amiloidosis. Las causas más frecuentes de óbito se debieron a complicaciones infecciosas respiratorias e insuficiencia renal.

Resumen de los autores

McDOUGALL, A. C. The nasal excretion of leprosy bacilli. Editorial. *Lepr. Rev.*, 49(4):265-267, 1978.

It may be relevant to recall that there is a continuous bacteraemia in lepromatous leprosy which is associated in a high percentage of cases with the finding of bacilli, many of them solid-staining and presumably viable, in the endothelial lining cells of blood vessels. These include a wide range of vessels in the nasal mucous membrane, a tissue which is delicate, easily shed, and subject to secondary infection. Having presented such a wealth of data on the nasal route of excretion in the transmission of leprosy, Dr. Davey does not elaborate on the possible role of biting insects, wisely commenting that its importance has yet to be more fully established. Some important data from this area of research have already been published in *Leprosy Review*, and it is certainly one that is worth pursuing. In view of the known importance of the vascular endothelium as a site of replication and shedding of viruses and rickettsiae that are transmitted by blood-sucking arthropods (Minis, 1977), we await with interest further research which might point to yet one more subtle device by the leprosy bacillus — a link between a continuous (and totally asymptomatic) bacteraemia, loading of endothelial lining cells by bacilli, and biting arthropods.

From the editorial

MIRANDA, R. N. Sobre a existência em medicina de um estado de acidose dissimulada. Sua observação em dermatoleprologia. *Pub. Cent. Est. Lepr.*, 17(1/2):12-24, 1977.

The salivary pH moves in parallel with the blood pH, and — important fact — it falls in the mouth before falling in the blood. So, the acid pH in saliva, means: a) — a pre-acidosis condition; b) — greater quantity of acids in the organism, not sufficient to be a true acidosis. I call these conditions "Dissembled Acidosis". In cases of lepomatous leprosy in reaction, 1 observed low levels of the salivary pH and, when this level was 4.50, the metabolic acidosis was present.

From author's summary

MITTAL, M. M.; MAHESWARI, H. B.; SAHA, K.; SHARMA, R. Hepatic lesions in asymptomatic children of leprosy patients. *Int. J. Lepr.*, 46(1):42-46, 1978.

Forty-two asymptomatic children of leprosy patients were studied for possible hepatic lesions. Hepatic lesions were observed in 47% while acid-fast bacilli in the liver were found in 9.5%. The most frequent lesions encountered included granuloma in 9.5%, focal areas of necrosis in 14%, portal triaditis in 17%, and Kupffer cell hyperplasia in 33%. Occasionally more than one lesion was observed in a biopsy. No correlation with the occurrence of the various hepatic lesions could be made with a history of BCG vaccination or results of skin tests done with tuberculin and lepromin.

Authors' summary

MUKHERJEE, A.; GIRDHAR, B. K.; DESIKAN, K. V. The histopathology of tongue lesions in leprosy. *Lepr. Rev.*, 50(1):37-43, 1979.

A histopathological study of the tongue lesions in 8 cases of lepomatous leprosy is presented. The salient histopathological changes in these lesions are described and the implication of the findings discussed.

Authors' abstract

NAAFS, B. & VAN DROOGENBROECK, J. B. A. Décompression des névrites réactionnelles dans la lèpre: justification physiopathologique et méthodes objectives pour en apprécier les résultats. *Med. Trop.*, 37(6):763-770, 1977.

In leprosy nerve surgery is still a controversial issue, mainly due to a lack of proper control groups in the studies done. In this paper a pathophysiological model is presented, which may explain nerve damage during reversal reaction and ENL. The influence of nerve decompression and prednisolone is discussed. The authors are of the opinion that nerve surgery always should be done under prednisolone cover. An arbitrary numerical system — nerve index — is presented which makes it possible to control follow-up studies of nerve surgery in order to evaluate objectively its value. The different parameters used are discussed and shown in relationship with each other.

Authors' summary

NAAFS, B. & VAN DROOGENBROECK, J. B. A. Interêt en léprologie d'un indice névritique de gravité et d'évolutivité, établi d'après la vitesse de conduction motrice dans les nerfs cubitiaux et médians. *Med. Trop.*, 97(6):767-762, 1977.

Patients in the borderline range (BT — BB — BL) of the leprosy-spectrum are liable to develop a reversal reaction. Such a reversal reaction can be either in skin or in nerves or both. However even in patients with skin reaction only, nerve involvement may be present and anti-reaction treatment is required. A neuritis index is presented based on motor nerve conduction velocity (M. C. V.). This index is a valuable parameter in the follow-up of anti-reaction treatment. A regular long term follow-up of the patients is required. The authors are of the opinion, that a chronic disease needs "chronic" observation.

Authors' summary

NAIK, S. S. & PANDYA, S. S. Dapsone in wheat flour as a possible method of leprosy: a laboratory report. *Lepr. India*, 49(4):516-520, 1977.

DDS added to wheat flour in the proportion 400 mg/kg gives blood levels corresponding to 50-100 mg of conventional Dapsone therapy/day for adults and corresponding levels are obtained in children. The acceptability of this mode of administration of drug has to be tested in families of infectious leprosy patients, where chemoprophylactic and therapeutic considerations are important.

From authors' conclusions

NIKBIN, B. & ALA, F. HLA and disease in Iran. In: ASIAN SYMPOSIUM ON HISTOCOMPATIBILITY ANTIGENS IN HEALTH AND DISEASES AND ITS BIOLOGICAL SIGNIFICANCE. New Delhi, 1977. p.21-22.

Leprosy: We have typed 48 leprotic patients. Although we observed a relatively high incidence of B5, no significant relationship between HLA antigens and leprosy was observed in our patients.

From authors' abstracts

NIRMALA, V.; CHAKO, C. J. G.; JOB, C. K. Tuberculoid leprosy and tuberculosis skin — A comparative histopathological study. *Lepr. India*, 49(1):65-69, 1977.

Since it has been found hard to differentiate histopathologically tuberculoid leprosy from tuberculosis of the skin, a study of 20 biopsies from each of those conditions was undertaken to identify if possible some of their characteristic features. In tuberculoid leprosy along with tuberculoid granulomata there is always selective involvement and destruction of nerves, lack of fibrosis, absence of caseous necrosis and often epidermal atrophy. In cutaneous tuberculosis, on the other hand, in addition to tuberculous granuloma, there is often a proliferative reaction of the epidermis, areas of ulceration, absence of nerve destruction, marked increase in the reticulin, significant fibrosis and occasionally caseous necrosis.

Authors' abstract

NOVALES, J. Lepra de Lucio. III. Aspectos histopatológicos. *Dermatologia: rev. max.*, 22(2):164-174, 1978.

By histopathological study these were the findings: in superficial and intermediate dermis, lepromatous infiltrates as small foci around vessels and appendages. Infiltrates were more dense in deep dermis and hypodermis. In ear lobes infiltrates are rather similar to those found in nodular lepromatous and are well separated from the epidermis by the Unna non affected zone. In Lucio's phenomenon, epidermal necrosis and ulcerations were observed and sometimes intraepidermic bullae. Epidermal changes were not seen in all cases, but vasculitis of small or medium size vessels surrounded by neutrophils and a number of bacilli was present in every case. Regarding dermal fibers, in these diffuse cases, elastic ones were found destroyed, reticular augmented and collagen, normal. By

biopsies of liver, hepatocytes were found normal, amyloid absent and small lepromatous foci were observed in hepatic and periportal connective tissue. The same may be said about testis, epididymis and mammary gland: lepromatous infiltrates and bacilli were found in all the cases. Finally, in cases treated by rifampicine were deteriorated faster than in those on DDS.

PRABHAKARAN, K. Hypopigmentation of skin lesions in leprosy — a hypothesis. Correspondence. *Lepr. India*, 49(3):462-463, 1977.

Our experiments *in vitro* using cultures of melanocytes support the hypothesis that the bacteria suppress melanin formation. In melanocyte cultures aggregates of melanin pigment can be observed. When viable suspension of *M. leprae* (obtained from biopsies) are added to such cultures, no pigment formation takes place; heat-killed organisms, or bacilli separated from autopsy material fail to do so. Our experimental evidence leads to the conclusion that among other factors, utilization of dopa by o-diphenoloxidase of *M. leprae* may have a role in the hypopigmentation of skin lesions observed in leprosy.

From the letter

PRABHAKARAN, K. *M. leprae* and hyaluronic acid. Correspondence. *Lepr. India*, 49(1):162-163, 1977.

When DOPA undergoes auto-oxidation or enzymatic oxidation, there is a general increase in absorbance in the spectrum. Therefore, at whatever wavelength (of the spectrum) the absorbance is measured, there would be an increase. This is not enough to prove that a particular pigment is formed in the reaction. To prove that, the whole spectrum has to be measured and the absorbance peak characteristic of the pigment has to be demonstrated. Kato *et al.*, have not done so.

From the letter

ROY CHOUDHURY, S. B. & SRINIVASAN, H. Nerve abscess in lepromatous leprosy: a case report and a discussion of pathogenesis. *Lepr. India*, 49(3):330-338, 1977.

An instance of nerve abscesses developing in a patient with lepromatous leprosy is reported. The pathogenesis of nerve abscess in lepromatous leprosy is briefly discussed. It appears that such abscesses may develop (i) from an ENL lesion in the nerve during ENL reaction, (ii) because of exacerbation of exist-

ing lepromatous lesion, (iii) arise as an "exacerbation nodule", (iv) due to quiet necrosis in a lepromatous granuloma, or (v) it may be iatrogenic.

Authors' abstract

SAKURAI, I. & SKINSNES, O. K. Histochemistry of B663 pigmentation: ceroid-like pigmentation in macrophages. *Inst. J. Lepr.*, 45(4):342-354, 1977.

Histochemical studies were made of pigmented cutaneous lesions from three cases of lepromatous leprosy treated with B663 to determine the nature and histogenesis of the brown pigmentation which develops as a side effect of the drug. One case of DDS-treated leprosy and four cases of untreated leprosy were also investigated histochemically as controls. The brown pigmentation of the skin is due to deposition of a ceroid-like substance in the macrophages, which is a yellowish-brown, acid-fast lipid pigment. It is insoluble in fat solvents and accepts lipid dyes even after lipid extraction by fat solvents. The macrophages in the B863-treated leprosy contain more neutral fat and less phospholipid than the untreated lepromatous leprosy tissues. Caroid in the macrophages probably originated from unsaturated fatty acids of the leprosy bacilli through oxidation or their binding with the drug. Crystals of the drug were not found in the macrophages in this series, even on the tissues embedded in carbowax or frozen sections.

Authors' summary

SHANKER, A.; GUPTA, S. B.; SHARMA, .1. N. A study of serum and skin zinc in leprosy. *Indian J. Dermatol. Venereol. Leprol.*, 42:258-260, 1976.

The mean value of serum zinc in healthy individuals was 105.7814g with S.D. 7.47 (range 88-128). The mean value of serum zinc in leprosy patients was 91.20  $\mu$ .g. with range 79-104  $\mu$ .g. Serum zinc is significantly reduced in all types of leprosy as compared to healthy controls. The mean value of skin zinc in healthy individuals was 83.24  $\mu$  g with range 68.93  $\mu$  g. The mean value of skin zinc in leprosy patients was 84.90  $\mu$  g range being 72-97  $\mu$  g. No significant difference was found in skin zinc in leprosy patients and in healthy controls.

From authors' summary

SKINSNES, O. K. Histochemical analysis of leprosy tissue leads to cultivation of leprosy bacilli. Editorial. *Aroh. Pathol. Lab. Med.*, 100(4):173-174, 1976.

SKINSNES, O. K. Immuno-metabolism in leprosy. *Ethiop. Med. J.*, 19:111-120, 1975.

SKINSNES, O. K. Lesion lodgement in leprosy. Editorial. *Int. J. Lepr.*, 46(2):204-215, 1978.

VERMA, K. C.; CHUGH, T. D.; CHAUDHARY, S. D. Tissue lipids in leprosy. *Lepr. India*, 49(4):510-515, 1977.

A total of 30 cases of leprosy (15 lepromatous and 15 tuberculoid) were studied by histochemical procedures for lipids in the morbid skin. The possible origin and relation of lipids to the presence of lepra bacilli in the lepra cells is discussed.

Authors' abstract

WEDDELL, G. Disorders of peripheral cutaneous nerves. *J. Invest. Dermatol.*, 69(1):130-135, 1977.

The histopathology of leprosy is described with particular reference to its effects on peripheral cutaneous nerves. *Mycobacterium leprae* invade the Schwann and perineurial cells of peripheral cutaneous nerves preferentially. The organisms are eventually destroyed with their host cells by a cell-mediated immune response. The effect is a dying-back phenomenon without the formation of neuromata. The sensory effects are gradually increasing anesthesia and localized nerve trunk pain but seldom any peripheral sensory reference or paresthesiae. Peripheral nerves are shown to be zones where there is some degree of immunologic privilege for *Myc. leprac.*

Author's abstract

YUMNAM, I. S.; KAUR, S.; KUMAR, B.; RASTOGI, G. K. Evaluation of thyroid functions in leprosy: I. Thyroid function tests. *Lepr. India*, 49(4):485-491, 1977.

Twenty six patients of different types of leprosy were studied for radio active iodine uptake (P) and serum levels of triiodothyronine (T<sub>3</sub>), thyroxine (T<sub>4</sub>) and thyroid stimulating hormone (TSH). None of the patients had clinical evidence of thyroid involvement. No significant difference was found between the values obtained in patients and normals and in different varieties of leprosy.

Authors' abstract

## HANSENIÁSE EXPERIMENTAL, LEPRA ANIMAL

## EXPERIMENTAL HANSENIASIS, ANIMAL LEPROSY

ADAPOE, C.; ISHAQUE, M. KATO, L. Occurrence of ketoglutarate dehydrogenase in *Mycobacterium lepraemurium*. *Rev. Canad. Biol.*, 95(2):91-92, 1976.

AVILA, J. L.; CONVIT, J.; PINARDI, M. E.; JACQUES, P. J. Loss of infectivity of mycobacterial and protozoal exoplasmic parasites after exposure in vitro to the polyenzymic cocktail "PIGO". *Biochem. Soc. Trans.*, 4:680-681, 1976.

BINFORD, C. H.; MEYERS, W. M.; WALSH, G. P.; STORRS, E. E.; BROWN, H. L. Naturally acquired leprosy-like disease in the nine-banded armadillo (*Dasypus novemcinctus*): histopathologic and microbiologic studies of tissues. *J. Reticuloendothel. Soc.*, 22(4):377-388, 1977.

Histopathologic studies were conducted on tissues from necropsies on 41 nine-banded armadillos from Louisiana with a natural disease resembling lepromatous leprosy, hereafter often referred to as the "natural disease". The lesions were composed of macrophages (histiocytes) containing numerous acid-fast bacilli and were similar to those seen in armadillos experimentally inoculated with *Mycobacterium leprae*. Invasion of small and large nerves by phagocytes containing acid-fast bacilli was a characteristic feature of the natural disease. The *Mycobacterium* presumed to cause the disease was not cultivable on standard mycobacterial media; however, mycobacteria belonging to the *M. avium-intracellulare* group were cultivated from lymph nodes of 8 and the spleen of 1 of 32 of the diseased armadillos but not from other organs. Cultures of lymph node specimens and other organs from each of the remaining 24 diseased armadillos were negative. Acid-fastness of the bacilli in all tissues was abolished on exposure to pyridine. The bacilli were DOPA oxidase positive, but interpretation of this finding is difficult because some tissues from normal armadillos also gave positive reactions in the spot test employed. Histopathologic studies of tissue from autopsies on the 41 armadillos and microbiologic studies on tissues from 32 of the animals provided evidence indicating that the cause of the natural disease in armadillos may be *M. leprae*.

Authors' abstract

BULLOCK, W. E. Leprosy and other infections. In: INTERNATIONAL CONGRESS OF IMMUNOLOGY, 2., Brighton, United Kingdom, 1974. *Proceedings spud Progress in Immunology*, 8:193202, 1974.

In summary, evidence for a direct suppression of cellular immune function by infection with obligate intracellular parasites have been reviewed. Utilizing murine leprosy as a prototype of such infection, we have demonstrated that the recirculation of infused thoracic duct lymphocytes is markedly disturbed. The mechanism of this perturbation appears to be a hindrance to exit of lymphocytes from lymphoid organs. This hindrance in turn may be secondary to an increased resistance to the passage of lymphocytes caused by granulomatous involvement of critical trafficking areas. We hypothesize that in certain infections characterized by extensive granulomatous invasion of lymphoid organs, a disturbance in traffic of T-lymphocytes may contribute to the complex of factors acting to compromise immune function of the host.

Author's summary

BULLOCK, W. E.; EVANS, P. E.; FILOMENO, A. R. Impairment of cell-mediated immune responses by infection with *Mycobacterium lepraemurium*. *Infect. Immun.*, 18(1):157-164, 1977.

The effect of chronic infection with *Mycobacterium lepraemurium* upon cell-mediated immune responses was studied in Leis rats. Rats infected for 40 to 175 days were completely protected from attempted induction of experimental adjuvant disease, and the severity of experimental allergic encephalomyelitis in leprosy rats was markedly attenuated. Full manifestations of each autoimmune disease were expressed in littermate control groups. Skin homograft rejection by infected rats was significantly impaired ( $P < 0.001$ ) as was the delayed-type hypersensitivity response to sheep erythrocytes ( $P < 0.02$ ). It is suggested that chronic infection with *M. lepraemurium* exerts a nonspecific inhibitory effect on cell-mediated immunity by perturbation of normal lymphocyte recirculation and by induction of immune-suppressor cell activity.

Authors' abstract

CHANG, Y. T. Are all nonsolid *Mycobacterium leprae* dead? Does a negative finding in the mouse foot pad indicate that there is actually no growth of *M. leprae* in the animals? *Int. J. Lepr.*, 46(3):236-240, 1977.

This paper outlines the reasoning that not all nonsolid *M. leprae* are dead, and that not all the organisms in the foot pads are detectable by the present standard foot pad *M. leprae* technic.

From author's summary

COLSTON, M. J.; ELLARD, G. A.; GAMMON, P. T. Drugs for combined therapy: experimental studies on the antileprosy activity of ethionamide and prothionamide, and a general review. *Lepr. Rev.*, 49(2):115-126, 1978.

The activity of ethionamide and prothionamide against *Mycobacterium leprae* has been evaluated using the mouse footpad model. The minimum effective doses of both drugs were found to be approximately 0.01%, and their minimal inhibitory concentrations were estimated to be about 0.05 p.g/ml. Both compounds were found to be bactericidal against *M. leprae* at dietary concentrations of 0.1%. These findings indicate the importance of studies to evaluate the potential role of ethionamide and prothionamide in clinical practice. The available experimental evidence concerning the relative antileprosy activities of drugs that might be used in the combined treatment of lepromatous patients is reviewed.

Authors' abstract

COLSTON, M. J.; HILSON, G. R. F.; BANNERJEE, D. H. The "proportional bactericidal test": a method for assessing bactericidal activity of drugs against *Mycobacterium leprae* in mice. *Lepr. Rev.*, 49(1):7-15, 1978.

A new method for assessing the bactericidal activity of antileprosy drugs against *Mycobacterium leprae* using the mouse footpad technique is described. This approach, referred to as the "proportional bactericidal test", has been devised to overcome some of the problems of interpretation caused by drug persistence or prolonged bacteriostasis after drug administration has ended. The bactericidal activity of several drugs against *M. leprae* has been determined using this approach and the results obtained compared with those previously reported using alternative methods.

Authors' abstract

COLSTON, M. J.; HILSON, G. R. F.; ELLARD, G. A.; GAMMON, P. T.; RES, R. J. W. The activity of thiacetazone, thiambutosine and sulphamethoxypyridazine against *Mycobacterium leprae* in mice. *Lepr. Rev.*, 49(2):101-113, 1978.

The mouse footpad model has been used to evaluate the activity of thiambutosine, thiocarlide, thiacetazone and sulphamethoxypyridazine against *Mycobacterium leprae*. The minimum effective doses of thiambutosine and thiocarlide were found to be approximately 0.05% and of thiacetazone 0.03%, although different strains of *M. leprae* displayed varying sensitivity to all 3 drugs. The minimal inhibitory concentrations of thiambutosine, thiacetazone and sulphamethoxypyridazine were estimated to be about 0.5 µg/ml, 0.21kg/ml, and 30 µg/ml, respectively. Evidence was obtained indicating that the antileprosy activity of thiambutosine, thiocarlide and thiacetazone was essentially bacteriostatic. The clinical relevance of these findings is discussed.

Authors' abstract

CONVIT, J. Avances en lepra experimental. *Bol. Inf. Soc. Arg. Lepr.*, 1(4):22, 1977.

CONVIT, J. Indigenous leprosy in the armadillo *Dasypus novemcinctus*. *J. Reticulo-endothel. Soc.*, 24(6):605-607, 1978.

CONVIT, J. The armadillo as experimental model in leprosy research. In: *Leprosy: Cultivation of the etiologic agent, immunology animal models*. Proceedings of the Workshop on Future Problems in the Microbiology of *M. leprae*, Baltimore, Md., 1976. Washington, 1977. p. 53-56. (OMS/PAHO, scientific publication, n.º 342).

DESAI, A. C. & BHIDE, M. B. Anti-leprotic activity of oil from the seeds of *Hydnocarpus laurifolia*. In: *U.G.C. Seminar Recent Advances Chemistry Pharmacology Indian Plant Drugs*. Proceedings. p. 102-105.

The hydnocarpus oil given in the dose of 3.0 gm% in the food, not only that it is well tolerated but also it has shown bacteriostatic action against *Myco. leprae* in the mouse foot-pad.

Authors' summary

DESAI, A. C.; APTE, S. N.; BHIDE, M. B.  
The infectivity of drug resistant cases.  
*Lepr. India*, 49(1):54-58, 1977.

The present study shows that leprosy bacilli resistant to dapsona, multiply in mouse foot-pad as equally as the dapsona sensitive bacilli would multiply, suggesting that the dapsona resistant case will be as infective as the dapsona sensitive case.

Authors' abstract

DHOPLE, A. M. & HANKS, J. H. *In vitro* growth of *Mycobacterium lepraemurium* an obligate intracellular microbe. *Science*, 197(4301):379-381, 1977.

By using an ultrasensitive technique to measure adenosine triphosphate in terms of functional biomass, we have confirmed that *Mycobacterium lepraemurium* (the agent of rat leprosy and a classical obligate intracellular microbe) grows in vitro in the Nakamura system. By using a sulphhydryl-containing medium that occupies 65 to 75 percent of the culture tube volume, together with the five supplements recommended by Nakamura, we have obtained growth rates some eight times above the original. The new physico-chemical environment and the use of adenosine triphosphate as an index of energy status in the presence and absence of growth provide a basis for investigating the physiology and growth of other noncultivated microbes.

Authors' abstract

FIELDSTEEL, A. H. & LEVY, L. Dapsone chemotherapy of *Mycobacterium leprae* infection of the neonatally thymectomized Lewis rat. *Am. J. Trop. Med. Hyg.*, 25(6):854-859, 1976.

HARBOE, M.; CLOSS, O.; BJORVATN, B.; KRONVALL, G.; AEXLSEN, N. If. Antibody response in rabbits to immunization with *Mycobacterium leprae*. *Infect. Immun.*, 18(3):792-805, 1977.

*Mycobacterium leprae* purified from liver tissue of an infected armadillo (the A/10 preparation) was tested for antigenic composition by immunization of rabbits and characterization of the antibody response by crossed immunoelectrophoresis. The rabbit antisera detected seven distinct components in the *M. leprae* preparation. This number is far lower than in similar experiments with other mycobacteria. The *M. leprae* sonic extract gave far fewer lines after polyacrylamide gel electrophoresis and staining with Coomassie

brilliant blue than sonic extracts prepared from BCG, *M. smegmatis*, and *M. phlei* adjusted to the same protein concentration based on the Folin assay. The seven components detected in *M. leprae* cross-reacted extensively with *M. avium*, BCG, *M. lepraemurium*, *M. smegmatis*, and *Nocardia asteroides*. The seven components are involved in immune reactions in leprosy; antibodies against all of them were demonstrated in sera from patients with lepromatous leprosy, but the specificity of the antibodies varied from patient to patient. The reason for the demonstration of so few antigenic components and some of the implications of these findings for the use of armadillo-grown *M. leprae* to develop specific skin test reagents and in other aspects of leprosy research are discussed.

Authors' abstract

HIRATA, T. Cell-biological study on the acid-fast organisms isolated and cultivated from leprosy patients. 2. Pathogenic behavior of the organism to experimental animals, and results of inoculation to mice foot-pads. *Lepr.*, 45(3):145-152, 1976.

The cultivable organisms of *Mycobacterium sp.* I strain isolated from nasal washings of the patient with lepromatous leprosy were suspended in sterile saline solution on the living condition. Then, the suspension was inoculated subcutaneously, intraperitoneally and into foot-pads of rabbits, guinea-pigs and mice. The organisms did not produce progressive lesions in any part of used experimental animals macro and microscopically. However, in case of inoculation into mice foot-pads, the acid-fast organisms similar to leprosy bacilli were observed in the inoculated sites, and these organisms seemed to multiply in numbers. The organisms harvested from infected foot-pads of mice were tried to be cultivated onto the egg-yolk media, but there was no growth of acid-fast organisms.

From author's abstract

HIRATA, T. Cyto-morphological study of *Mycobacterium lepraemurium* in the murine-leproma. *Lepr.*, 45(3):153-161, 1976.

JOB, C. K.; KIRCHHEIMER, W. F.; SANCHEZ, R. M. Liver lesions in experimental lepromatoid leprosy of the armadillo. A histopathologic study. *Int. J. Lepr.*, 46(1):1-8, 1978.

A retrospective study of liver lesions was made in 13 armadillos infected intracutane-

ously with 10; *M. leprae* from the same inoculum, to evaluate the pathogenesis of the experimental disease. Survival times ranged from 13 to 55 months. In seven armadillos the liver lesions were markedly less severe than in six of these animals. The extent of the lesions was unrelated to the duration of the infection and was interpreted as reflecting individual differences in resistance. In contrast to man, leprosy bacilli were found in the liver cells of both groups of armadillos but to a lesser extent in those of the more resistant armadillos. The latter also had no obvious changes in the liver tissue except for round cell infiltration and prominent Kupffer's cells which contained *M. leprae*. These lesions can be compared to indeterminate leprosy in humans. The lesions in the more susceptible (lepromatoid) armadillos were initiated in Kupffer's cells. Later, large collections of bacillated macrophages infiltrated the liver lobules. The liver cells heavily loaded with *M. leprae* developed a pale granular cytoplasm which became foamy in the late lesions. In three of the lepromatoid livers, lesions compatible with *erythema nodosum* were seen.

Authors' summary

KATO, L.; ADAPOE, C.; ISHAQUE, M. The respiratory metabolism of *Mycobacterium lepraemurium* Can. J. Microbiol., 22:1293-1299, 1976.

KATO, L.; ISHAQUE, M.; WALSH, G. P. Cytochrome pigments in *Mycobacterium leprae* isolated from armadillos (*Dasypus novemcinctus* L.) Microbios, 12:41-50, 1975.

KATO, IL.; KIM, S. J.; ISHAQUE, M. In vitro cultivation of mycobacteria in cholesterol lecithin media from lepromas of rats infected with *Mycobacterium lepraemurium*. Int. J. Lepr., 46(4):376-385, 1978.

*In vivo* grown *M. lepraemurium* suspensions were inoculated into a basal medium containing cholesterol and lecithin. Slow growing strains of mycobacteria were cultured regularly in these media. The presence of free cholesterol or cholesterol in serum or cholesterol in trypsin-digested egg yolk was essential for growth.

From authors' summary

KIRCHHEIMER, W. F. Armadillo status. Star, 37(1):10-11, 1977.

KIRCHHEIMER, W. F. Occurrence of *Mycobacterium leprae* in nature. Lepr. India, 49(1):44-47, 1977.

KIRCHHEIMER, W. F. Recent advances in experimental leprosy. South. Med. J., 69:993-996, 1976.

Within the last 15 years we have learned to identify *Mycobacterium leprae*, determine its viability, screen the efficacy of antileprosy drugs, and monitor the bacilli for drug sensitivity. We have evidence that subclinical infections occur frequently among contacts of patients with leprosy and that the different manifestations of leprosy reflect differences in resistance to *M. leprae*. We are developing hypotheses about the mechanism of these differences. We have experimentally transmitted lepromatous leprosy to normal armadillos, and from these we can obtain amounts of leprosy bacilli which fully substitute for harvests from in vitro cultures. Furthermore, if susceptibility of armadillos can be determined without infecting them and if we can breed them under controlled conditions, we would have an animal model for investigating fundamental and applied areas of leprosy which otherwise are intractable. How much our knowledge has advanced is illustrated by a project of the World Health Organization which calls for the preparation of pure, specific antigens from the now available abundance of leprosy bacilli, which might become valuable as diagnostic and epidemiologic tools and as immunoprophylactic and even immunotherapeutic weapons.

KIRCHHEIMER, W. F. Termination of armadillo controversy. Correspondence. Int. J. Lepr., 45(3):298, 1977.

KIRCHHEIMER, W. F. & SANCHEZ, R. M. Quantitative aspects of leprosy in armadillos. Lepr. India, 49(1):48-53, 1977.

The most expedient way of producing billions of leprosy bacilli per gin of tissue in about one year is to infect mature armadillos intravenously with several hundred millions *M. leprae*. This is the method employed to satisfy the requirements of IMMLEP and the Institute of Allergy and Infectious Diseases. It is not possible at this time to be sure about the infecting dose of *M. leprae* which will cause disseminated infections in less than ten per cent of the armadillos, and therefore might be used to measure resistance.

Authors' conclusions

KIRCHHEIMER, W. F.; SANCHEZ, R. M.; SHANNON; E. J. Effect of specific vaccine on cell-mediated immunity of armadillos against *M. leprae*. *Int. J. Lepr.*, 46(4):353-357, 1978.

It is concluded that armadillos responsive to vaccination with heat-killed *M. leprae* with parameter of CMI are also resistant to infectious challenge. The implications of these findings for vaccination of susceptible human beings are discussed.

From authors' summary

KLINGMUELLER, G. Inoculation of hedgehogs (*Erinaceus europaeus*) with *Mycobacterium leprae*. *Star*, 37(4):2, 1978.

KOBAYASHI, Y.; MATSUOKA, M.; KAWAGUCHI, Y. Changes in length of murine leprosy bacilli in subcutaneous tissue of mice. *Jap. J. Leprosy*, 46(3):85-91. 1977.

KUNIGOSHI, U.; FUKUSHI, K.; KAWATSU, K. On the effect of *E. coli-12* treated with liquid-paraffin against the development of experimental murine leprosy in the mice. *Jap. J. Leprosy*, 46(3):79-84, 1977.

LEFFORD, M. J. & MACKANESS, G. B. Suppression of immunity to *Mycobacterium lepraemurium* infection. *Infect. Immun.*, 18(2):363-369, 1977.

After injection of  $10^8$  live *Mycobacterium lepraemurium* (MLM) into the left hind footpad of mice, there is development of local swelling attributable to a granuloma of the cell-mediated immunity type. Concomitant intravenous inoculation of live MLM delays and may even suppress footpad swelling, the effects being proportional to the intravenous dose of organisms. Concomitant footpad infection and intravenous inoculation of  $10^8$  dead MLM also delays footpad swelling, but over a period of months the feet become excessively swollen. The excessive swelling is due to local enhancement of infection as evidenced by an increase in the number of MLM per footpad. Attempts were made to prevent such immunosuppression by splenectomy or treatment with BCG. Splenectomy was entirely without effect, but  $10^7$  live BCG administered intravenously 2 to 4 weeks before dead MLM prevented enhancement of infection. The mediator of the immunosuppressive mechanism that results in enhanced infection remains to be elucidated, but it is unlikely to be antibody or immune complexes.

Authors' abstract

LEFFORD, M. J.; PATEL, P. J.; POULTER, L. W.; MACKANESS, G. B. Induction of cell-mediated immunity to *Mycobacterium lepraemurium* in susceptible mice. *Infect. Immun.*, 18(3):654-659, 1977.

A mouse strain (CB6) that is highly susceptible to *Mycobacterium lepraemurium* was infected with  $10^7$  bacilli into the hind footpad. These mice developed cell-mediated immunity to *M. lepraemurium*, as expressed by the development of a granulomatous lesion at the site of inoculation in normal but not in T-lymphocyte-depleted mice, a proliferative response in the paracortical zone of the draining lymph node, delayed-type hypersensitivity to a sonic extract of *M. lepraemurium*, and immunopotentiality of the delayed hypersensitivity response to sheep erythrocytes. Resistance to a second challenge infection with *M. lepraemurium* was not demonstrated.

Authors' abstract

LEVY, L. & PETERS, J. I<sup>3</sup>. Some characteristics of the action of dapsone on multiplication of *Mycobacterium leprae* in the mouse. *Lepr. Rev.*, 48(4):237-245, 1977.

In a number of experiments, male BALE/c mice were inoculated with *Mycobacterium leprae* and administered dapsone (4-4'-diaminodiphenylsulphone, DDS) incorporated into the mouse chow in concentrations of 10 to  $10^{-2}$  g% for periods of about 90 days during logarithmic multiplication of the organisms. Both the duration of the delay between beginning treatment and the onset of inhibition of bacterial multiplication and the duration of the delay between cessation of treatment and resumption of bacterial multiplication were dependent on the dosage of DDS. The number of doublings of *M. leprae* after the start of DDS treatment appeared more sensitive to minor variations of DDS concentration than the duration of the delay of resumption of multiplication after treatment was stopped.

Authors' abstract

LEVY, L.; AIZER, F.; NG, H.; WELCH, T. M. The effects of tilorone on mycobacterial infections of mice. *Lepr. Rev.*, 49(3):215-222, 1978.

Tilorone (2,7-bis[2-diethylaminoethoxy]fluoren-9-one dihydrochloride), administered in a concentration of 0.05 g per 100 g in the mouse chow, was found to inhibit multiplication of *Mycobacterium leprae* in the mouse footpad. Infection was enhanced in mice inoculated with *M. marinum* or *M. lepraemurium*

to which the drug was administered in the same dosage. Tilorone appears to have exerted an antimicrobial effect on *M. leprae* that outweighed the immunosuppressive effect of the drug on the mouse host.

Authors' abstract

MATSUO, Y. & UTSUNOMIYA, S. Viability of *Mycobacterium leprae* pretreated with rifampicin. *Lepro*, 45(3):174-176, 1976.

Suspensions of *Mycobacterium leprae* were incubated at 4°C or 30°C for 60 min with rifampicin at a concentration of 2 mg/ml. Before inoculating of mice, halves of the suspensions were repeatedly washed with a balanced salt solution. The unwashed bacilli did not multiply in mouse foot pads regardless of the exposure temperatures to the drug. The washed one pretreated at 4°C multiplied normally. The organisms treated with the same procedure but at 30°C resulted in a significant growth delay.

Authors' abstract

MATSUOKA, M. & KAWAGUCHI, Y. Observation of *M. lepraemurium* in subcutaneous tissue of mice by spread tissue preparations. *Jap. J. Leprosy*, 46(2):3743, 1977.

MATSUKI, G.; KASHIWABARA, Y.; NAKAGAWA, H.; KOBAYASHI, K.; FUJIMIYA, T. Studies on the collection of leprosy bacilli from infected tissues for metabolic experiments. *Jap. J. Leprosy*, 46(1):14-23, 1977.

McDOUGALL, A. C.; ROSE, J. A.; GRAHAM-SMITH, D. C. Penetration of C14-labeled rifampicin into primate peripheral nerves. *Experientia*, 31:1068-1069, 1975.

The penetration of Cu Rifampicin into various tissues, but particularly peripheral nerve, has been studied in the monkey. Penetration into the substance of peripheral nerve internal to the epineurial covering was demonstrated and the significance of this in relation to the treatment of leprosy is discussed.

Authors' summary

MEYERS, W. M. Leprosy and armadillos. Letter to the Editor. *South. Med. J.*, 69:1103, 1976.

MIRANDA, R. N. Hansenologia experimental. *Pub. Cent. Eat. Leprol.*, 17(1/2):71-73, 1977.

MORI, T. Cultivation of *Mycobacterium lepraemurium* under low oxygen tensions. *Jap. J. Leprosy*, 46(2):44, 1977.

MORI, T. Growth factor of *Mycobacterium lepraemurium*. *Jap. J. Bacteriol.*, 30:207, 1975.

MORI, T. Study of a growth factor for *Mycobacterium lepraemurium*. 1. Minimal medium. *Int. J. Lepr.*, 46(2):125-132, 1978.

A growth promoting factor is contained in the petroleum ether or acetone extracted residue of lyophilized dry egg yolk. Egg white, horse serum, soybean powder, bovine serum albumin, egg albumin and milk were used in *M. lepraemurium* culture attempts as protein sources instead of yolk lipoprotein. None of these substances promoted the growth of *M. lepraemurium*.

From author's summary

NAKAMURA, M. Multiplication of *Mycobacterium lepraemurium* in cell-free liquid medium. 11. Establishment of the ND-5 medium. *Lepro*, 45(4):211-216, 1976.

In order to improve the NC-5 medium, the Dubos medium (pH 7.3) was used as a basal medium, instead of Kirchner medium. The complete medium thus prepared is referred to as ND-5 medium. In this medium, *Mycobacterium lepraemurium* quickly multiplies in the form of binary fission without an extraordinary elongation. Possible generation times could be calculated by repeated experiments as 1.4-2.6 days. A slightly degenerative change in the cells during prolonged cultivation was observed by electron microscopy. This medium has some advantages for inhibiting other bacterial contaminations. Serial subcultivation is not tested yet.

Author's abstract

NAKAMURA, M. Multiplication of *Mycobacterium lepraemurium* in cell-free liquid medium. 10. Factors involved in the starting material of *M. lepraemurium* for the growth *in vitro* and *in vivo*. *Lepro*, 45(4):203-210, 1976.

NAKAMURA, M. Multiplication of *Mycobacterium lepraemurium* in cell-free liquid medium 13. Growth evaluation; sediment smear method (SSM). *Jap. J. Leprosy*, 46(3):98-103, 1977.

NAKAMURA, M. Multiplication of *Mycobacterium lepraemurium* in cell-free liquid medium. 15. Growth stimulating effects of adenosine and thymidine on *M. lepraemurium* in vitro. *Jap. J. Leprosy*, 46(3): 108-111, 1977.

Evidence is presented that the multiplication of *M. lepraemurium* is remarkably stimulated by addition of adenosine at final concentration of 0.005% to NC-5 and ND-5 medium. The effect resulted in maintenance of plateau of stationary phase of *M. lepraemurium*. On the other hand, there is no effect of addition of thymidine on the growth of *M. lepraemurium* in NC-5 as well as ND-5 medium.

Author's abstract

NAKAMURA, M. & CHIBA, K. Multiplication of *Mycobacterium lepraemurium* in cell-free liquid medium. 14. Initial growth curve of *M. lepraemurium* in cell-free medium. *Jap. J. Leprosy*, 46(3) : 104-107, 1977.

*M. lepraemurium* suspension was inoculated into NC-5 and ND-6 medium and cultivated at 30°C. The growth was measured by the bacillary counting method. The results obtained demonstrate that there is a temporary peak of the increase of bacilli 4 days and 3 days after cultivation in NC-5 and ND-5 medium, respectively. Thereafter, the number of bacilli decreased, and then gradually increased until 6 weeks. The meaning of the peak in the initial growth is still not clear.

Authors' abstract

NAKAMURA, M.; CHIBA, K.; TANAKA, Y. Multiplication of *Mycobacterium lepraemurium* in cell-free liquid medium. 12. Growth of *Mycobacterium lepraemurium* grown on egg yolk solid medium in the liquid-medium. *Jap. J. Leprosy*, 46(3) : 92-97, 1977.

NAKAMURA, M.; ITOH, T.; WAKI, C. Isolation of a cultivable *Mycobacterium* from an armadillo subcutaneous tissue infected with *M. leprae* and characterization of this isolated strain. *Leprosy*, 45(4): 217-222, 1976.

A strain of acid fast bacillus was isolated from a leproma of armadillo infected with *M. leprae* during the cultivation trial. Colonies were easily formed on Ogawa egg medium one-two weeks after inoculation, and were yellow. This isolated *Mycobacterium* was identified as a type of *Scotochromogen*, which is belonged to Group II atypical

*Mycobacterium*, by biological and biochemical characterizations.

Author's abstract

NARAYANAN, E.; SREEVATSA; KIRCHHEIMER, W. F.; BEDI, B. M. S. Transfer of leprosy bacilli from patients to mouse footpads by *Aedes aegypti*. *Lepr. India*, 49(2):181-186, 1977.

*Aedes aegypti* mosquitoes which were first allowed to feed on untreated lepromatous leprosy patients, and then to refeed on mouse footpads were found to transfer *Mycobacterium leprae* to the footpads as seen by the subsequent multiplication of the bacilli in the footpads. Results presently available are insufficient to come to any conclusion about the actual role of mosquitoes in the transmission of leprosy in the field.

Authors' abstract

NAVALKAR, R. G. & PATEL, P. J. Cell-mediated immune response in *Mycobacterium leprae* infected mice. *Int. J. Lepr.*, 45(3):221-227, 1977.

Positive skin reactions to homologous antigens in mice infected with *Mycobacterium leprae* were observed at the time that the bacillary multiplication was nearing the plateau level. Once developed, the skin reactivity persisted for a considerable length of time. Lymphocyte transformation studies indicated that the lymphocytes from infected animals were unable to respond to specific antigenic stimuli in the early phase of infection.

From author's summary

NAVALKAR, R. G. & PATEL, P. J. Evaluation of the immune response in mice infected with *Mycobacterium marinum*. *Int. J. Lepr.*, 45(3):228-234, 1977.

Foot pad infection of mice with *Mycobacterium marinum* carried out with a view to comparing the immune response on the humoral level of such mice, with that observed previously in mice infected with *M. leprae*, indicated that there was a similarity in terms of the first appearance and proliferation of immunocytes and the time at which the peak and decline in the antibody-producing cells occurred. The significant difference appeared to be in the immunoglobulin G response, which was absent in the *M. leprae* infected mice, but occurred simultaneously with the immunoglobulin M response at a high level, both during a primary and after a secondary challenge administered 15 days post-primary infection in the *M. marinum* infected mice.

From authors' summary

NISHIURA, M.; IZUMI, S.; MORI, T.; TAKEO, K.; NONAKA, T. Freeze-etching study of human and murine leprosy bacilli. *Int. J. Lepr.*, 45(3) :248-264, 1977.

*Vide Bacteriologia / Bacteriology*

OKADA, S.; NISHIURA, M.; OGAWA, T.; MORI, T. Electron microscopic study of colonies of *Mycobacterium lepraemurium*. *Int. J. Lepr.*, 46(4) :364-371, 1978.

OGAWA, T. Attempts at growth of *M. leprae* in mice. *Lepr.*, 45(4):223-229, 1976.

OGAWA, T. Studies on murine leprosy bacillus. XIV. Some observations on primary and secondary cultures of *M. lepraemurium*: gross appearance and transplantability of primary isolates and occurrence of smooth variants during serial culture passage. *Jap. J. Leprosy*, 46(2): 29-36, 1977.

PANITCH, M. L. & LEVY, L. The action of dapsone on a susceptible strain of *Mycobacterium kansasii*. *Lepr. Rev.*, 49(2): 131-140, 1978.

Because studies of the action of dapsone on *Mycobacterium leprae* have been obstructed by the need to conduct the studies in infected animals, a study of the action of the drug has been carried out on a strain of *M. kansasii* shown to be inhibited by 0.3 µg dapsone per ml, a concentration 100 times larger than the minimal inhibitory concentrations of the drug for *M. leprae*. In stationary broth cultures, dapsone was bactericidal in concentrations of 1.0 µg per ml or larger; populations of *M. kansasii* as small as  $1.7 \times 10^8$  organisms appeared to contain individuals resistant to 1.0 and 10 µg dapsone per ml. The organisms were shown to bind the drug against a concentration gradient. The action of the drug was antagonized by 4-aminobenzoic acid (PABA) in a mole ratio (PABA: dapsone) of 2:1. PABA itself, in a concentration of 10 µg per ml, inhibited multiplication of this strain of *M. kansasii*.

Authors' abstract

PATTYN, S. R. Further data on the effect of ethionamide and prothionamide in experimental leprosy. *Lepr. Rev.*, 49(3): 199-202, 1978.

Experiments carried out in mice using intermittent administration of ethionamide and/or prothionamide indicate that the efficacy of these drugs are substantially impaired if they are given less frequently than 3 times a week. Irregular administration of these drugs

could lead more rapidly to the emergence of resistance than is the case for dapsone. Results of the total minimal inhibitory test show that treatment of paucibacillary leprosy with prothionamide during 9 or 12 weeks can be envisaged.

Author's abstract

PATTYN, S. R. & SAERENS, E. Evaluation of the activity of streptomycin on *Mycobacterium leprae* in mice. *Lepr. Rev.*, 49(4):275-281, 1978.

The effect of streptomycin on *Mycobacterium leprae* was studied in the conventional mouse model. The drug has a relatively high bactericidal activity that places it between dapsone and ethionamide or prothionamide. Its effect is more pronounced when administered immediately after the experimental infection than when treatment is started at a later time. This is probably the result of the higher activity of streptomycin on leprosy bacilli located outside cells. It is concluded that streptomycin could be a valuable companion drug during the initial treatment of dapsone resistant leprosy in countries with limited resources. Streptomycin as monotherapy is not suited for the short course treatment of paucibacillary leprosy.

Authors' abstract

POULTER, L. W. & LEFFORD, M. J. Development of delayed-type hypersensitivity during *Mycobacterium lepraemurium* infection in mice. *Infect., Immun.*, 17(2): 439-446, 1977.

Various preparations of *Mycobacterium lepraemurium* were used to elicit delayed-type hypersensitivity in the footpad of mice infected with this organism. With a sonicated preparation of the mycobacterium, a significant increase in footpad swelling was elicited in mice infected with *M. lepraemurium* 5 weeks previously, but not in BCG-infected animals or uninfected controls. This footpad reaction was shown to peak at 24 h and to be associated with an infiltration of mononuclear cells. The kinetics of footpad swelling, its association with lymphoproliferation, and its dependence on T lymphocytes were each examined. The results support the hypothesis that this is a delayed-type hypersensitivity reaction. The ability to transfer this reactivity to normal mice with cells but not serum offers further confirmation that this hypersensitivity is dependent on cell-mediated immunological mechanisms rather than humoral antibody. The relevance of this to the study of the immunological response of mice to murine leprosy is discussed.

Authors' abstract

PRABHAKARAN, K.; HARRIS, E. B.; KIRCHHEIMER, W. F. Absence of  $\beta$ -glucuronidase in *Mycobacterium leprae* and elevation of the enzyme in infected tissues. *Lepr. Rev.*, 49 (3):203-213, 1978.

Q-Glucuronidase activity was determined in mouse footpads infected with *Mycobacterium leprae*, in the leprosy organisms separated from the liver and spleen of experimentally infected armadillos, and in the armadillo tissues. Enzyme assays in the mouse footpads were initiated 1 week after inoculation with *M. leprae* and continued at monthly intervals for 12 months. In the mouse footpads and in the armadillo tissues, *M. leprae* infection resulted in remarkable elevations of  $\beta$ -glucuronidase levels. The leprosy bacilli seemed to be devoid of the enzyme. In its properties like pH optimum, reaction velocity and effect of inhibitors, the activity detected in *M. leprae* resembled the host tissue enzyme rather than bacterial 8-glucuronidase; and the activity was found to be superficially adsorbed on the bacilli. It is well established that phagocytes are rich in lysosomal enzymes. Evidently, the increased 8-glucuronidase of the infected tissues is not derived from the invading organisms, but from the different types of phagocytic cells infiltrating the tissues.

#### Authors' abstract

PRABHAKARAN, K.; HARRIS, E. B.; KIRCHHEIMER, W. F. Evidence for the occurrence of tissue inhibitors of o-diphenoloxidase in *Mycobacterium leprae* obtained from infected armadillos. *Lepr. Rev.*, 48 (4) :299-300, 1977.

SAITO, J.; KIYOTANI, K. & YAMACKA, K. Classification of *Mycobacterium lepraemurium*. *Jap. J. Bacteriol.*, 90:72, 1975.

SASIAIN, M. C.; CAROSELLA, E. D.; BALINA, L. M.; BREZAVSCEK, D. M.; BACHMANN, A. E. A study of cellular and humoral immunity in three species of armadillos. Part I. *Int. J. Lepr.*, 45(4) :323-326, 1977.

In the present study the membrane receptors of immunocompetent cells and immunoglobulins in three varieties of armadillos were explored for determining, in later studies, the possible differences in inoculated animals developing leprosy. The studies of cellular immunity were performed in five *Chaetophroctus villosus* (Ch.v), one *Dasyypus hybridus septecinctus* (DHS) and one *Zaedus Pichei* (ZP), while the humoral immunity

was studied with a serum pool of 17 Ch. v and 6 DHS. The results obtained demonstrate that the lymphocytes of the three species studied have receptors for SRBC, C3 and Ig-s, and no receptors for Fe segment of immunoglobulins. With reference to immunoglobulins no definite alteration of the humoral immunity was observed with the exception that DHS presents increased IgC levels and Ch. v increased IgM.

#### Authors' summary

SHEPARD, C. C. Rodents, edentata, and other animal models for leprosy. In: *Leprosy: Cultivation of the etiologic agent, immunologic animal models. Proceedings of the Workshop on Future Problems in the Microbiology of M. leprae.*, Baltimore, Md., 1976. Washington, 1977. p. 57-62. (OMS/PAHO, scientific publication, n.° 342).

SHEPARD, C. C.; VAN LANDINGH'AN, R.; WALKER, L. L. Effect of levamisole on *Mycobacterium leprae* in mice. *Infect. Immun.*, 16(2) :564-567, 1977.

Levamisole, an antihelminthic drug that is capable of enhancing immune responses in mice and in humans, was tested in experimental *Mycobacterium leprae* infections in mice by a number of schedules. Intermittent schedules were used, and administration of the drug was started (i) around the time of inoculation with *M. leprae*, (ii) when the *M. leprae* population was approaching the plateau level, (iii) after the onset of the plateau phase, or (iv) after BCG vaccination 28 days following the inoculation with *M. leprae*. No effect of drug could be discerned with any of the schedules.

#### Authors' abstract

SHEPARD, C. C.; YOUMANS, A. Y.; YOUMANS, G. P. Lack of protection afforded by ribonucleic acid preparations from *Mycobacterium tuberculosis* against *Mycobacterium leprae* infections in mice. *Infection & Immunity*, 15(3) :733-736, 1977.

*Mycobacterial* ribonucleic acid preparations from H37Ra, an attenuated strain of *Mycobacterium tuberculosis*, provide their usual marked protection against *M. tuberculosis* challenge; however, they provided no protection against *Mycobacterium leprae* challenge. Suspensions of intact H37Ra were not effective against *M. leprae*. Suspensions of BCG gave their usual distinct protection against *M. leprae* challenge.

#### Authors' abstract

SMITH, J. H.; FILE, S. K.; NAGY, B. A.; FOLSE, D. S.; BUCKNER, J. A.; WEBB, L. J.; BEVERDING, A. M. Leprosy-like disease of wild armadillos in French Acadiana, Louisiana. *J. Reticuloendothel. Soc.*, 24(6):705-719, 1978.

An independent survey wild armadillos in the French Acadiana section of Louisiana revealed that approximately 10% of trapped armadillos had a leprosy-like disease indistinguishable from experimentally produced infection of pathologic findings in 2 afflicted animals and a proposed model of the pathogenesis are reported.

Authors' abstract

STORRS, E. E. Initiation of armadillo program. Correspondence. *Int. J. Lepr.*, 46(4):436-438, 1978.

TAVERNE, J.; REICHLIN, M.; TURK, J. L.; REES, R. J. W. Detection of immune complexes in mice infected with *Mycobacterium lepraemurium*. *Clin. Exp. Immunol.*, 24:157-167, 1976.

TURCOTTE, R. Suppressor cells in experimental murine leprosy. *Int. J. Lepr.*, 46(4):358-363, 1978.

These results strongly suggest the presence of suppressor cells in the spleens of MLM-infected mice that occur relatively soon after infection and that persist till the death of the animal. Since the suppressive activity in spleen cell suspensions was not totally abolished either by adherence to nylon wool or by the carbonyl iron-magnet technic, most of the suppressor cells would belong to a T cell subpopulation.

From author's summary

WALSH, G. P.; STORRS, E.E.; MEYERS, W.; BINFORD, C. H. Naturally acquired leprosy-like disease in the nine-banded armadillo (*Dasypus novemcinctus*) recent epizootiologic findings. *J. Reticuloendothel. Soc.*, 22(4):363-367, 1977.

Fifty armadillos from 12 locations have been found with a naturally acquired disease caused by an agent that is indistinguishable from *Mycobacterium leprae*. Forty-seven of the animals were from 459 examined from 11 locations in Louisiana. Two were from unknown locations in Louisiana and one animal was from eastern Texas. Most of the infected

animals were initially diagnosed by the examination of ear specimens.

Authors' abstract

WATSON, S. R.; BROWN, I. N.; SLJIVIC, V. S. Enhancement of the antibody response *in vitro* by adherent cells from mice infected with *Mycobacterium lepraemurium*. *Infect. Immun.*, 17(2):263-267, 1977.

Spleen cells from mice systemically infected 4 to 6 weeks previously with *Mycobacterium lepraemurium* gave an enhanced primary antibody response *in vitro* to sheep erythrocytes, but responded normally to dinitrophenylated polymerized flagellin. The ability to enhance the response was associated with the glass-adherent spleen cell population and with peritoneal cells. Similar cells obtained from infected mice depleted of T lymphocytes failed to enhance the antibody response. These studies suggest that macrophages that become activated during the development of cell-mediated immunity to infection can also stimulate antibody responses to thymus-dependent antigens.

Authors' abstract

YAMAGAMI, A. & CHANG, Y. T. Growth of *Mycobacterium lepraemurium* in cultures of macrophages obtained from various sources. *Infect. Immun.*, 17(3):531-534, 1977.

Studies were made on the growth of *Mycobacterium lepraemurium* in cultures of macrophages obtained from various sources, such as bone marrow, spleen, and blood of mice. Macrophages were maintained in good condition for more than 12 weeks. Marked intracellular multiplication of *M. lepraemurium* was observed in cultures from all three sources. Whereas *M. lepraemurium* freshly prepared from the animals showed good growth in the cultures, those that were kept at 4°C for 10 or 14 days showed no growth.

Authors' abstract

YOSHII, Z. & NAKAMURA, M. Growth features of *Mycobacterium lepraemurium*, cultivated in NC-5 medium. *Kurume Med. J.*, 22(1):35-66, 1975.

YOSHII, Z. & NAKAMURA, M. Scanning electron microscopy on the partial swellings of *Mycobacterium lepraemurium* appeared during cultivation in a cell-free liquid NC-5 medium. *Kurume Med. J.*, 28:29-39, 1976.

## CLÍNICA, DIAGNÓSTICO CLINICAL ASPECTS, DIAGNOSIS

ANTOLA, M. C.; ORTIZ, M. C.; VAQUERO, N.; JAURRIETA, C.; ALCON, R. D.; TORCHINSKY, O. M. Las neuropatías hansenianas. *Tem Leprol.*, 21(63/64):1-123, 1978.

Introducción. Breves antecedentes históricos. Reserva de trabajos experimentales en neurohanseniasis. Histología normal de los nervios periféricos. Anatomía patológica de los nervios periféricos en el mal de Hansen. Patogénesis neural hanseniana. Clínica neurológica en el mal de Hansen. Epidemiología descriptiva de las neuropatías hansenianas en enfermos internados en un hospital especializado. Breve reseña terapéutica de las neuropatías en la enfermedad de Hansen. Conclusiones. Bibliografía.

Se destaca la alta prevalencia de graves manifestaciones neurológicas en pacientes hansenianos, que se halla en relación directa con el tiempo de evolución de la enfermedad. En cuanto a la patogénesis de las neuropatías y a pesar de los notables adelantos en inmunopatología, quedan muchas incógnitas a revelar; por lo cual se recomienda, se de prioridad a investigaciones y estudio que permitan develar las causas de las neuropatías. Con respecto al tratamiento, se recomienda estudiar y controlar periódicamente, los resultados inmediatos y alejados de los procedimientos (clínicos y quirúrgicos), actuales y futuros, haciendo hincapié en la necesidad del estudio clínico y neurológico previo a la terapéutica. Se recomienda que se efectúen estudios epidemiológicos prospectivos de las neuropatías en los nuevos pacientes detectados y bajo contra terapéutico.

Conclusions de los autores

BALIICIA, L. M. Clasificación de la lepra de acuerdo con los recientes avances de la inmunología. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPRO. 4°, Caracas, 1975. Washington, 1977. p. 17-2. (OPS. Publicación científica, n.° 344).

BASSET, A. Diagnostic différentiel de la lèpre. *Med. Trop.*, 87(6):701-710, 1977.

The differential diagnosis of leprosy must be considered in two eventualities: In the first one, bacilli are present and one must try to give evidence of their presence by checking nasal mucus, dermal serosity and biopsies. In the second eventuality, no bacilli

are found and the diagnosis relies on the clinical and histological evidence of a nervous disorder. In some cases, para-clinical tests are necessary to support the diagnosis: detection of vaso motor changes, measure of the nerve conduction velocity and even radiography after °pacification of the cubital or fibularis superficialis nerves.

Author's summary

BEDI, T. R.; KAUR, S.; SINGHAL, P. C.; KUMAR, B.; BANERJEE, C. K. Fatal proliferative glomerulonephritis in lepromatous leprosy. *Lepr. India*, 49 (4) :500-503, 1977.

A patient of lepromatous leprosy with recurrent erythema nodosum leprosum developing acute renal failure proving fatal within 8 weeks is reported. The renal lesion demonstrated acute proliferative glomerulonephritis. Its pathogenesis in relation to ENL is discussed.

Author's abstract

BENNETT, N. McK. Diagnosis of leprosy in Victoria — a non-endemic area of Australia. *Med. J. Aust.*, 2(11) :349-351, 1977.

There have been at least 70 cases of leprosy in Victoria since 1950; the occurrence of 40 of these in the last seven years indicates that the disease is no longer rare in this State. The diagnosis was delayed in most patients, the average period of time between development of symptoms and diagnosis being 28 months. The most common presentations among these patients emphasize the point that a diagnosis of leprosy should be considered in patients who are suffering either from chronic skin diseases which are atypical and have not responded to therapy, or from localized disturbances of skin sensation.

Author's abstract

BEYLOT, C.; MORETTI, G.; BEYLOT, J.; BIOULAC, P. & DOUTRE, M. S. La lèpre en France. Problèmes épidémiologiques, diagnostiques et thérapeutiques. Notre expérience bordelaise. *Bordeaux Médical*, 10(21):1423-1432, 1977.

*vide Epidemiologia/Epidemiology*

BRAVO, L. L. & RATARD, R. C. Leprosy disabilities in the New Hebrides. *Lepr. Rev.*, 48(4):247-260, 1977.

The proportion of disabled among leprosy patients is 39% in the New Hebrides. This proportion is higher among lepromatous cases (67%) than among tuberculoid and borderline cases (38%). The disability index is higher among disabled lepromatous (1.2) than among disabled tuberculoid and borderline (0.8). Males are more often disabled than females (47% for males, 33% for females), but females seem to be more seriously disabled than males. There is an increase in the proportion of disabled and in the disability index with age. Disabilities are more frequent among positive cases, among patients taking irregular treatment or no treatment at all and among patients with leprae reaction. The proportion of disabled among tuberculoid cases increases 4 to 6 years after diagnosis and then decreases. For lepromatous patients there is a high and stable proportion of disabled from the beginning of the disease; there is also a steady increase in the severity of the disabilities. The nature of the initial symptoms influences the future occurrence of disabilities among tuberculoid and borderline cases. Only 13 to 16% will develop disabilities if there is no nerve involvement, 35 to 38% will do so if nerves are already involved. Bilateral lesions are more common among lepromatous than among tuberculoid or borderline cases. The prevalence of disabled for the whole population was estimated to be 2.7 per thousand.

Authors' abstract

BOUGHTON, C. R. Leprosy in Sydney: a brief account. *Med. J. Aust.*, 2(11):351-353, 1977.

Individuals with leprosy and those incubating the disease continue to enter New South Wales from endemic areas. With early diagnosis and treatment, the prognosis is good. The diagnosis should be considered in any patient who has lived or worked in a leprosy endemic country and who presents with an unusual or persistent skin eruption (especially if there is associated hypoaesthesia) and/or mononeuritis or mononeuritis multiplex. Occasionally the disease presents in other guises; biopsy of the appropriate tissue and staining for acid-fast bacilli, as well as with haematoxylin and eosin, will usually indicate the correct diagnosis.

Authors' abstract

CARAYON, A. & LANGUILLON, J. Lésions ostéo-articulaires dans la lèpre. *Med. Tropicale*, 97(4):427-432, 1977.

Bone changes are frequent in leprosy involving small distal bones of the limbs and, in advanced cases some cranial bones. The various kinds of osteitis and their radiologic features are described as well as the arthritis to which they can give way. These changes may result directly from the infection by *M. leprae* indirectly through nerve damage and also by pyogenic infections. The therapeutic tactic is discussed according to this approach of the various types of bone and joint damage.

Authors' summary

CARAYON, A. Dermatologie analytique de la lèpre dans le spectre clinico-immunopathologique. *Med. Tropicale*, 37(4):405-426, 1977.

The importance and difficulties of fixing a good and practical classification of leprosy cases are stressed. The various aspects and evolutions are described according to Ridley and Jopling spectrum. The dermatological changes are then consistently classified.

Author's summary

CARAYON, A. Gamme lésionnelle des névrites hanséniennes (état actuel des acquisitions récentes et des orientations thérapeutiques). *Med. Trop.* 36(1):41-61, 1976.

*vide Patologia/Pathology*

CONVIT, J. Lepra y leishmaniasis. Modelos clinico-inmunológico-patológicos similares. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPRO. 4.°, Caracas, 1975. Washington, 1977. p. 23-29. (OPS. Publicación científica, n° 344).

DEBI, B. & MOHANTY, H. C. Reactional states of leprosy: a clinical assessment. *Lepr. India*, 49(2):229-233, 1977.

Leprosy, because of its mutilating character and chronicity, has always been a great challenge to physicians. The pathogenesis of the varying manifestations of lepra reactions is not usually clearly understood; however, an humble attempt has been made in this study to single out a few factors which have a bearing on the subject.

Authors' conclusions

DISCAMPS, G. & CARAYON, A. La lèpre et le laboratoire. (Tendances actuelles). *Med. Tropicale*, 37(4):447-456, 1977.

Today an accurate clinical diagnosis of leprosy must refer to the spectrum estab-

lished by Ridley and Jopling and must be completed by some laboratory tests. Current ones as skin tests of delayed hypersensitivity, bacteriology of skin and nose smears (BI, MI) and histopathology. More sophisticated ones for study of the immunological status and its variations which is necessary in difficult cases to place the considered form in the spectrum, to recognize the existence of shifts, reactions or flares (exacerbations), to appreciate the effects of the chemotherapy and the real action of the immuno-adjuvants and immuno-depressors.

Authors' summary

DISCAMPS, G.; CARAYON, A.; GIRAU-DEAU, P. Lésions osseuses dans la lèpre *Med. Tropicale*, 37(4) :433-436, 1977.

After a description of the technical procedures for bone microradiography the authors give their first results in leprosy, various aspects of central osteolysis with some degree of cortical osteoid neo-production.

Authors' summary

GIRDHAR, B. K. & DESIKAN, K. V. A clinical study of the mouth in untreated lepromatous patients. *Lepr. Rev.*, 50(1): 25-35, 1979.

The mouth in 40 consecutive, unselected bacilliferous leprosy patients has been examined. The frequency and various types of lesion are reported. Twenty-three patients showed lesions inside the mouth. Although all parts of the mouth were found to be affected in a varying percentage of patients, the hard palate was involved in all 23 patients. Further, of these 23 patients, 21 showed acid-fast bacilli on the surface of mouth as judged by surface smears and mouthwash. A review of the literature concerning oral lesions in lepromatous leprosy is also presented.

Authors' abstract

HASAN, S. A survey of leprosy deformities among the patients of Hyderabad city. *Lepr. India*, 49(3) :393-399, 1977.

Neuropathic deformity is a major problem among the patients of Hyderabad city. Nearly 44.3% of the patients have one or the other kind of deformity of the hand, foot or face. 29.1% of the upper limbs, 30.7% of the lower limbs and 5.2% of the faces were affected. The patients with Lepromatous Leprosy showed greater tendency to deformity (66.4%). Patients with simply anaesthesia in hands and feet formed the majority among the deformity cases, a total of 41.6%.

Education of the patients in the hand and foot care is an essential feature of the clinic physiotherapy technician.

Author's abstract

HIRAMALINI, S.; JOSEPH, N. A.; CHACKO, C. J. G. Concentration and persistence of bacilli in the fingers and toes of patients with lepromatous leprosy. *Lepr. Rev.*, 49(3) :223-229, 1978.

In 41 patients with lepromatous leprosy, the fingers and toes were found to be the site with the highest bacillary load, the fingers being more productive than the earlobe or buttock and the toes being more productive than the buttock. Neither was the bacillary index at the finger significantly different from that at the toe, nor was the bacillary index at the terminal phalanx significantly different from that at the middle phalanx in either the finger or the toe. However, the terminal phalanx of the finger harboured more solid bacilli than the middle phalanx. In 14 long-treated low index cases where BI had registered a fall, and was not more than 2+ at any of the routine smear sites, the fingers and toes harboured more bacilli than the earlobe. In one long treated smear negative case, the terminal phalanges of the fingers and toes proved to be the only skin sites positive for bacilli, all other routine sites, being acid-fast bacilli negative.

Authors' abstract

ISHIHARA, S. A case report on leproma in the tongue. *Lepr. India*, 49(3) :419-420, 1977.

KUNIGOSHI, U. & MATSUMOTO, S. On lingular disease the diagnosis of which has been established for the first time after 33 year-history of hanseniasis. *Lepro*, 45(3) :162-165, 1976.

Lingular disease can be defined as characterized clinically by hemoptysis, blood-tinged sputum and recurrent episodes of pulmonary infection and pathologically by atelectasis, fibrosis and bronchiectasis and is occasionally made an erroneous diagnosis as pulmonary tuberculosis, chronic bronchitis, bronchial asthma, cardiopathy and neuropathy, in spite of its characteristic and peculiar roentgenological appearance.

Authors' abstract

LATAPf, F. & CHEVEZ-ZAMORA, A. Interpretación actual de la lepra de Lucio; síntesis patogénica. *Dermatologia: rev. mex.*, 99(2) :108-116, 1978.

LATAPF, F. & CHAVEZ-ZAMORA, A. La lepra "manchada" de Lucio; estudio inicial clínico e histopatológico. *Dermatología: rev. mex.*, 22(2):102-107, 1978.

Hemos intentado en este trabajo, divulgar lo relativo a la "lepra de Lucio", rendir homenaje a este gran médico mexicano y presentar una parte de los trabajos que sobre este tema se realizan en México, la que se refiere al estudio comparativo clínico e histopatológico de la *infiltración cutánea difusa* que hemos encontrado diferente de la nodular clásica, y de la lesión aguda episódica que Latapf ha propuesto llamar "fenómeno de Lucio" o "eritema neerosante" y cuya lesión esencial de vascularitis aguda, hemos estudiado y presentado en sus diversas fases; hemos por último, expuesto el estudio inicial de la *reacción de Medina* (respuesta especial a la lepromina) en estos enfermos.

De las conclusiones de los autores

MALIK, R.; KHANDPUR, R.; CHANDRA, K.; SINGH, R. A clinicopathological study of 244 cases of leprosy with special reference to histoid variety. *Lepr. India*, 49(3):400-405, 1977.

A statistical evaluation of 244 cases of leprosy is given. A detailed clinicopathological study of histoid leprosy is described.

Authors' abstract

MASANTI, J. C.; MARTINO, O. A.; CROXATTO, J. O.; BERNARD, J. C.; PÉREZ CHADA, R. D.; MANDE DE FALCON, M. A. Correlación anatomoclínica en la lepra lepromatosa. *Temas Leprol.*, 20 (62):3-54, 1977.

vide Patología/Pathology

McDOUGALL, A. C. & WAUDBY, H. Dermal microfilariasis and leprosy. *Lepr. Rev.*, 48 (3):161-168, 1977.

A 12-year period (1964-1976) has been selected for detailed study and the histopathological findings are considered in close relation to the doctor's letter or clinical information supplied. It is apparent that in geographical areas where both leprosy and onchocerciasis or streptocerciasis are endemic, there is continuing confusion — even amongst experienced observers — which may lead to errors in the diagnosis, classification, assessment and follow-up of patients with leprosy. Skin biopsies, with appropriate attention to (1) the body site selected, (2) laboratory technique, and (3) the careful examination of

serial sections, may be invaluable in minimizing or eliminating these errors.

From authors' abstract

MIRANDA, R. N. & MIRANDA, R. P. G. Uma introdução à odontoleprologia. Lepra: suas manifestações buco-maxilares no adulto e na criança. Curitiba, Imprensa da Univ. do Paraná, 1973. 67p.

Conceituação moderna da lepra. Manifestações da lepra sobre o esqueleto. Manifestações da lepra sobre as cavidades.

NAAFS, B. & WHEATE, H. W. The time interval between the start of antileprosy treatment and the development of reactions in borderline patients. *Lepr. Rev.*, 49(2):153-157, 1978.

NIGAN, P.; GOYAL, B. M.; MISHRA, D. N.; SAMUEL, K. C. Reaction in leprosy complicated by filariasis. *Lepr. India*, 49(3):344-348, 1977.

Five cases of reaction in leprosy with filariasis have been presented to emphasize the coexistence of the two conditions in the areas endemic to filariasis and leprosy. One may modify the clinical features of the other. Necessity of recognising filariasis as an important precipitating factor for lepra reaction in tropical countries has been highlighted for proper management of rather protracted and resistant cases.

Authors' abstract

OPROMOLLA, D. V. A. Grupo indeterminado, Aspectos clínicos histopatológicos y epidemiológicos. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA. 4.º, Caracas, 1975. Washington, 1977. p. 11-16. (OPS. Publicación científica, n° 344).

ORTIZ, Y. & GINER, M. Avances recientes en la lepra de Lucio. II. Aspectos clínicos, de laboratorio y gabinete. *Dermatología: rev. Mex.*, 22(2):141-163, 1978.

Twenty five patients with Diffuse Lepromatous Leprosy were studied. Thirteen of them from the group I (pure and primary form), eight with Lucio's phenomenon, and twelve from the group II (secondary form), five with erythema nodosum, two with erythema nodosum and necroticans, and one with erythema multiforme. Age was between 11 and 54 years, middle was of thirty three. This study confirmed the well known symptoma-

tology of diffuse cases: diffuse skin infiltration all over the body, anhydrotic and even ichthyosiform skin, loss of eyebrows, eyelashes and body hair, frequent epistaxis and final perforation of nasal septum and other symptoms described in former publications. From laboratory studies: very high sedimentation rate, reacting C protein in more than half of cases, hypochromic anaemia in one third, VDRL + in 30% (group I) and 16% (group II), hyperglobulinemia. No other abnormal findings.

Authors' summary

PENCHENIER, L.; LOUVET, M.; SAINT-ANDRE, P. L'onchocercose chez les lépreux: aspects cliniques et biologiques a propos de 100 observations. *Med. Trop.*, 37(6):711-716, 1977.

The immunological deficiency of lepromatous patients, though rather specific may facilitate the onchocercal infestation and reversely onchocerciasis may enhance the development of leprosy. Onchocercal skin changes are more marked in lepromatous patients and tuberculoid ones are more responsive to the Mazzotti test. *O. volvulus* is more frequently detected in blood of leprosy patients than in a non leprosy-population.

Author's summary

PFALTZGRAFF, R. E. Dermal microfilariasis and leprosy. Letter to the Editor, *Lepr. Rev.*, 49(2):168, 1978.

PEYRO, E. Un caso de lepra lepromatosa con nódulos histoides. *Dermatologia: rev. mex.*, 21(2/3):234-238, 1977.

RAMANUJAM, K. SUNDAR, P. R.; KHAMNEI, A. A. Ocular leprosy in Iran: findings of a random survey at the Baba Baghi Leprosarium, Tabriz. *Lepr. Rev.*, 49(3):231-239, 1978.

Ocular manifestations in 100 cases of leprosy, mostly lepromatous, in a racial group susceptible to serious leprosy are presented. The pathogenesis of the eye involvement is discussed. Its prevention and management are recounted solely with a view to emphasize the fact that the institution of simple procedures will go a long way in calling a halt to the ocular tragedy in leprosy.

RODRIGUEZ, O. Lepra de Lucio. I. Historia y concepto. *Dermatologia: rev. mex.*, 22(2):117-140, 1978.

The author presents a synthetic and historical view of Diffuse Lepromatous Leprosy (Lucio's leprosy) since the first report in which it is mentioned (Pascua, 1844) as far as the more recent immunological studies. She analyses the masterly description of Lucio and Alvarado (1852) and the main data which have been accumulating since its identification (Latapi, 1936). Finally she exposes the thoughts of mexican leprologists on the varieties of this entity: the Pure and Primary Diffuse Lepromatous Leprosy (Lucio's leprosy in a strict sense) and the Secondary Diffuse Lepromatous Leprosy (Lucio's leprosy in a larger sense) and the characteristics that define them.

Author's summary

SAKURAI, I. & SKINSNES, O. K. Histochemistry of B663 pigmentation: ceroidlike pigmentation in macrophages. *Int. J. Lepr.*, 45(4):342-354, 1977.

vide Epidemiologia/Epidemiology

SAÚL, A. Lepra de Lucio. Editorial. *Dermatologia: rev. mex.*, 22(2):91-92, 1978.

SCHMITT, J.; BARRUCAND, D.; FLOQUET, J.; SCHMIDT, C. Névrite hansénienne a forme pseudosyringomyélique. Considérations cliniques, diagnostiques et thérapeutiques à propos de trois cas. *Rev. Neurol.*, (Paris), 132(1):33-49, 1976.

SEHGAL, V. N.; AGGARWAL, D. P.; SEHGAL, N. Ocular leprosy. *Indian J. Med. Res.*, 64 (11):1600-1606, 1976.

Four hundred and thirty leprosy patients were studied for ocular involvement of which 229 were of tuberculoid, 69 of lepromatous, 69 of borderline, 63 of neuritic and 3 patients of reaction of which 2 were lepromatous and 1 borderline leprosy. Ocular lesions were seen in 106 patients comprising 43 (18-7 per cent) tuberculoid, 30 (43-4 per cent) lepromatous, 15 (21-7 per cent) each borderline and neuritic and 3 (4-2 per cent) of reactions. Majority of patients with affliction of the eyes were in the age group of 20 to 59 years. The commonest clinical signs in different types of leprosy were madarosis and infiltration of the eyebrows and eyelids and were frequently in lepromatous leprosy. Conjunctivitis, episcleral nodules, interstitial keratitis, pannus, punctate keratitis and corneal opacities were also seen, but their occurrence was infrequent. The affection of the posterior

segment of the eye was uncommon. The demonstration of *Mycobacterium leprae* in conjunctival scrapings and/or fluid in patients of lepromatous leprosy was of interest as it supports the earlier reports of direct invasion of ocular tissues in this type of leprosy.

Authors' abstract

SEHGAL, V. N.; REGE, V. L.; MASCARENHAS, M. F. Pattern of reactions in leprosy: a clinical appraisal. *Lepr. India*, 49(2):221-228, 1977.

The term 'reactions' is applied in the present text, to describe the acute episodes, recognized with the different types of leprosy. The incidence of reactions was found to be 9.7 percent of 1053 cases examined. They were seen in all types of leprosy, but their frequency and severity was marked in lepromatous and borderline cases, and in majority of them, the age ranged from 20-40 years. The precipitating factor(s) could not be established in many; in some dapsone was incriminated, followed by bacterial infection and malnutrition. The exacerbations of the existing lesions) either alone or in combination with new lesions (E.N.L.) and E.N.L. lesions alone, were the presenting clinical features. The constitutional symptoms were observed largely in the types other than the tuberculoid. Foot drop and contractures of the fingers were the common sequels of the reactions. An attempt has been made to explain their mechanism in the light of the recent literature.

Authors' abstract

SEHGAL, V. N.; REGE, V. L.; REYS, M. Correlation between clinical and histopathologic classification in leprosy. *Int. J. Lepr.*, 45(3):278-280, 1977.

A detailed histopathologic study, utilizing hematoxylin and eosin stain, was done in 95 fresh uncomplicated cases of leprosy. The microscopic features were classified according to Ridley's (1974) definition, while the clinical grouping was done using the criteria of Ridley and Jopling (1962). The disparity between them on comparison was explicit. In one third of the cases the two were in consonance with each other. In many there was a shift of one step either towards the tuberculoid or lepromatous end of the spectrum. The remaining were classified as indeterminate because of early histopathologic changes. This disparity was expected because the parameters used for the histopathologic classification were precise and also took into account the immunologic aspect. The histo-

logic definitions seem practical and may prove useful in assessment of the status of the disease with or without treatment.

From authors' summary

SOUZA, R. L. Lesões oculares na reação hansênica. *Bol. Div. Nair. Dermatol. Sant.*, 37(2/4):23-30, 1977.

SUBRAMANIAM, K. & MARKS JR., S. C. Alveolar bone loss in leprosy — a clinical and radiological study. *Lepr. Rev.*, 49(4):287-296, 1978.

Alveolar bone loss in 47 patients with lepromatous, borderline or tuberculoid leprosy was studied clinically and radiographically. Alveolar bone loss was greater in the maxillary anterior region than in other areas. Alveolar bone loss around maxillary central incisors, measured on periapical radiographs, was significantly greater in patients with lepromatous leprosy. No changes in alveolar bone loss could be detected over 6 months. These results were compared with measurements of alveolar bone loss from 56 patients without leprosy who sought dental treatment. The data are interpreted to mean that bone loss between maxillary anteriors is a characteristic manifestation of leprosy, particularly of the lepromatous type.

Authors' abstract

TAKIZAWA, H. Studies of clinical course and prognosis of Hansen's disease during chemotherapy. 2. Erythema nodosum in lepromatous leprosy. *Lepra*, 46(3):167-173, 1976.

ENL is essentially the manifestation of antigen-antibody reactions and occurs in the pure and near lepromatous patients. But some of lepromatous cases (49.4%) escape ENL in their course. Although ENL has become much more common since the initiation of sulfone therapy, it can be caused by other antileprosy drugs including chaulmoogra oil. As far as bacterial negativity is concerned, prognosis of patients with severe ENL is not always worse than that of the patients without ENL. We have tried to notice previously the occurrence of ENL in the lepromatous patients. Twenty three cases of 34 new cases (68%), who took the serologic test for syphilis (STS), showed positive STS at the start of chemotherapy. These biological false positive cases of STS were confirmed by RPCF and TPHA. There was only one case who showed latent syphilis. The correlation between the occurrence of ENL and the positive STS in the lepromatous cases was

statistically significant. The Leproagglutination, which has antigen made from cardiolipin and lecithin (1:1) was shown in this paper as a more useful test for ELN. The lepromatous cases with positive Leproagglutination test in serum dilutions of 1:64 or greater before chemotherapy were apt to have episodes of ENL in their clinical course ( $p=0.01$ ).

From author's abstract

VAIDYANATHAN, E. P. & VAIDYANATHAN, S. I. Superficial peroneal nerve thickening as an early diagnostic sign in leprosy. *Lepr. Rev.*, 49(2):149-151, 1978.

Clinical examination of 1020 persons in a region of India in which leprosy is endemic revealed thickening of *one or both* superficial peroneal nerves in 54 persons, 19 having previously received treatment for leprosy, whether full or incomplete (old cases), and 35 never having been treated (new cases). Biopsies of thickened superficial peroneal nerves showed that of 33 symptom-free new patients, 18 had diagnostic histological

changes (54.5%), and a plea is made that screening examinations for leprosy should always include palpation of superficial peroneal nerves, for subsequent nerve biopsies are likely to provide early diagnostic evidence in more than 50% of cases.

Authors' abstract

WASTIE, M. L. Radiological changes in serial X-rays of the foot and tarsus in leprosy. *Clin. Radiol.*, 28:285-292, 1975.

Most bone abnormalities seen in serial films of the feet in leprosy were static being the end result of old disease. Changes over a period of time were observed in serial films of 214 feet and these changes were due to a combination of infection, neuropathic changes and avascular necrosis occurring in anaesthetic feet. The bone abnormalities seen were absorption of toes and metatarsals; bone destruction; a neuropathic arthropathy of toes and metatarsals and various patterns of tarsal disintegration.

Author's abstract

## TERAPÊUTICA THERAPY

The estimated percentage of gross irregularity of intake is markedly higher in the bi-weekly as compared with the daily dosage schedule. The gross irregularity of intake was particularly marked in the higher dosage groups such as 100 mg daily or bi-weekly and 200 mg bi-weekly. The implications of the findings are discussed.

Author's abstract

BALABRISHNAN, S. & RAMU. Blood DDS levels and acetylation rates of sulphadimidine in leprosy patients. *Lepr. India*, 49(1):59-64, 1977.

The plasma DDS clearance rates and the acetylation rates of Sulphadimidine were studied in a group of 30 leprosy patients comprising of 17 non-responders and 13 responders to DDS treatment. No differences in the acetylator type or in the plasma DDS clearance were seen between the responders and non-responders. Acetylation rate did not bear any relation to the plasma clearance of DDS in the non-responders. The findings indicate that the resistance to DDS therapy in these patients is not related to any abnormal metabolic disposition of DDS.

Authors' abstract

AMBROSE, E J.; KHANOL%AR, S. R.; ANTIA, N. H.; CHULAWALLA, R. G.; KOTICI A, K. K. Rapid test for drug resistance in leprosy. *Lancet*, 2(8046):1036, 1977. Letter.

ARAI, M. et. al. A study on transition of bacillary indices by chemotherapy of leprosy. *Jap. J. Lepr.*, 46(4):147-162, 1977.

BALABRISHNAN, S. Monitoring self administration of dapsone by patients. *Lepr. India*, 49(3):364-371, 1977.

The Urinary DDS/Creatinine ratios in the supervised in-patients and out-patients attending the C.L.T. & R.I., clinic were compared. The subjects of this study were receiving dapsone at the daily dosage of 25, 50 and 100 mg or bi-weekly dosage of 25, 50, 75, 100 and 200 mgs. The mean urinary DDS/Creatinine ratios from out-patients were significantly lower than those of the in-patients in both dosage schedules of treatment and suggest that a certain percentage of out-patients have been irregular in the intake of dapsone in the period immediately prior to the collection of urine specimens.

BEYLOT, C.; MORETTI, G.; BEYLOT, J.; BIOULAC, P.; DOUTRE, M. S. La lepre en France. Problèmes épidémiologiques, diagnostiques et thérapeutiques. Notre expérience bordelaise. *Bordeaux Médical*, 10 (21):1428-1432, 1977.

*vide* Epidemiologia/Epidemiology

BENINCASA, E. Rethinking about iodine in leprosy. Correspondence. *Int. J. Lepr.*, 45(3):299, 1977.

BRAND, M. B. The care of the eye: part 1. *Star*, 37(5):2-3, 1978.

BRAND, M. B. The care of the eye. Part two, *Star*, 37(6):2-3, 1978.

BRAND, M. B. The care of the eye: part three. *Star*, 38(1):10-11, 1978.

BROWNE, S. G. Non-sulfone drugs in the treatment of leprosy. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1.º, Manila, 1977. *Proceedings*. [Tokyo] Department of Health, Republic of the Philippines & Sasakawa Memorial Foundation [1977] p. 66-71.

BROWNE, S. G. The treatment of leprosy today and tomorrow: the Lepra consultation on chemotherapy. *Lepr. Rev.*, 48(4):283-286, 1977.

CHODHURY, S.; KUNDU, S.; GHOSH, S. HAZRA, S. Anabolic steroid as an adjuvant in the treatment of chronic lepra reaction and ENL under corticosteroid therapy. *Lepr. Rev.*, 48(3):181-184, 1977.

Fourteen lepromatous patients in the various stages of reaction with ENL episodes were put on Methandienone in addition to steroid therapy. Methandienone, an anabolic steroid, was found to be useful as an adjuvant and helped both in reducing the dosage of steroid needed, and in making possible the institution of DDS in about 60% of cases.

Authors' abstract

DAVEY, T. F. A day in the life of Yeeranna. A cautionary tale. *Lepr. Rev.* 49(4): 269-274, 1978.

Considering the clinical and bacteriological data of a known untreated patient with early lepromatous leprosy in the setting of personal habits, social behaviour, insect transmission and modern transport, it becomes possible to envisage an ordinary day in the life of this patient in which he becomes the source from which 100 people are infected

with *Mycobacterium leprae* up to a distance of 50 miles from his home. In 1 month this total could become 3000, and if only 1% of these developed clinical leprosy, 30 cases of leprosy would result, of whom possibly 3 could be potentially lepromatous in type.

Author's abstract

DAVEY, T. F. "Release from control" in leprosy. Editorial. *Lepr. Rev.*, 49(1): 1-6, 1978.

DESAI, A. C. & BHIDE, M. B. Hydnocarpus oil as an antileprotic agent in footpad technique. *Lepr. India*, 49(3):360-363, 1977.

Hydnocarpus oil alone and mixed with dapsone in food and fed to the mice infected with *Mycobacterium leprae*, showed inhibition of the growth of the lepra bacilli, both sensitive and resistant to dapsone. There was an additive inhibitory effect of the combination of dapsone and oil on the growth of bacilli.

Authors' abstract

DESIKAN, K. V. Viability of *Mycobacterium leprae* outside the human body. *Lepr. Rev.*, 48(4):231-235, 1977.

DHARMENDRA. Need for inexpensive multi-drug antileprosy regimens for developing countries. Editorial. *Lepr. India*, 49(2):167-180, 1977.

DHARMENDRA. Possibility of an anti-leprosy vaccine being in the near future. Editorial. *Lepr. India*, 49 (4):464-466, 1977.

EKAMBARAM, V. & SITHAMBARAM, M. Self-healing in non-lepromatous leprosy in the area of the Elep Leprosy Control Project Dharmapuri (Tamil Nadu). *Lepr. India*, 49(3):387-392, 1977.

A study to assess the evolution of the disease in non-lepromatous group, who have taken no treatment in a six year period 1970-1975, was undertaken. Among the 714 patients who did not take treatment, only 432 cases (60.5%) could be examined. The majority of these patients (425) had single lesions. The study revealed that nearly 74% of these 'N' patients became self-healed.

Authors' abstract

El Banco Mundial se une a la lucha contra las enfermedades tropicales. *Bol. Of. Sanit. Panam.*, 84(4):357-366, 1978.

El Programa Especial lucha actualmente contra la esquistosomiasis, filariasis (incluyendo la ceguera de los rios), leishmaniasis, lepra, malaria y tripanosomiasis (la enfermedad africana del sueño y la forma americana Ramada enfermedad de Chagas)

Del articulo

FARIA, E. Drug resistance: can 11th HD Congress solve the problem? *Star*, 38(1):2, 16, 1978.

FARIA, E. Education: the missing element in HD control. *Star*, .97(4):10, 16, 1978.

FARIA, E. When can a patient stop treatment? *Star*, 37(5):10, 16, 1978.

FIRKIN, F. C. & MARIANI, A. F. Agranulocytosis due to dapsone. *Med. J. Aust.*, 2(8):247-251, 1977.

A case of agranulocytosis due to dapsone administered for the treatment of acne vulgaris is described. Agranulocytosis has previously been reported after administration of dapsone for other dermatological disorders, leprosy, and prophylaxis against falciparum malaria. The frequency of agranulocytoses when dapsone was used for malaria prophylaxis in United States servicemen in Vietnam was sufficient to result in its withdrawal from use for this purpose. Caution should therefore be exercised in the administration of dapsone for conditions for which less toxic agents are available.

Authors' abstract

GELBER, R. H.; WATERS, M. F. R.; PEARSON, J. M. H.; REES, R. J. W.; McDOUGALL, A. C. Dapsone alone compared with dapsone plus rifampicin in short-term therapy of lepromatous leprosy. *Lepr. Rev.*, 48(4):223-229, 1977.

Previously untreated lepromatous leprosy patients were randomly allocated to treatment with either 100 mg dapsone daily or 100 mg dapsone and 600 mg rifampicin daily for 6 months. Patients receiving rifampicin improved more rapidly, but by 6 months the regimens were equivalent. There was no difference in the incidence, severity, and time of onset of erythema nodosum leprosum (ENL) in the 2 groups. Skin smears and histological sections and mouse foot-pad

inoculation of biopsy specimens from skin, peripheral nerve, skeletal muscle and dartos muscle demonstrated more rapid killing of *Mycobacterium leprae* in those on combination chemotherapy. In the patients treated only with dapsone, viable *M. leprae* were generally found after 3 months of therapy, and frequently even at 6 months. Even on the combined regimens, viable *M. leprae* were commonly detected at 3 months, but only occasionally at 6 months.

Authors' abstract

GUINTO; R. S. Need for immunotherapy in leprosy. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1.<sup>o</sup>, Manila, 1977. *Proceedings.* /Tokyo/ Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation /1977/ p. 72-77.

GHOSH, S.; HAZRA, S. K.; KUNDU, S.; CHOUDHURY, S. Clinical trial with rifampicin in the treatment of leprosy: final report. *Lepr. India*, 49(3):339-343, 1977.

A controlled trial of Rifampicin plus Dapsone had been in progress for two years in the Department of Leprology, School of Tropical Medicine, Calcutta. Interim results of this trial after six months treatment were reported in 1976. The present paper is the final report of the study after two years of treatment. The study reveals that with Rifampicin, ML falls rapidly after six months, but changes in BI are not better than in the DDS group. As a matter of fact, regarding BI, treatment with DDS has given better results as two cases have become negative in the DDS group while no case has become negative in the Rifampicin group. It is, therefore, concluded that clinical improvement with Rifampicin is similar to that with DDS.

Authors' abstract

GYI, K. M.; LWIN, M. M.; MYAING, Y. Y.; OO, K. M.; SHWE, T. Reliability of dapsone self-administration by leprosy patients in the Rangoon area. *Lepr. Rev.*, 49(4):283-286, 1978.

The application of urine tests to assess the reliability of dapsone self administration by leprosy patients in the Rangoon area is described. Dapsone/creatinine ratios were determined on urine samples collected from the patients and the results compared with those from supervised controls. The results

obtained demonstrated that the taking of dapsone by patients attending the out-patient dispensaries of the Rangoon General Hospital Skin Department and both the out-patients and in-patients served by the Htauk Kyant Hospital was good. However patients from Hlegu, Hwawbi, Htauk Kyant and Taik Kyi villages appeared to take dapsone rather irregularly. Possible reasons for their poor compliance are discussed and suggestions are made as to how they might be encouraged to take their dapsone more regularly.

Authors' abstract

HAMILTON, J. M. The place of electrical stimulation in the physiotherapy of leprosy. *Lepr. India*, 49(2):197-206, 1977.

The production of nerve and muscle impulses by faradic and interrupted direct current, and the "Strength-duration curves" plotted for normal, denervated, and partially denervated muscles, are described. The advantages and disadvantages of such electrical stimulation in the testing of recent paralysis, the treatment of recent paralysis, and following tendon transfer surgery, in leprosy patients, are discussed. In the light of these, electrical stimulation is concluded to have only a minor role in the Physiotherapy of leprosy.

Author's abstract

HAYER, A. & ROSENFELD, M. Die Bedeutung von 4,4-Diamino-Diphenylsulfon/ in Kombination mit Isoniazid and Rifampicin *in vitro*. *Prax. Pneumol.*, 29:459-465, 1976.

In the course of a study to develop an efficacious anti-mycobacterial drug combination for the simultaneous treatment of leprosy and tuberculosis, 125 combinations of isoniazid, rifampicin and 4,4-diamino-diphenylsulfone (DDS) in varying concentrations were tested *in vitro* for their anti-mycobacterial activity. 83 combinations produced complete inhibition of growth. In 29 of these DDS was indispensable for completely suppressing growth of a bacterial population of  $3.3 \times 10^8$ , i.e. the combination of the two drugs, isoniazid-cum-rifampicin, did not succeed in fully inhibiting the inoculum. DDS alone, even in concentrations of 16 mcg/ml had no, or hardly any, effects *in vitro* on *Mico. tuberculosis*. The findings show that the properties of an *in-vitro* tested agent may differ according to whether it is tested by itself or in combination with other agents.

Authors' abstract

HAZAMA, S. A study of sulfone therapy in Japan bacillary clearance time (BCT) with sulfone therapy for lepromatous leprosy. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1., Manila, 1977. *Proceedings*. [Tokyo] Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation [1977] p. 53-65.

HUIKESHOVEN, H. & BIJLEVELD, I. Encouraging results from DDS urine analysis among registered leprosy patients in the Wangas, Kenya: an exception that challenges the rule. *Lepr. Rev.*, 49(1):47-52, 1978.

From previous research among the Wangas (Kenya), it appeared to be the standard of medical services, and in particular the leprosy fieldworker's approach, rather than sociocultural factors, which accounts for failure of leprosy control. The present investigation adds weight to these findings. Urine samples were taken from 39 patients of one highly reputable leprosy fieldworker, and analysed for DDS/creatinine ratios. Comparison with data from elsewhere demonstrates their scrupulousness in weekly DDS-taking at home.

Authors' abstract

INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1., Manila, 1977. *Proceedings*. [Tokyo] Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation [1977] 213p.

IYER, C. G. S.; BALAKRISHNAN, S.; RAMU, G. A comparison of low and conventional dosages of dapsone in the treatment of lepromatous leprosy. *Lepr. India*, 49(3):372-386, 1977.

A therapeutic trial using two dosages of Dapsone with a schedule of administration of the drug once a week was undertaken at the Central Leprosy Teaching and Research Institute, Chingleput. Adult males with active lepromatous leprosy who were either previously untreated, or who had no specific treatment for at least three months immediately prior to their inclusion into this study, were the subjects of this trial. Two dosages, viz., 10 mg. per kg. body weight/week, and 3.3 mg. per kg. body weight/week, were employed in this trial. It was found that Dapsone administered orally as a single dose once a week was therapeutically effective in

most of the patients, and improvement, clinical or bacteriological, was directly related to the duration of treatment, irrespective of the dosage of Dapsone. Blood levels of Dapsone in these patients were in general commensurate with the dose of the drug in either group. No adverse effects on any of the visceral functions were encountered during the prolonged use of this schedule of treatment with Dapsone.

Authors' abstract

JACOBSON, R. R. The present status of sulfone therapy of leprosy. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1.<sup>o</sup>, Manila, 1977. *Proceedings*. [Tokyo] Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation [1977] p. 25-36.

JESUDASAN, K. Relapse in leprosy. Correspondence. *Br. Med. J.*, 2(6098): 1356-1357, 1977.

Considering the high costs, multiple drug therapy of patients in many cases may not be feasible. We should note that we do not yet have sufficient results of long term combination drug trials convincing us of their cost effectiveness and whether they will effectively postpone the emergence of drug resistance. The cosmetic unacceptability of B663 and the emergence of resistance to rifampicin complicate the matter. A daily dosage of 100 mg of dapsone from the onset of treatment, combined with good health education and alternative methods of supervised administration, especially for lepromatous patients, as suggested by Allard, Pearson *et al*, and Warren, may be our best defences against the emergence of dapsone resistance for some time to come.

From the letter

LANGUILLON, J. Traitement de la maladie de Hansen par une dose unique de 1,5g de rifampicine associée a une sulfonothérapie continue. *Med. Trop.*, 37(6): 717-719, 1977.

With a single dose of 1,5 g of rifampicine the morphologic index reaches 0 p. 100 in less than two months as well as with a daily or periodic administration of the drug. This action is of great value for mass-campaigns but it must be followed by disulone or clofazimine for a life-long course.

Author's summary

LECHAT, M. F. Introduction to final discussion conclusions and recommendations. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1.<sup>o</sup>, Manila, 1977. *Proceedings*. [Tokyo] Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation [1977] p. 78-85.

LOUVET, M.; SAINT-ANDRÉ, P.; GIRAUDEAU, P. Traitement médical des maux perforants plantaires lépreux. (A propos de 34 observations). *Méd. Trop.*, 36(5): 429-433, 1976.

34 patients suffering from perforating foot ulcers were given titrated extract of *Centella asiatica* combined with antibiotics and plaster boot. The average length of treatment was 45 days and complete cicatrization occurred in 76 per cent of cases.

From authors' summary

MASON, G. H.; ELLIS-PEGLER, R. B.; ARTHUR, J. E. Clofazimine and eosinophilic enteritis. *Lepr. Rev.*, 48(3): 175-180, 1977.

A case of eosinophilic enteritis associated with clofazimine (Lamprene) therapy is reported. A 29-year-old Samoan woman with leprosy developed abdominal pain after 8 years of clofazimine therapy at 600 mg daily. At laparotomy there was nodular thickening of the upper ileum with black-brown pigmentation of the ileal wall, mesentery and mesenteric lymph nodes. Ileal biopsy showed eosinophilic enteritis, and red crystals of clofazimine were present in unstained sections of the small bowel mucosa and submucosa, as well as in mesenteric lymph nodes. It seems that these histological changes and her peripheral eosinophilia represent a reaction to the drug. The potential hazards of long-term high dose clofazimine therapy are stated *again*.

Authors' abstract

NAAFS, B. & WHEATE, H. W. The time interval between the start of anti-leprosy treatment and the development of reactions in borderline patients. *Lepr. Rev.*, 49(2):153-157, 1978.

One hundred patients who developed a reversal reaction were analysed with respect to the time lapse between the start of treatment and the start of the reaction. It was found that in nearly all cases BT and BB patients developed reaction in the first

half year of treatment. For BL patients such an obvious relationship could not be found. The authors express the opinion that the reversal reaction is a natural occurrence in the course of untreated borderline leprosy and that although sulphone treatment may accelerate the reaction it certainly does not cause it.

Authors' abstract

NAIK, S. S. & GANAPATI, R. Regularity of dapsone intake by leprosy patients attending urban treatment centre. *Lepr. India*, 49(2):207-215, 1977.

Dapsone/Creatinine in urine ratios were determined in statistically randomised samples of 965 leprosy patients attending out-patient department of Acworth Leprosy Hospital and 44 inmates of the Hospital. The percentage of irregularity in DDS treatment was found in 43 and 22.6 respectively in out-patients and inmates of the Hospital. The need to assess the possible response for irregularity in treatment is stressed and the hazard of infectious cases remaining without treatment or with incomplete treatment is pointed out.

Authors' abstract

OPROMOLLA, D. V. A. Terapéutica básica de la lepra. In: SEMINÁRIO PANAMERICANO. SOBRE EL CONTROL DE LA LEPROSA, 4.º, Caracas, 1975. Washington, 1977. p. 61-65. (OPS. Publicación científica, n.º 344).

PALANDE, D. D.; SEVERY, C.; RAJAGOPALAN, M. S. Plantar ulcers with osteomyelitis underneath: a bacteriological study. *Lepr. India*, 49(3):322-329, 1977.

39 consecutive cases of plantar ulcers with underlying chronic osteomyelitis admitted in the Sacred Heart Hospital during 1975/1976 were studied for the infecting organisms and their sensitivity to easily available antibiotics. Single organisms was isolated in only 10 cases, the infection in the rest being a mixed one. The commonest organisms were *Staphylococcus*, *Streptococcus* and *Proteus mirabilis*. In a few cases *Pseudomonas* and *E-Coli* were also isolated. Chloramphenicol was the most effective antibiotic in general and Streptomycin the least. 70% of the staphylococcus strains isolated were found to be resistant to Penicillin. Empirical use of antibiotics especially Penicillin and Streptomycin is hence deprecated.

Authors' abstract

PATTYN, S. R. The chemotherapy of leprosy from a microbiological standpoint. *Lepr. India*, 49(4):526-539, 1977.

The increased knowledge concerning microbiology and chemotherapy of leprosy is exposed. Great stress is put on the knowledge of chemotherapy of tuberculosis that has accumulated during the last two decades and the guidelines that are equally valid for the chemotherapy of leprosy. The problems of the chemotherapy of the different forms of the disease are exposed and future lines of research indicated.

Author's abstract

PATTYN, S. R. & COLSTON, M. J. Cross-resistance amongst thiambutosine, thiacetazone, ethionamide and prothionamide with *Mycobacterium leprae*. Letter to the Editor. *Lepr. Rev.*, 49 (4) :324-326, 1978.

This demonstration of cross-resistance with *M. leprae* amongst thiambutosine, thiacetazone, ethionamide and prothionamide emphasizes that these drugs should be considered as alternatives to each other when devising antileprosy drug regimens, and that where past treatment with one of the drugs is known to have occurred, sensitivity testing in the mouse footpad is advisable when considering one of the drugs for inclusion in a treatment regimen.

From the letter

PEREIRA JR., A. C. Avaliação e crítica de medicamentos ensaiados na hanseníase. *Rol. Div. Nac. Dermatol. Sanit.*, 37(2/4) : 31-41, 1977.

The author presents personal observations about the treatment of Hanseniasis, appraising and criticizing the drugs used in 18 patients from Frei Antonio Hospital — Rio de Janeiro. He thinks it is convenient the association Rifampicin plus DDS, makes considerations about sulfone-resistance, therapy of hansenic reaction and suggests other drug associations.

Author's summary

PETERS, J. H.; GORDON, G. R.; MURRAY JR., J. F.; MEYERS, W. M. Metabolic disposition of dapsone in African leprosy patients. *Lepr. Rev.*, 50(1) :7-19, 1979.

In a preliminary study (Study I) of 20 African leprosy patients receiving various doses of dapsone (DDS), we found a distribution of capacities to acetylate DDS that suggested the polymorphism of acetyla-

tion observed in other populations. A more detailed investigation (Study 2) in a subsequent group of 21 patients using sulfamethazine (SMZ) as the primary drug for determining acetylator phenotype as well as DDS clearly demonstrated that African patients exhibit the polymorphism of acetylation of these drugs. As in other populations studied previously, plasma clearance rates of DDS as expressed by the half-time of disappearance were unrelated to acetylator phenotype. Clearance rates or acetylation capacities were also unrelated to age, sex, or body weight of the patients, or to the dose of DDS administered per week. In 6 patients who participated in both Studies 1 and 2, no consistent marked differences in acetylation of DDS or plasma clearance rates of DDS were noted even though the two studies were separated by 11 months. A positive linear relationship between the 4-h level of DDS after the last dose and total dose of DDS per week was observed.

Authors' abstract

PETTIT, J. H. S. Clofazimine pigmentation. Correspondence. *Int. J. Lepr.*, 46(2):227, 1978.

REES, R. J. W. Combined therapy in principle and practice for the control of dapsone resistance. Editorial. *Lepr. Rev.*, 49(2):97-100, 1978.

Relapse in leprosy. *Br. Med. J.*, 2(6092): 914-915, 1977.

SAKURAI, I. & SKINSNES, O. K. Histochemistry of B663 pigmentation: ceroid-like pigmentation in macrophages. *Int. J. Lepr.*, 45(4):342-354, 1977.

Vide Patologia/Pathology

SAINT-ANDRE, P. La stimulation de l'immunité à médiation cellulaire dans la lèpre lépromateuse: état actuel du problème. *Méd. Trop.*, 96(1):80-85, 1976.

SAINT-ANDRE, P.; LOUVET, M.; GIRAUDEAU, P.; SCHLECH, B. Effects de la stimulation de l'immunité cellulaire par les lysats et extraits bactériens dans la lèpre lépromateuse. *Med. Trop.*, 36(2): 137-145, 1976.

STENSTROM, S.; HALLMANS, G.; DE JONGH, A.; DE WAEL, T. Leprosy wound healing with ordinary adhesive tape: a preliminary report. *Scand. J.*

*Plastic. Reconstr. Surg.*, 10(3):241-244, 1976.

The use of adhesive tape as wound treatment in leprosy cases is described and found to be superior to the classical dressing as regards security and facility of application, and for the rapidity and quality of healing. Its use as a "preventive" treatment is stressed. The results of this study seem to justify the following conclusions: the adhesive tape is easy to handle, it heals the leprosy wounds in about half the time necessary for the classical dressing and it costs about 60 times less.

Authors' abstract

TAYLOR, P. M. Clofazimine from broken bottles. Letters to the Editor. *Lepr. Rev.*, 48(4):297-298, 1977.

U.S. LEPROSY PANEL (U.S. — Japan Cooperative Medical Science Program; Leonard Wood Memorial. Spaced clofazimine therapy of lepromatous leprosy. *Am. J. Trop. Med. Hyg.*, 25(3):437-444, 1976.

Patients with previously untreated borderline-lepromatous or fully lepromatous leprosy were treated with one of five clofazimine (B663) regimens: 1) 200 mg daily 6 days per week; 2) 100 mg three times weekly; 3) 300 mg weekly; 4) 600 mg every other week; and 5) 600 mg on 2 consecutive days every 4 weeks. After 24 weeks of treatment, the patients were randomly allocated to treatment either with 200 mg B663 daily 6 days per week (regimen 6) or with dapsone, beginning with a small dosage and increasing over a period of 8 weeks to 100 mg daily 6 days per week (regimen 7). Death of *Mycobacterium leprae* was monitored by mouse inoculation with organisms recovered from skin biopsy specimens obtained at intervals during the first 24 weeks. Killing of *M. leprae* proceeded most rapidly in regimen 1 and 2 patients, least rapidly in the patients of regimes 4 and 5, and at an intermediate rate in regimen 3 patients. Erythema nodosum leprosum (ENL) was no more frequent nor more severe during treatment with any one of the first-24-weeks regimens. ENL was more frequent in regimen 7 than in regimen 6 patients. Pigmentation of the skin, assessed only during the first-24-weeks, occurred in patients of all regimens, but was most marked in regimen 1 patient. No evidence of B663 toxicity was noted. Although all of the first-24-weeks regimens were effective in terms of the rate of killing

of *M. leprae*, greater effectiveness was associated with more frequent administration of the drug. The B663 that accumulated in the tissues did not appear to be available to exert an antimicrobial effect.

*Abstract*

WALTER, J. The present trend of antileprosy chemotherapy and its practical implications. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1<sup>o</sup>, Manila, 1977. *Proceedings*. — Tokyo — Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation — 1977 — p. 19-24.

WATERS, M. F. R. Management of complications of sulfone therapy. In: INTERNATIONAL WORKSHOP ON CHEMOTHERAPY OF LEPROSY IN ASIA, 1<sup>o</sup>, Manila, 1977. *Proceedings*. — Tokyo — Department of Health, Republic of the Philippines & Sasakawa Memorial Health Foundation — 1977 — p. 37-52.

SAINT-ANDRE, P.; LOUVET, M.; GIRAUDEAU, P.; DISCAMPS, G. Essai de différents protocoles thérapeutiques anti-lépreux avec rifampicine initiale suivie d'associations de sulfones et d'immunostimulants. *Med. Trop.*, 37(6):721-729, 1977.

Rifampicine has a strong and rapid effect beneficial to the patient and to the epidemiological risk. A conventional chemotherapy following this starting phase will be enhanced by BCG or levamisole. The authors suggest for in the field treatments the association of rifampicine (500 mg weekly for 2 months) DADDS (1 injection every 75 days) and levamisole (1 tablet 2 days a week).

Authors' summary

SAINT-ANDRE, P.; LOUVET, M.; GIRAUDEAU, P.; DISCAMPS, G.; SCHLECHT, B. Bilan actuel du traitement de la lépre par chimiothérapie et immunostimulation associées. *Med. Trop.*, 38 (3):331-349, 1978.

I. — Treatment with BCG and DDS in lepromatous or borderline patients. II. — Value of BCG added to a prior and long-continued treatment with DDS or rifampicine. III. — Value of various immunostimulants given previously to a

treatment with BCG and chemotherapy. IV. — Value of a lysate of *Neisseria perflava* as an immunostimulant associated with DDS in an initial treatment of lepromatous and borderline patients. V. — Results of a seventeen months treatment of lepromatous and borderline patients with a lysate of *Neisseria perflava* associated with DDS.

The various therapeutic trials reported in these 5 papers demonstrate that hansenian nevritis conventionally treated may show improvement when an immunostimulant (BCG or bacterial lysate or levamisole) is given either previously or in association with DDS or rifampicine or after such a treatment. It has still been observed that two immunostimulants given simultaneously have no good effect and that this association must be discarded.

Authors' summary

SAKURAI, I. Reply/Pettit, J. H. S. Ciofazimine pigmentation. *Int. J. Lepr.*, 46(2):228, 1978.

SANDERS JR., W. E. Rifampin. *Ann. Intern. Med.*, 85 (1):82-86, 1976.

SAÛL, A. Avances en el tratamiento de la lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA, 4<sup>o</sup>, Caracas, 1976. Washington, 1977. p.66-76. (OPS. Publicación científica, n.º 344).

SAÛL, A. Lepra de Lucio. V. Epidemiología y terapéutica. *Dermatologia: rev. mex.*, 22(2):182-188, 1978.

*Vide Epidemiologia/Epidemiology*

WATERS, M. F. R.; LAING, A. B. G.; REES, R. J. W. Proven primary dapsone resistance in leprosy — A case report. *Lepr. Rev.*, 49 (2):127-130, 1978.

A patient is described who at the age of 10 years developed tuberculoid leprosy; during the next 2 years while on oral dapsone therapy, his condition deteriorated and he became lepromatous. Both clinically, and experimentally by drug sensitivity testing in mice, his strain of *Mycobacterium leprae* was found to be fully resistant to dapsone. His father was a known case of secondary (acquired) dapsone resistance. The potential medical and economic importance of primary sulphone resistance is discussed.

Authors' abstract

CIRURGIA, FISIOTERAPIA, REABILITAÇÃO FÍSICA  
SURGERY, PHYSIOTHERAPY, PHYSICAL REHABILITATION

ANTIA, N. H. & PANDYA, N. J. Surgical treatment of the nasal deformities of leprosy. *Plastic Reconstr. Surgery*, 60(5):768-777, 1977.

We present a retrospective review (from 1959 to 1975) of 86 patients who were treated surgically for nasal leprosy deformities at the Tata Department of Plastic Surgery. The postnasal skin graft inlay was the most frequent procedure, and it seems best suited for these repairs in developing countries where the patients often present late with major deformities. For minor and early nasal deformities, the insertion of a bone graft or a silicone rubber implant is recommended.

Authors' summary

ANTONY, P. Polambakkam splint for treatment of plantar ulcer in leprosy. *Lepr. India*, 49(4):521-525, 1977.

An open type of short leg splint is described and illustrated for the treatment of plantar ulcer in leprosy. Its fabrication, method of application, advantages and disadvantages are discussed as compared to the other methods of immobilisation. In our short experience we have found that with the use of this splint, ulcers heal in a period of about 6 weeks and in many cases even earlier than this period.

Author's abstract

ARVELO, J. J. Rehabilitacion, prevención y tratamiento de los enfermos de lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA. 4.º, Caracas, 1975. Washington, 1977, p.119-140. (OPS. Publicacion científica, n.º 344).

BOVET, J. L. Action de la décompression externe et de l'épineurotomie dans le traitement des névrites lépreuses. *Med. Tropicale*, 87 (4):497-500, 1977.

The author reports his own experience in Meshed (Iran). He has performed 32 neurolyses (ulnar nerve: 15; median nerve: 10; lateral popliteal: 7). The neurolyse of the ulnar nerve has been completed 14 times by extensive anterior transposition and once by epitrochleectomy followed by smooth transposition. He analyses his results on pain, muscular weakness and anaesthesia and

considers surgery in leprosy neuritis as a semi-emergency which can prevent, if performed early enough the apparition of deformities and disability.

Author's summary

CARAYON, A. & GIRAUDEAU, P. La neurolyse fasciculaire dans la lèpre 20 ans après (1957-1977). *Med. Trop.*, 37(6):731-755, 1977.

A better knowledge of the pathological and physiopathological nervous involvement in leprosy and a more extended experience of fascicular neurolysis have proved the value of this procedure proposed by Carayon in 1957. The opposed opinions are discussed and the authors give the strict rules required for a good indication and a good surgical technic according to the kind of damage and to the nerve concerned.

Authors' summary

CARAYON, A. & TUBIANA, R. L'influence de Zancolli sur la réhabilitation de la main lépreuse. *Med. Tropicale*, 37(4):481-495, 1977.

Zancolli has devised and achieved several surgical procedures of rehabilitation of the hand in leprosy: 5 of them resort to the activation of the intrinsic muscles and 2 are palliative technics for thumb paralysis. Some passive procedures capsulorrhaphy and tenodesis which are today less often used, lead to a best understanding of the dynamic of the flexors. The 3 Zancolli's active procedures for proximal activation are original and interesting. They give some hyperextension of the finger and a good grip. But their indications must be carefully fixed after many follow-up studies. The 3 technics for thumb paralysis are also of great value, specially that which uses 2 motor muscles (1968).

Authors' summary

CARAYON, A.; GIRAUDEAU, P.; DISY, P. La composante neuro-vasculaire dans les ulcères plantaires de la lèpre. Nouvelle approche. *Med. Trop.*, 88(4):453-478, 1978.

Vide Patologia/Pathology

FRITSCHL, E. P. A new operation hand splint for intrinsic replacement tendon transfers. *Lepr. Rev.*, 50 (1):21-24, 1979.

GONELLA, H. A.; FINAMOR, A. C.; SILVEIRA, L. M. Rinoplastia na lepra. *Rev. Bras. Cir.*, 67(9/10):283-288, 1977.

Os autores apresentam a classificação das deformidades nasais na lepra, baseados em uma experiência de 30 anos, focalizando as diferentes técnicas utilizadas na correção destas deformidades.

Resumo dos autores

HALL, G. A review of drop-foot corrective surgery. *Lepr. Rev.*, 48(3):186-192, 1977.

The late results of 65 tendon-transfer operations for drop-foot are reviewed, especially in relation to the various surgical techniques employed. It is concluded that from the patient's point of view range of movement was more important than gait. For young patients with good pre-operative mobility, single-tendon transfers were preferable, but for patients with inverted, deformed or stiff feet, where range of movement was less important than stability, the two-tendon Carayon techniques could be preferable.

Author's abstract

MUKHERJEE, S. M. Care of trophic ulcer. *Lepr. India*, 49(3):408-413, 1977.

NAMASIVAYAM, P. R. Foot-wear. *Lepr. India*, 49(3): 406-407, 1977.

OEHMEN, M.; LORENZETTI, E.; MANDETTA, H.; FIGUEIREDO, A. Reabilitação no Sanatório São Julião Campo Grande — MT. *Bol. Div. Nac. Dermatol. Sanit.*, 87(2/4):89-96, 1977.

Breve relato histórico do hospital. Hanseníase e reabilitação. A reabilitação no Sanatório São Julião.

PALANDE, D. Notre experience de la chirurgie de la névrite lépreuse. *Med. Tropicale*, 37(4):501-503, 1977.

The author reports his own experience of the surgery of neuritis in leprosy and specially that of the ulnar nerve. If early applied with good indications and a careful procedure, the surgical treatment gives a high frequency of sensory and motor recovery, preventing deformities and rehabilitation.

Author's summary

PALANDE, D. D. The role of physiotherapists in dynamic tendon transfer. *Lepr. India*, 49(4):640-644, 1977.

Hansen. *Int.* 4(2):153-209, 1979

PANDYA, N. J. Surgical decompression of nerves in leprosy. An attempt at prevention of deformities. A clinical, electrophysiologic, histopathologic and surgical study. *Int. J. Lepr.* 46(1): 47-55, 1978.

Forty-five leprosy patients were electively subjected to extraneural decompression and medial longitudinal epineurotomy in anticipation that relief from compression may favorably alter the course of the disease by retrieving reversibly damaged nerve bundles and preventing further progression of disease. Neurolysis was performed in 69 nerves, including the ulnar, median, lateral popliteal and posterior tibial. The period of follow-up was up to three years. Excellent sensory recovery was seen in most patients while motor recovery was less predictable. The recovery seen was better in those patients taking treatment early and also at the age the surgery was carried out. Motor damage appeared more severe in the 10-20 year age group. Most of the beneficial effects can be explained on the basis of increased vascularity due to relief from extraneural and intraneural compression.

Author's summary

PANDYA, N. J. & ANTIA, N. H. Elective surgical decompression of nerves in leprosy — technique and results: a preliminary study. *Lepr. Rev.*, 49 (1): 53-62. 1978.

Elective surgical decompression by extraneural and medial longitudinal epineurotomy was carried out in 45 patients. The ulnar nerve was the commonest, followed by the lateral popliteal, median and posterior tibial which comprised 69 nerves which were biopsied. The maximum period of follow-up was up to 3 years with a mean of 25 months. Thirty-three patients showed sensory recovery, 3 failed to recover and only 1 deteriorated. Motor recovery was less predictable and seen in 26 patients. Seven failed to show any improvement and 1 deteriorated. Six patients with no sensory and 9 with no motor loss showed no adverse effects when followed for 3 years. The recovery was better seen in the group seeking early treatment and at an earlier age. It is felt that the beneficial effects may have resulted from the increased vascularity and improved venous return due to relief from the extraneural and intraneural compression.

Authors' abstract

RUGGIERI, F. S. Surgical polyneuropathy in Hansen's disease. *Star*, 37(4):4, 1978.

SCHIFFERLI, R. Cours de physiothérapie et d'éducation sanitaire pour lépreux. *Acta Leprol.*, (71/72):1-44, 1978.

"Ce cours a été élaboré à l'intention de tout le personnel médical travaillant dans des services de lépreux et de tous ceux qui s'intéressent aux problèmes de la lèpre ou qui s'occupent de la réhabilitation des lépreux. Il s'adresse plus précisément aux infirmiers spécialistes de la lèpre servant dans des postes de brousse. Il contient des données simples, théoriques et pratiques, de physiothérapie et d'éducation sanitaire pour lépreux.

Préface de l'auteur

SKINSNES, O. K. The need for long-term follow-up of surgical reconstruction in leprosy. Editorial. *Int. J. Lepr.*, 45(3):291-292, 1977.

VAIDYANATHAN, E. P. & ANTHONY, P. Extensor pollicis brevis transfer to flexor digitorum sublimis in Hansen's disease — Follow-up study for four years. *Lepr. Rev.*, 49(1):63-68, 1978.

Five cases of tuberculoid leprosy with paralysis of thumb are studied. Extensor pollicis brevis was anastomosed with ring finger, flexor sublimis at different levels, and cases were assessed. Case reports, assessments and advantages of the operation are presented.

Authors' abstract

VAN DROOGENBROECK, J. B. A. & NAAFS, B. Étude comparative d'une série de nerfs lépreux décomprimés chirurgicalement par rapport aux nerfs controlatéraux non opérés. *Med. Trop.*, 37(6):771-776, 1977.

In this paper preliminary results are presented of nerve decompression in which nerves are followed up with the nerve index for one year and more. Improvement in operated nerves is shown indicating that mechanical factors may be attributed to the nerve damage. The authors conclude that there are certainly indications for nerve release following the methods described by Carayon and give some clinical indications for this surgery. In a serie of more than 100 nerve releases only four did not respond to surgery and continued their deterioration as before the operation. Comparison of the improvement between operated and non-operated nerves in patients under antileprosy and immunosuppressive therapy is in favor of the operated nerves.

Authors' summary

VAN DROOGENBROECK, J. B. A. & NAAFS, B. Neurolyse et artériolyse du nerf tibial postérieur dans la lèpre: étude comparative de leur action dans les ulcères plantaires atones. *Med. Trop.*, 37(6):777-779, 1977.

In an approach of neuritis treatment in leprosy, more than 130 nerve releases were performed with 26 concerning the posterior tibial nerve, and completed with arteriolyse. From these 26 releases 12 were performed for neuropathic disorders, and 14 for chronic ulcers. Eleven patients remained ulcer free after one year (75 p. 100), while in a control group this proportion was only about 30 p. 100. The difference is significant.

Authors' summary

WARREN, G. Let's keep those feet walking. *Star*, 87(5):4-5, 16, 1978.

## EPIDEMIOLOGIA, PREVENÇÃO EPIDEMIOLOGY, CONTROL

ASCHHOFF, M. Integrating general health care into a program of Hansen's disease control. *Star*, 88(1):4-5, 1978.

BECELLI, L. M. La vaccination par le BCG dans la prophylaxie de la lèpre. *Med. Tropicale*, 37(4):371-378, 1977.

Progress in the microbiological studies on *M. leprae*, especially on leprosy transmis-

sion to armadillos, should lead to the preparation of a specific vaccine. This would have a greater epidemiological impact if able to protect the small fraction of the population poorly prepared (genetically?) to deal with *M. leprae*, thus reducing the incidence of lepromatous and borderline leprosy. Perhaps even a specific vaccine may not be able to give this protection and/or prevent leprosy in already infected

individuals. An optimistic forecast of the vaccine potentiality should be avoided because of this and also of the relative resistance of most of the inhabitants in endemic areas, and of certain epidemiological aspects in regions of high and low endemicity. The magnitude of the immunizing power of the vaccine, its potential effect on the leprosy problem and its public health importance should be determined in long-term field trials in different epidemiological situations.

*From author's summary*

BEDI, B. M. S.; NARAYANAN, E.; SREEYATSA; KIRCHH'EIMER, W. F. & BALASUBRAHMANYAN, M. Dispersal of *Mycobacterium leprae* by leprosy patients while breathing. *Ann. Indian Acad. Med. Sci.*, 12:1-5, 1976.

*Vide Bacteriologia/Bacteriology*

BELDA, W. Aspectos epidemiológicos da hanseníase na infância. *Clin. Pedit.*, 2(6):4-12, 1979.

Agente etiológico. Características básicas. Características do suscetível. Transmissão. História natural da doença Aspectos na infância. Hanseníase tuberculíde. Hanseníase virchoviana. Diagnóstico. Aspectos epidemiológicos. Medidas de proteção.

BEYLOT, C.; MORETTI, G.; BEYLOT, J.; BIOULAC, P. & DOUTRE, M. S. La lèpre en France. Problèmes épidémiologiques, diagnostiques et thérapeutiques. Notre expérience bordelaise. *Bordeaux Médical*, 10(21):1423-1432 1977.

Concerning some 17 cases of leprosy observed in Bordeaux over ten years, the authors consider the particular problems posed by this complaint in France. On the epidemiological plane, there has been an increase in the number of cases of the illness, but the origin of such leproses has altered over the last ten years, due to political and sociological changes. Since the end of the colonial era, there are fewer cases among Frenchmen of metropolitan France, having lived in overseas countries. On the other hand, due to the constantly increasing need for labour, there are more and more cases among Frenchmen of the Overseas Departments, and in immigrant workers. Such cases are above all lepromatous forms, and therefore contagious. The diagnosis can prove to be difficult because of the very particular

psyche of these patients, who are still imbued to a greater or lesser degree with the terror of leprosy dating from the Middle Ages, and who often seek to conceal all or part of this illness from those around them, and from their doctor. For the same reasons, it is very difficult to get such patients to regularly follow the prolonged treatment necessary for their recovery. Lepers are particularly difficult patients to follow, as they often escape from the vigilance of one Service, only to reappear one or two years later in another. This lack of discipline is obviously detrimental to the therapeutic results. From these personal cases, the authors recall the various classifications of leprosy and the reactional conditions, at present defined above all according to immunological criteria.

*Authors' summary*

BRASIL. Ministério da Saúde e de Previdência e Assistência Social. Portaria interministerial n.º 3, de 27-10-78, publicada D.O. União de 6-11-78. "Diretrizes de ação conjunta no controle da hanseníase". Apud *JAMB*, 20(939):8, 1978.

BROWNE, S. G. La situation actuelle de la lèpre dans le monde. *Méd. Tropicale*, 87(4):367-369, 1977.

Any program against leprosy will meet with difficulties similar to those encountered in the statistical evaluation of other great communicable diseases. But, in the case of leprosy, psychological, economical and even clinical factors amplify these problems and make difficult to appreciate the effect of the various implemented programs.

*Author's summary*

BRUBAKER, M. L. Estado de la lepra en las Americas. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA. 4.º, Caracas, 1975. Washington, 1977. p.84-98. (OPS. Publicación científica, n.º 344).

CARAYON, A. Effets de la malnutrition sur la propagation, la gravité et les infirmités de la lèpre. *Med. Tropicale*, 87(4):395-404, 1977.

The malnutrition due to a low-level of proteino-caloric in-put may affect the immunological status of leprosy patients through changes in immunoglobulins, specific antibodies and cell-mediated responsivity.

It seems that lipids too may have various and important effects; the 3 fatty acids of chaulmoogra and the lipidic components of the myeline and of the skin may lead to new studies.

Author's summary

COKHALE, S. D. Priority to children. Editorial. *Lepr. India*, 49(3):320-321, 1977.

Vide Psicologia/Psychology

GANAPATI, R.; REVANKAR, C. R.; CHRISTINA; ROMANO. Associated cases in the families of school children with leprosy. *Lepr. Rev.*, 49 (1):43-46, 1978.

The screening of 190 families in which children suffering from leprosy discovered through school surveys were present, yielded a total of 41 cases. Though the prevalence rate among the contacts was 44 per thousand, only in 14% of the families visited, another associated case could be found, and only in 2 instances out of 27 families, the associated case belonged to L type. The school surveys as well as contact examination yielded predominantly cases belonging to non-lepromatous type mostly with single lesions whose contribution to the pool of infection in the community is questionable.

Authors' abstract

GODAL, T. The Clayton Memorial Lecture, 1978: "Is immunoprophylaxis in leprosy feasible?" *Lepr. Rev.*, 49(4): 305-317, 1978.

The size of the problem. Present methods of leprosy control. If developed, is a vaccine likely to have any place in a leprosy control programme? Is immunoprophylaxis, if applied, likely to have any impact on the infectious reservoir of leprosy? Technical considerations. Conclusions.

HIRSHMAN, J. H. Communicable disease in the South Pacific Island. *Med. J. Australia*, 2:758-760, 794-798, 1976.

Leprosy poses little real risk to Australia and New Zealand and neither does filariasis.

From the abstract

HUBSCHER, S.; GIRDHAR, B. K.; DESIKAN, K. V. Discharge of *Mycobacterium leprae* from the mouth in

lepromatous leprosy patients. *Lepr. Rev.*, 50(1):46-b0, 1979.

Vide Patologia/Pathology

KAPOOR, P. L. & RAMCHANDANI, P. J. Stratégie du dépistage de la lèpre en zones urbaines. *Méd. Tropicale*, 37(4): 379-388, 1977.

This paper outlines the various methods of an early case detection of leprosy patients in urban areas. The relative merits of these methods are discussed after comparison between data obtained in rural and in urban areas. School surveys, specially of children above 10 years and slums surveys are priorities when resources do not allow a total population survey. The importance of an intensive publicity and a good location of the leprosy facilities is emphasized.

Authors' summary

LANGUILLON, J. La lutte contre la lèpre. Cours des infirmiers spécialistes de la lèpre. *Acta Leprol.*, (71/72) :1-75, 1978.

Ces "directives pour la lutte anti-lépreuse" on été écrites pour eux et nous traiterons successivement de ce qu'est la lèpre, comment on fait son diagnostic, comment on la traite, puis nous dirons ce qu'est la lutte contre la lèpre sur le terrain, comment tenir l'importante comptabilité de la lèpre et nous terminerons par le rôle majeur que doit jouer l'infirmier spécialiste de la lèpre dans un secteur du Service des Grandes Endémies. Pour rédiger ce fascicule, je me suis inspiré de mon expérience clinique, thérapeutique et épidémiologique concernant la lèpre, et des idées de l'O.O.O.G.E. et de l'O.C.E.A.C. concernant la campagne contre la lèpre.

De l'avant-propos de l'auteur

LECHAT, M. F. Sulfone resistance and leprosy control. Editorial. *Int. J. Lepr.*, 46(1) :65-67, 1978.

LECHAT, M. F. The realities of HD control in the field. *Star*, 37(4):8-16, 1978.

LECHAT, M. F.; VELLUT, C.; MISSON, C. B.; MISSON, J. Y. Application of an economic model to the study of leprosy control costs. *Int. J. Lepr.*, 46(1):14-24, 1978.

The effectiveness of various control methods for reducing the incidence of leprosy have been tested over 20 years and compar-

ed with predictions made using the present current control method (early diagnosis and mass treatment). Specific vaccination of the whole population, a control measure yet to be developed, has been identified as the most effective strategy in the long run.

A cost-effectiveness analysis has been carried out for three indicators, annual incidence annual prevalence and cumulative prevalence as 20 years, using cumulative costs. The analysis indicates that specific vaccination at high levels of coverage is the most effective method for controlling incidence in the long term. Provided the cost of the vaccination campaign during the first years (roughly fourfold the funds required for carrying out the current strategy) can be supported, specific vaccination is also the most cost-effective method where a high level of effectiveness is required. Specific vaccination is still the most advantageous method if prevalence or cumulative prevalence are taken to indicate the effectiveness of leprosy control. The BCG-type of vaccination is not only less effective, it is also less cost-effective.

Reducing the rate of abandonment of treatment (which in the model has been simulated by increasing the rate of resuming treatment) and earlier detection both appear as useful methods under conditions of severe budgetary constraints. Their ultimate effectiveness in terms of incidence reduction is, however, very small. As expected, segregation is costly and ineffective compared with other methods.

In each simulation, the cost of treating the backlog of patients already ill or infected (incubating) at the time the control measures are initiated is high. Methods aimed at reducing transmission, such as vaccination, early treatment or segregation, have long-delayed effects on the cost even if incidence is reduced. The major cost item in these control measures is the prolonged or even lifelong treatment of patients.

The development of fast-acting, effective treatment is likely to be the only way to reduce the cost in the short term. Thus, in addition to research aimed at developing a vaccine for leprosy, resources should also be allocated for developing new therapeutics.

#### Authors' summary

LUCHA contra la lepra. Examen de las actividades de cooperación técnica y fondos disponibles. *Cronica de la OMS*, 81(12):664-670, 1977.

Directrices para la lucha antileprosa. Cooperación técnica en el sector de la lepra. Estudios operativos y actividades de inves-

tigación. Fondos para actividades antileprosas; colaboración con otras organizaciones y organismos.

McDOUGALL, A. C. Leprosy control in 1978 and beyond: who is to do the work? Editorial. *Lepr. Rev.*, 49 (3):183-185, 1978.

McDOUGALL, A. C. On the mode of transmission of *Mycobacterium leprae*. Letters to the Editor. *Lepr. Rev.* 48(4): 295, 1977.

McDOUGALL, A. C. The nasal excretion of leprosy bacilli. Editorial. *Lepr. Rev.*, 49(4): 265-267, 1978.

*vide Patologia/Pathology*

McDOUGALL, A. C. & ROSE, P. Integrated leprosy control in Guyana. *apud Lepr. Rev.*, 49(4): 328, 1978.

MEHRA, N. K.; DE VRIES, R. R. P.; VAIDYA, M. C.; GUPTA, M. D.; VAN ROOD, J. Family studies to demonstrate HLA linked control of infection with *M. leprae*. In: ASIAN SYMPOSIUM ON HISTOCOMPATIBILITY ANTIGENS IN HEALTH AND DISEASES AND ITS BIOLOGICAL SIGNIFICANCE. New Delhi, 1977. p. 17.

Recent evidence indicates that the products of the HLA system have an important function in the immune response to infectious agents. Accordingly, genetic factors have been thought to influence the immune responsiveness and disease manifestations after infection with *M. leprae*. Following our population studies on HLA and leprosy, we undertook family studies with patients obtained from Wardha (India), an area endemic for leprosy. The data from these studies indicate that at least susceptibility to tuberculoid leprosy is controlled by HLA-linked genes. Further, B cell typing for the DR determinants have suggested an association of DRW2 with susceptibility genes for leprosy, particularly the tuberculoid type and recessivity of these genes. The latter finding was further confirmed when sera from normal mothers or wives in these families and also in the randomly selected couples did not reveal any characteristic pattern with leprosy or leprosy type. The significance and implications of these findings will be discussed.

Authors' abstracts

MEHTA, J. M. Poona Urban District leprosy control programme. *Lepr. Rev.*, 48(3): 196-199, 1977.

MOTTA, C. P.; BLUM GUTIERREZ, E.; SILVEIRA, A. R.; MOLINA, E.; BOGAERT, H. Sistemas de control de la lepra. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA, 4°, Caracas, 1975. Washington, 1977. p. 101-118. (OPS. Publicación científica, n.º 344).

NARAYANAN, E.; SREEVATSA, A.; RAJ, A. D.; KIRCHHEIMER, W. F.; BEDI, B. M. S. Persistence and distribution of *Mycobacterium leprae* in *Aedes aegypti* and *Culex fatigans* experimentally fed on leprosy patients. *Lepr. India*, 50(1): 26-37, 1978.

Laboratory reared *Aedes aegypti* and *Culex fatigans* were experimentally fed on untreated lepromatous leprosy patients and the proboscides, guts and faeces of the mosquitoes were examined at 12 hour intervals to determine the persistence and distribution of *Mycobacterium leprae*. In *A. aegypti*, bacilli persisted in proboscis till 156 hours, in gut 96 hours, and in faeces 72 hours after feeding. In *C. fatigans* — proboscides 144 hours, gut 96 hours and faeces 72 hours after feeding. In *A. aegypti* solid bacilli were present in proboscis upto 96 hours, in gut 48 hours and in faeces 42 hours after feeding. Corresponding figures for *C. fatigans* were: 144 hours for proboscis, 48 hours for gut, solid bacilli being absent in faeces. The results are discussed from the point of view of arthropod transmission.

Authors' abstract

NIGAN, P.; VERMA, B. L.; SRIVASTAVA, R. N. Leprosy — a clinico-epidemiological study in a rural population of Bundelkhand. *Lepr. India*, 49 (3) :349-359, 1977.

NOORDEEN, S. K. Long term effects of chemoprophylaxis among contacts of lepromatous cases: results of a 8 1/2 years follow-up. *Lepr. India*, 49(4):504-509, 1977.

An eight and half years follow-up was carried out of contacts of lepromatous cases who had treatment with either Dapsone or placebo earlier, and whose 'treatment' had been terminated following their index cases becoming inactive. The declaration of inactive state was based on bacteriological negative

state maintained for at least three years as verified through six half yearly skin smear examinations. The follow-up showed that contacts who were originally taking Dapsone continued to receive protection even after termination of treatment, as compared with the controls. It is difficult to explain this 'carry over' benefit from chemoprophylaxis, unless it is hypothesised that contacts studied consisted mostly of infected persons without manifest disease and chemoprophylaxis contributed to the aborting of infection in those persons without at the same time interfering with the development of immune capability.

Author's conclusions

NOORDEEN, S. K. The need for operational studies in leprosy control. Editorial. *Lepr. India*, 49 (1) :6-7, 1977.

OMS, Geneva. Quinto relatório do Comité da OMS de Peritos em hanseníase. Epidemiologia da hanseníase. Estratégia da luta anti-hansênica. Elaboração e gerência dos Programas de luta contra a hanseníase. Pesquisa. *Bol. Div. Nac. Dermatol. Sanit.* 37(2/4) :79-87, 1977.

PEDLEY, J. C. The hypothesis of skin to skin transmission. Letter to the Editor. *Lepr. Rev.*, 48(4):295-297, 1977.

RAMPEN, F. The dermatological clinic in a leprosy control scheme: 10 years' experience in Malawi. *Lepr. Rev.*, 49(2): 141-147, 1978.

A few years after starting a leprosy control scheme in the southern part of Malawi, it became clear that increasing numbers of patients with general dermatological conditions were being referred to the leprologist for diagnosis and treatment. Weekly clinics were therefore established in the 2 urban centres of the control area, and between 1968 and 1975 over 9000 new patients were seen. This paper describes the main conditions diagnosed during these years, listing those of one recent year (1975) in detail. Many curable conditions were seen and the clinics were also a valuable source of new cases of leprosy. The role of the general skin clinic within a leprosy control programme (and in a country with nearly 6 million people and no dermatologist) is discussed, and it is concluded that it may be of considerable diagnostic, therapeutic and research value.

Author's abstract

RAMASEETA, T.; SAMPUTTAVANICH, S.; OCHASANENDHA, P.; ITO, T. Results of five years of integration of leprosy control into the Provincial Health Service of Phuket Island, Southern Thailand. *Lepr. Rev.*, 48(4):261-268, 1977.

Five years experience of integration of leprosy control in Phuket Island Southern Thailand, showed that known cases of leprosy had increased by 251% from 0.77 to 1.93 per thousand, through the efforts of local health workers, and by 318% from 0.75 to 2.45 per thousand on a second survey conducted in the fifth year of integration. Local health workers detected 43% of total registered cases, remaining cases being found by a specialized leprosy survey team. The accomplishment of 3 main targets in leprosy control, namely treatment, contact examination and bacteriological smears had gradually declined by 35% from 66 to 31% indicating a great need for better supervision and motivation. Adequate survey before integration was also necessary, followed by regular supervision and field guidance to promote proper efficiency and effectiveness of leprosy control.

Authors' abstract

RATARD, R. C. & BRAVO, L. L. The epidemiology of leprosy in the New Hebrides. *Lepr. Rev.*, 49 (1):31-42, 1978.

This epidemiological study of leprosy in the New Hebrides was based on a survey of the population (41% coverage), and the results of 20 years of case finding. The annual incidence of new cases is 0.45 per thousand. Thirteen percent are of lepromatous type. Leprosy predominates among males. The incidence of leprosy cases increases with age until the age group 30 to 44. Leprosy is concentrated in families, in villages and in foci in which the prevalence is high. The prevalence is also very high among contacts. Most of the foci are well under control but some are still developing. In some areas there is a possibility of a small outbreak occurring. Leprosy being one of the major public health problems in the New Hebrides, a careful and selective control programme is indispensable.

Authors' abstract

SAHA, K. Vaccine development in leprosy. Correspondence. *Int. J. Lepr.* 45(3): 297-298, 1977.

SAÚL, A. Lepra de Lucio. V. Epidemiología y terapéutica. *Dermatología: rev. mex.*, 22(2):182-188, 1978.

The author studied the epidemiological data in 25 cases of Lucio's leprosy. He made also an inquiry among 16 leprologists from and central regions of Mexico. Confirmation of well known figures was obtained. Diffuse leprosy is more frequent in the State of Sinaloa (80% of the cases) and after it came Colima, Jalisco and Michoacán. From the 25 cases studied information was obtained about 19 another cases related to them. These 25 patients had 135 contacts, and half of them were examined but only one new patient was discovered. Most of the 25 cases had been discovered by dermatological consultation. These patients were treated by DDS. Some of them by a combination of DDS with rifampicine. Lepra reaction with erythema nodosum appeared in 15 of them. None of them developed Lucio's phenomenon during the treatment. Author's summary

SCHULZ, E. J. Westfort Institution remains only HD treatment center in Republic of South Africa. *Star*, 37(4) :5, 1978.

SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPRO. 4.º, Caracas, 1975. Washington, OPS, 1977. 153p. (OPS. Publicación científica, n.º 344).

SMITH, D. G. & GUINTO, R. S. The association between age of onset and mortality in lepromatous leprosy. *int. J. Lepr.*, 46(1) :25-29, 1978.

A life-table approach was employed to estimate expectation of survival of the non-lepromatous members of a population in which leprosy is endemic. The observed survival of members who developed lepromatous leprosy at different ages was compared with that expected after having attained the age at which onset occurred. Those whose onset occurred at later, as opposed to earlier ages more frequently lived their expected remaining years of life. Survival was not decreased in those whose onset occurred after age 20. It is hypothesized that those whose onset occurs after maturity are more resistant to complications arising from infection with *M. leprae* which can lead prematurely to death.

Authors' summary

TAUIL, M. C.; & AZEVEDO, A. C. Participação comunitária nas ações de saúde numa comunidade amazônica do Brasil. *Bol. Of. Sanit. Panamer.*, 83(6):545-555, 1977.

WESTERN, K. A. Epidemiología y vigilancia de las enfermedades infecciosas. In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPRO, 4.º, Caracas, 1975. Washington, 1977. p.79-83. (OPS. Publicación científica. n.º 344).

PSICOLOGIA, EDUCAÇÃO, REABILITAÇÃO SOCIAL  
 PSYCHOLOGY, EDUCATION, SOCIAL REHABILITATION

AGGARWAL, P. K. Rehabilitation problems of leprosy patients. *Journal Rehab. Asia*, 18(4):40-42, 1977.

Though, generally speaking, the sharpness of the old prejudice is gone, the modern outlook is not in evidence in the measure in which it should be. The society still holds the notion — once a "leper", always a "leper", it still believes that leprosy is incurable, highly infectious and hereditary, it is a "maharog", and some may still think, like Charak said, it is a punishment by God for our past sins. This stigma gives rise to a sense of despondency in us, as well as provides a readymade beautiful excuse for many of our shortcomings. It is this stigma which leads to enforced concealment of disease which untreated becomes more advanced and leads to infection of other family members.

From the article

ANTIA, N. H. The people we fail to reach. *Lepr. Rev.*, 48(3):155-157, 1977. (Editorial).

Leprosy is a disease which affects the body of the patient and the mind of the public. It carries a greater stigma than any other disease and the continued use of the word "leper" with its evil connotation is still commonly used in most societies. Can we truly blame the public when the majority of the medical profession continue to treat it as a disease apart from all others? The age-old fear of leprosy was the result of the unsightly deformities and the fact that no cure was available. Today leprosy is curable, deformities can be prevented and if they should occur can be corrected by reconstructive surgery.

Nevertheless the age-old fear and stigma continues to persist and is probably the single most important factor which has prevented the control of leprosy, despite well planned national programmes based on effective drugs and modern scientific knowledge. Despite the expenditure of vast sums of money we realize that only a third of the estimated number of persons in the world suffering from leprosy are actually registered, and surveys demonstrate that of these less than 60% take regular if any treatment after diagnosis. At the end of 2 years probably another half drop out or become irregular. How can any disease be controlled, however effective the drugs, if the majority of patients do not take the treatment necessary

for the cure? This is a problem common to many other chronic diseases like tuberculosis and filariasis.

Unfortunately these important social and psychological aspects of the disease receive scant attention in the planning of most major programmes, and the emphasis continues to be on "early detection and treatment".

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These and other similar experiences have demonstrated that social and psychological factors are probably more important in leprosy control than the medical component of the programme. While it is not suggested that the medical aspect of the disease is unimportant, the medical profession who advise governments and plan most programmes have failed to realize the relative importance of the above factors which are hence generally given only token recognition, as is reflected in most budgets for leprosy control.

There are many booklets, posters, slide and other educational materials which have been made available for leprosy in the last 2 decades. Public lectures are given, as well as radio talks and press publicity. Why is it then that the public attitude towards the disease has not shown any significant change? Unfortunately much of this educational effort, though well intentioned, is ill conceived and poorly executed. The appeal is often emotional and based on pathos rather than directed towards a more intellectual approach commensurate with modern scientific knowledge about this disease. Sometimes this is excused on the plea that only thus can funds be raised. Why is it that a grossly deformed victim is the usual picture rather than a cheerful young girl with a small skin patch? The latter is certainly more true to reality. The more factual presentations are usually restricted to small meetings, where the preacher preaches to an audience already converted, or through posters in leprosy institutions.

A change in public attitude can be achieved only by a sustained campaign of education using mass media of publicity. The radio, television and the press are potent but not the only available media. The schools, political platforms, and word of mouth are also important tools in the art of communication, education and persuasion. All these techniques are being used daily whether for the sale of soap or matches, for the sale of drugs by pharmaceutical firms or ideologies

by politicians, and they reach the remotest village. That these methods can be employed in the field of health has been demonstrated by the campaigns for family planning and smallpox and poliomyelitis eradication.

From the editorial

BLOOMBAUM, M. & GUGELYK, T. Two sociologists' views. *Star*, 37(5):1, 16, 1978.

Our research experiences to date lead us to some observations regarding the Hale Mohalu issue, even though our research is not primarily directed at and indeed goes well beyond the controversy over the current problem. We have as sociologists developed a perspective for analysis of the current problem. We believe that there are at least three major components involved in dealing with HD patients. First and foremost in the minds of many is the quality of *medical treatment* for the disease itself. No one disputes or ignores the importance of this component. Indeed the patients themselves have, overwhelmingly, a favorable view of the medical care they have received. The second component relates to *physical care* of the patients; many nonpatients can closely understand and sympathize with the need for adequate housing, clothing, food supply, clean water, major household appliances, gasoline for automobiles, recreational facilities, etc. — except for such items as wheelchairs, special shoes, etc., these are things that all people want. Third is the *social component*, and has most importantly to do with the patients' sense of well being in terms of their values as human beings — their sense of personal and group identity and their dignity these aspects are, for nonpatients, easiest to ignore. How can the dignity of 128 patients best be preserved in the context of their lives being administered by the very large and pragmatic bureaucracy which is the state? It is a question that has no simple answer. However, in our testimony presented at the State of Hawaii Senate Health Committee hearing (January 27, 1978), we took the position that "When it comes to the consideration of the social as opposed to the medical and/or physical care aspects of patient life, there is no special reason to believe that any nonpatient's views ... deserve greater consideration than the views of the patients themselves."

From the article

BOUDREAUX, L. & ELWOOD, R. Stepping stones to dignity & freedom. *Star*, 37(4):1, 1978.

In an innocent childhood game we yell, "sticks and stones may break my bones but

names will never hurt me." But names do hurt; as children they bring tears and to society's "leprosy" victim, the names bring ostracism. It is a pain far more excruciating than that caused by the disease itself. The biblical terms "leper" and "leprosy" have stuck like a gummed label to a jar of jam. Only hours of soaking in hot water will remove it and even then a portion of the label remains.

Where does this leave us? It's simple. Only when the offensive words "leper" and "leprosy" are no longer used will we experience real progress. And history has taught us one thing — that which hinders progress most is our old friend money.

From the article

BRASIL. Ministério da Saúde. Divisão Nacional de Educação em Saúde. Educação em saúde na hanseníase. Brasília, 1978. 49p.

Proposição para os níveis de atendimento em Saúde Pública. Descrição dos níveis de atendimento. Serviços básicos de saúde. Serviços especializados de saúde. Objetivos gerais e específicos da educação em saúde. Educação em saúde na hanseníase. Objetivo geral. Objetivos específicos. Aplicação dos princípios e técnicas da educação em saúde na hanseníase. Nível individual. Nível de grupo. Nível de comunidade. Pré-requisitos para um eficaz trabalho de educação em saúde na hanseníase. Compatibilização das ações de educação em saúde com as atividades existentes nos diversos níveis de atendimento. Considerações finais.

CONTRERAS DUEIAS, F. The problem of reincorporation into society of ex-leprosy patients. *Correspondence. Int. J. Lepr.*, 46(2):225-227, 1978.

DHARMENDRA. Equality before law. Editorial. *Lepr. India*, 49(1):7-8, 1977.

EKAMBARAM, V. Stratégie pour le recensement des cas de lèpre et la distribution des médicaments. Étude des options possibles. *Med. Trop., Tropicale*, 37(4):389-392, 1977.

The author, from his own experience, emphasizes the main causes of poor results given by the leprosy control program. One must know, first, the psychological and social and economical conditions of the rural leprosy patients. Then remedial measures can be proposed.

Author's summary

Exorcizing the leper. [Editorial] *Med. J. Aust.*, 2 (11):345-348, 1977.

Repressive legislation and instinctive community fear are alike inappropriate in dealing with leprosy. Doctors have a key role to play in modifying both, so that patients with leprosy need no longer "hide away" from treatment or from their neighbours. Because of its subtle clinical presentations and its long incubation period, leprosy will not be eradicated by the sort of vigorous and imaginative control programme which has been so effective for smallpox. But it will be eradicated slowly, as modern treatment becomes freely available to cooperating patients. A major step towards this will be a medical exorcism of the word "leper", through acceptance of patients with leprosy into our clinics, our surgeries and our hospitals as unrestricted patients and fellow human beings, so far as this is reasonably possible. When it is necessary, in the interests of the patient and/or the community, for a patient to be isolated in some degree, it is essential that the reasons for this be explained sympathetically to the patient and to relatives or others concerned. The degree and period of isolation should be as limited as possible, and any suggestion of implied stigma should be actively and firmly dismissed.

*From the editorial*

FARIA, E. Education: the missing element in HD control. *Star*, 97(4): 10, 16, 1978.

*vide Epidemiologia/Epidemiology*

GARRIGUE, R. Reclassement socio-économique des lépreux en Iran. L'expérience de "Behkadeh-Radji". *Med. Tropicale*, 97(4): 505-512, 1977.

The author, first emphasizes the fundamental needs of every man. Then he demonstrates how these needs have been met in the leprosy community of Behkadeh-Radji. He stresses the difficulties and the prospects.

*Author's summary*

GOKHALE, S. D. Priority to children. Editorial. *Lepr. India*, 49 (3) :320-321, 1977.

The entire approach in planning of leprosy work in India seems to suffer from two inadequacies. Firstly the rehabilitation component of the plan seems to be weak in terms of professionalisation of rehabilitation services. Secondly the concentration of the entire plan seems to be on adults and not on

children. Anyone who has worked with leprosy becomes at once humbler and elevated by that experience. The sulphone and plastic surgery are no doubt an important part in the control programme of leprosy, but the other part which is more important is change in the attitude of community at large. I do not think that leprosy could be eradicated unless the people at large flush out of their minds the detritus of generation of misinformation and prejudice about leprosy. The fight against leprosy has begun at the level of a common man wanting to know and this cannot be achieved without a very strong and effective programme of health education. So far as the attitudes of planners and field workers are concerned, they both seem to be suffering from a mis-conception that medical treatment alone can solve the problem of leprosy. If one analyses the States budgets spent on leprosy programmes into medical work and institutional work, one would be painfully aware of the fact that very little or almost negligible amounts are provided for rehabilitation component of the control programme. Taking DDS tablets regularly is a very essential one for the patient for his cure, but how to assimilate the cured patient back into his family and society is a question which is more crucial and assumes serious proportions if one studies the statistics of cases that are rehabilitated.

*From the editorial*

GONZALEZ DEL CERRO, S. Multidisciplinaridad en lepra. *Dermatologia: rev. mex.*, 22 (1):49-52, 1978.

El enfermo de lepra es una unidad bio-psico-social-histórica. Para comprenderlo es necesario tener en cuenta no sólo al *Mycobacterium leprae*, la inmunología del enfermo y las lesiones orgánicas y funcionales consecutivas, sino también su biografía, su psicología y el medio en el cual vive con sus connotaciones políticas, económicas, sociales, históricas y culturales.

*Del trabajo*

KAUFMANN, A. E. Lepra y medios de comunicación: una perspectiva sociológica. *Dermatologia: rev. mex.* 21(2-3): 217-231, 1977.

Observamos que a través de los mensajes emitidos a través de los distintos medios de comunicación a través del tiempo permanece una idea negativa relacionada con la enfermedad de índole religiosa, que la considera como "castigo de los dioses". Ultimamente gradas a los adelantos científicos, a nuevos

enfoques del tema y a una mayor difusión esto está cambiando.

De las conclusiones de la autora

MATTHEWS, C. M. E. & JESUDASAN, M. A. leprosy health education project. *Int. J. Lepr.*, 46(4) :414-425, 1978.

The results of the survey show that the general public has very little knowledge about leprosy; patients have more knowledge. Attitudes measured with a Likert scale are negative for the general public and only slightly positive for the patients. Allopathic treatment for leprosy is preferred by most, but many do not relate the "patch" to leprosy and therefore do not seek early treatment. In addition, many patients do not complete the treatment. There is much need for health education.

From authors' summary

MUTATKAR, R. K. Health education in leprosy: an evaluation. *Lepr. India*, 49(2):234-239, 1977.

In conclusion we may say that health education tools effectively change the attitudes and practices of the people towards leprosy. However, the change is slow and needs repeated contact of health educator with the people. The prejudices like the hereditary nature of disease, which are culturally rooted into the minds of the people, are not easy to change unless health education is practised as a continuing process.

From the article

MEHTA, J. M. Prevention of debilitation in leprosy. *Lepr. India*, 49(2):240-246, 1977.

OZA, D. K. Attitudes of young doctors to leprosy and tuberculosis work: an analysis. *Lepr. India*, 49(2):247-252, 1977.

OZA, D. K. Rééducation des mendiants lépreux; notre expérience de Tamil Nadu. *Med. Tropicale*, 37(4):393, 1977.

The beggars of Tamil Nadu have been gathered in 10 rehabilitation homes of 500 inmates each where they have opportunity to receive a treatment and to practice their former work. This program may be regarded as a good success and should be extended after a few modifications.

Author's summary

ROSS, W. F. Patient education. *Star*, 38(1) :8-9, 1978.

ROTBERG, A. "Hansen's disease" vs. "Leprosy". *Star*, 38(1) :1, 16, 1978.

Nothing can ever be done to beautify or give status to "lepra", "leprosy" or any of its shameful linguistic equivalents in the endemic countries. However it is possible to liberate patients from these terrorizing "labels of primary force." And once again, this time in bond with *The Star* and the patients at Carville, I will appeal to the delegates of this 11th International Congress for the last time to abolish this outrageous and obnoxious terminology and to officially adopt an enlightened vocabulary which spawns from the more contemporary and humane term "Hansen's disease."

Changing inappropriate names is as old as mankind's technique of improving the "image" of anything from objects to abstractions in all fields of human activities. The technique is known to any novice in the science of mass communication. The revolting epithet "leprosy" is already being extirpated from the Old and New Testaments, both Protestant and Catholic, in spite of the fact that the Bible was not responsible for our current medical misuse of a term which merely means ritual defilement — of houses, garments, walls and persons.

It is time to expel from modern medicine the pejorative which extensive inquiries throughout the English-speaking world have proven beyond any doubt to be the "disintegrator of the patient's personality, the label that blocks education, the continued psychic pain and trauma and the most negative of all medical terms!"

From the article

SCHIFFERLI, R. Cours de physiothérapie et d'éducation sanitaire pour lépreux. *Acta Leprol.*, (71/72) :1-44, 1978.

Vide Cirurgia/Surgery

STAR Editorial Board. There is no middle of the road. *Star*, 38(1) :1-16, 1978.

Many advances in HD research and treatment have been made in the past decade, but the wisdom gained in working with this disease has yet to bring about the one change necessary to complete the "diagnosis-treatment-rehabilitation" cycle for the HD patient — an official worldwide change in

terminology. According to our records, this very delegation and WHO banned the word "leper, but its equally degrading cousin "leprosy" lives on! Financial pleas for sufferers of HD may not fill the mission coffers as readily, but the constant use of these archaic terms are not improving the psycho-social welfare of the patient either. It is this "stigmoney" raised by the missions which perpetuates the unwarranted fear, ignorance and prejudice associated with the old terminology. Let's modify our fund-raising tactics and educate the public! Slowly the news media will follow step and phase out their sensationalistic use of such words, as will some of our well-meaning friends right here at Carville who still insist on using the word "leprosy."

*From the editorial*

TAKIZAWA, H. Clinical studies on called phobic cases to Hansen's disease. *Lepr* 45(4): 230, 1976.

Thirty three cases with so-called phobic reaction to Hansen's disease were studied. They were divided into three groups. The cases of group I (12 cases) showed a transitory anxiety to become ill, but they well understand the results of medical examinations. In the cases of group II (16 cases), their anxieties were stronger and more lasting than those in group I. They may be often diagnosed and be treated as neurosis (true phobic reaction to Hansen's disease) or masked depression. There is one group of cases (5 cases) who complain of peculiar and strange complaints such as delusion of ozochrotia, acoasma, dysmorphophobia etc., including usual appeals. These case sare in group III. Many cases in group. II and all cases in group III must consult psychiatrists and must be treated with help of them although all cases in group I and some cases in group II may be seen by us with medical examinations or supportive psychotherapy.

*From author's abstract*

## GENERALIDADES, HISTÓRIA GENERAL AND HISTORY.

BROWNE, S. G. INTERNATIONAL WORKSHOP ON LEPROSY IN EUROPE, ROME, 9-10 June, 1978. *Lepr. Rev.*, 50(1):83-86, 1979.

BROWNE, S. G. México, 1978. Editorial. *Lepr. Rev.*, 50(1):1-5, 1979.

LANGUILLON, J. La lèpre. *Acta Leprol.*, (71/72):1-168, 1978.

Histoire et géographie de la lèpre. Le *Mycobacterium leprae*. La réaction à la lèpromine de Mitsuda. Les classifications de la lèpre. Classification immunologique de la lèpre. L'évolution clinique de la lèpre. Les lésions cutanées. Aspects anatomopathologiques de la lèpre. Lésions des muqueuses rhino-pharyngolaryngées. La nevrite lépreuse. Lésions osseuses de la lèpre. Les maux perforants plantaires. Les atteintes du globe oculaire. Les manifestations viscérales dans la lèpre. Formes interpolaires de la lèpre. Les états réactionnels dans la lèpre. Diagnostic et pronostic de la lèpre. Pronostic de la lèpre. Les examens biologiques dans la lèpre.

Traitement spécifique de la lèpre. Traitement des complications de la lèpre. La chirurgie réanimatrice. Epidémiologie de la lèpre. Prophylaxie de la lèpre. La lutte contre la lèpre.

BROWNE, S. G. Origin and spread of "leprosy". In: *Leprosy, new hope and continuing challenge*. Revised ed. London, The Leprosy Mission, 1977. *Apud Star*, 37(5):6, 1978.

CONTRERAS DUEVÁS, F. La lepra en la literatura. Madrid, Editorial Garsi, 1977. p. 50.

Lepra prehistórica — Canon de la Sagrada Escritura. La Biblia — La enfermedad de la lepra en la "Santa Biblia". Antiguo Testamento — Nuevo Testamento — La literatura en la Edad Media — Romance de la hija del Rey de Francia — Edad Moderna (Renacimiento) — Siglo XX — Galicia — Andalucía — Personajes históricos supuestos enfermos de la lepra — Cosas del Cid — Publicaciones en verso — Revistas y diarios — Literatura sobre la lepra — Bibliografía.

CONVIT, J. El Centro Internacional OPS/OMS de Investigación y Adiestramiento sobre lepra y Enfermedades Afines. (CIALEA). In: SEMINARIO PANAMERICANO SOBRE EL CONTROL DE LA LEPROSA, 4P, Caracas, 1975. Washington, 1977. p. 143-150. (OPS. Publicación científica, n.º 344).

DAVEY, T. F. The World Health Organization and leprosy. Editorial. *Lepr. Rev.*, 48(4):217-221, 1977.

HASAN, S. The book of outlines. Hyderabad, Hind Kusht Nivaran Sangh — 1977 — 126p.

"For paramedical workers and readers who are interested in elementary anatomy, physiology, pathology, bacteriology, food, communicable diseases, and leprosy with its varied problems".

From the cover

KERHARO, J. La pharmacopée sénégalaise. Note sur quelques traitements antilepreux traditionnels pratiqués dans le Baouar (prefecture de Kebemer). *Bull. Soc. Afr. Noire Lang. Franç.*, 22(3): 321-329, 1977.

7 methods of treatment are described. Preparations, means used, modus operandi, vernacular names, scientific names and the administration of medicines with the medicomagical character of these operations giving rise to the detailed developments which concern the 1964-1965 investigation are presented. These two investigations make it appear that the traditional healers have both the knowledge of the properties of antileprosy plants, the means of transmitting the knowledge from generation to generation and the evolution of formulae for medical preparations. Of the 56 drugs appearing in the 7 treatments mentioned one finds *Detarium senegalense* and *Jatropha chevalieri* 5 times, *Swartzia madagascariensis*, *Stereospermum kunthianum* and *Trichilia roka* 4 times, *Maytenus senegalensis* and *Acacia albida* 3 times, *Calotropis procera*, *Mitracarpus scaber*, *Euphorbia balsamifera*, *Straphantifus sarmen-tous*, *Commiphora africana* and *Capparis tomentosa* each twice while 16 other species are only mentioned once. In the particular case of information supplied by the traditional healer Daouda Ka, after a thirty year interval, one is able to notice that of 13 drugs employed by him in 1935, and of which he had knowledge at the time of the death of his father the year before, only 7 were still

used in 1965, 6 having been discarded and 5 added in their place.

LUCIO, R. & ALVARADO, I. Opúsculo sobre el Mal de San Lázaro o Elefantiasis de los Griegos. *Dermatologia: rev. mex.*, 22(2):93-101, 1978.

MESQUITA, A. P. Hanseniasis: conceituação atual. *JAMB*, 20(919): 9, 1978.

OMS. Geneva. Lepra: Comité de Expertos en lepra. Cooperación técnica en la lucha contra la lepra. Investigaciones. In: Actividades de la OMS, 1976-1977. *Actas Oficiales OMS* (243):113-116, 1978.

RODRÍGUEZ, O. Lepra de Lucio. I. Historia y concepto. *Dermatologia: rev. mex.*, 22(2):117-140, 1978.

ROSS, W. F. Fondamenti di leprologia. Bologna, Associazione Nazionale Amici dei Lebbrosi, s.d. p. 20.

Introduzione. Epidemiologia. Caratteristiche cliniche e classificazione. Diagnosi. Complicazioni. Terapia. Prevenzione e correzione delle deformità. Controllo della lebbra. Aspetti sociali.

SANSARRICQ, H. Progrès récents et orientations actuelles de la recherche sur la lépre. *Med. Trop.*, 37(6):627-635, 1977.

During the last five years evidence has been provided supporting the concept of sub-clinical infection in leprosy. Recent advances in the field of immunology and the generalized experimental infection obtained in the armadillo have made it possible to plan the development of a simple skin test for the detection of sub-clinical infection in the field, and of a vaccine. Trials with combined chemotherapeutic regimens are to be developed in order to establish how best to use the existing antileprosy drugs to cope with the problems of resistance to dapsone and microbial persistence. In addition, the activity of analogues of available compounds is to be investigated. Some progress has been made but further research is needed on the epidemiology of leprosy. Also much remains to be done to elucidate the biology of *M. leprae* with the aim of finally achieving its in vitro cultivation.

Author's summary

TULLIS, J. L. Annual discourse — Don't eat the quails. *N. Engl. J. Med.*, 297(9): 472-475, 1977.

Misdiagnoses unquestionably occurred. Such diseases as pityriasis rosea, ecthyma and desert sore were easily confused with leprosy. Moreover, the term "leprosy" was probably used as an adjective to describe any white or atrophic lesion, much as we use the term "acneform" today to describe most red and nodular eruptions. It is also inte

resting that leprosy was the first disease singled out by name in the New Testament. In a separate reference to an encounter of Jesus with a leper, additional features became evident. For one thing, He touched the leper.

*From the discourse*

VOGELSANG, T. M. Gerhard Henrik Armauer Hansen, 1841-1912. *Int. J. Lepr.* 46(3):257-332, 1978.