

HANSENÍASE: RESUMOS/HANSENÍASIS ABSTRACTS ***(Janeiro de 1988 a Dezembro de 1989)****CLINICA/CLINICAL ASPECTS****EPIDEMIOLOGIA E CONTROLE/EPIDEMIOLOGY AND CONTROL****GENERALIDADES/GENERAL ASPECTS****HISTOPATOLOGIA/HISTOPATHOLOGY****IMUNOLOGIA/IMMUNOLOGY****MICROBIOLOGIA/MICROBIOLOGY****PREVENÇÃO DE INCAPACIDADES FÍSICAS/PHYSICAL DISABILITIES PREVENTION****REABILITAÇÃO FÍSICA/PHYSICAL REHABILITATION****TERAPÊUTICA/THERAPEUTICS**

(*) Os resumos estão organizados por assunto e dentro de cada assunto estão na ordem alfabética dos sobrenomes dos autores. Também foram incluídos os editoriais (em alguns casos apenas a indicação). As revistas utilizadas foram: **Indian Journal of Leprosy, International Journal of Leprosy e, Leprosy Review** (Janeiro de 1988 a Dezembro de 1989).

AGUSNI, I. et al. Blood Flow Velocity In Cutaneous Lesions of Leprosy. **Int. J. Leprosy**, **56**(3):394-400, 1988.

SUMMARY - The velocity of blood flow in the cutaneous lesions of leprosy was measured by the noninvasive technique of laser-Doppler velocimetry in nine male patients, all under treatment with World Health Organization multidrug regimens. In three patients with stable borderline tuberculoid (BT) lesions, the blood-flow velocity was slightly faster over the lesion than that in adjacent uninvolved skin. There was no substantial difference between different sites at the center and edge of individual lesions in each patient, but there was some variation between subjects. In one other BT patient with a reversal reaction, blood-flow velocity was 20-fold greater than in adjacent uninvolved skin. In four patients with stable borderline lepromatous/lepromatous (BL/LL) disease, the blood-flow velocity was 3 to 9 times faster over the plaques than in adjacent skin. There was relatively little difference between measurements over comparable points at the edge and center of individual plaques, or between plaques in the same patient, but there were considerable differences between patients. A fifth BL patient reversal reaction showed generally similar results to those found in the stable BL/LL patients.

Histometric study of the biopsies taken immediately after blood-flow measurement from two different plaques on each of four BL patients showed a clear relationship between the granuloma fraction measured by planimetry and the blood-flow velocity. This finding suggests that laser-Doppler velocimetry might prove to be a useful, clinically acceptable, noninvasive technique for monitoring the severity of hyperemia as an early indication of reversal reaction during chemotherapy trials in leprosy patients.

AL-MOHAYA, S.A. et al. Renal Granuloma and Mesangial Proliferative Glomerulonephritis In Leprosy. **Int J. Leprosy**, **56**(4):598-602, 1988.

SUMMARY - A 17-year-old, Yemeni male patient with borderline lepromatous leprosy and erythema nodosum leprosum (ENL) developed a nephritic range proteinuria. A renal biopsy revealed mesangial proliferative glomerulonephritis and epithelioid granulomas in the interstitium. The presence of granular immunofluorescence for C3 and electrondense deposits in the glomerull indicated an immune complex glomerulonephritis. Clinical signs of ENL subsided rapidly under steroid treatment. The unusual combination of proliferative glomerulonephritis and epithelioid granulomas in leprosy is presented and discussed.

ANILKUMAR, G. et al. Malignant transformation of trophic ulcer in leprosy. **Indian. J. Leprosy**, **60**(3):385-388, 1988.

ABSTRACT - Malignancy developing in the trophic ulcer of leprosy is no more a rarity. In four years period we detected seven cases of squamous cell carcinoma developig in *the* trophic ulcer in patients with lepromatous leprosy.

ANILKUMAR, G. *et al.* Tetanus in patient with lepromatous leprosy (I). **Indian J. Leprosy**, **60**(3):448-449, 1988.

ABSTRACT - Tetanus in lepromatous leprosy is rare and reported occasionally as case reports only. We present a case of lepromatous leprosy who succumbed to death due to rapidly progressing tetanus. The mechanisms of protection from tetanus in leprosy is discussed.

ANILKUMAR, G. et al. Tetanus in leprosy patient (II). **Indian J. Leprosy**, **60**(3):450-452, 1988.

ABSTRACT - Leprosy patients are protected from tetanus due to acquired natural immunity

against tetanus. The incidence of tetanus in Leprosy is very low. A case of Indeterminate Leprosy developing tetanus following injury and terminating fatally is presented.

ARORA, S. K. et al. Calcification of ulnar nerve in leprosy - a case report. **Indian J. Leprosy**, **61**(1):111-112, 1989.

ABSTRACT - A case of Tuberculoid leprosy who had taken irregular treatment for five years and had thickened ulnar nerve which on radiological examination showed calcification, is reported.

ARORA, S.K. et al. Study of cutaneous lesions of leprosy on male genitalia. **Indian J. Leprosy**, **61**(2):222-224, 1989.

ABSTRACT - The cutaneous lesions of leprosy on male genitalia were studied. They were found in 2.9% of cases examined in this series. They were seen most commonly in borderline group. It is emphasised that it is not uncommon to find lesions on male genitalia in leprosy.

ARORA, S.K et al. A study of palmo-plantar lesions in leprosy: a preliminary report **Indian J. Leprosy** **61**(2):206-208, 1989.

ABSTRACT - Out of 500 leprosy patients screened for palmar and/or plantar lesions, eighteen cases were detected. They were classified according to Ridley-Jopling classification. In majority of cases it was macular lesion. Cases were from TT, BT and BB group. In 50% cases, palmo-plantar involvement was associated with type I reaction. In 66.7% case, it was extension of patch from surrounding area, 11.1% cases isolated lesions were seen and In 22.2% cases both extension as well as isolated lesions were present

BHARADWAJ, V. P. & KATOCH, K. Detection of subclinical Infection in leprosy: and 8 years follow-up study. **Indian J Leprosy**, **61**(4):495-502, 1989.

ABSTRACT - A follow-up study has been carried out using Fluorescent Leprosy Antibody Absorption (FLA-ABS) test in-1069 healthy contacts of multi and paucibacillary leprosy patients. Simultaneously lepromin testing with Dharmendra antigen has also been done to determine their delayed type hypersensitivity. In nearly 8 years of follow-up, 46 contacts have developed disease and of these 41 contacts were FLA-ABS positive and lepromin negative. It is inferred that test (alongwith) can be used to identify the contacts who are at higher risk of developing the disease. FLA-ABS test has also been found to be highly sensitive for detection of subclinical infection specially in younger age groups. This test could therefore serve as a very sensitive epidemiological tool for assessing the extent of disease in the community and for monitoring the transmission of disease especially after MDT and other Intervention measures.

BHATIA, V.N. Effect of temperature, cholesterol and nerve tissue on multiplication of armadillo M. leprae. **Indian J. Leprosy**, **61**(4)453-457, 1989.

ABSTRACT - The effect of temperature, nerve tissue and certain constituents of the medium on multiplication of armadillo M. Leprae was studied using Hanks BSS. An equal or better growth was seen at 30°C and 10°C compared to 37°C. Multiplication was also seen at - 20°C. Adding cholesterol, foetal calf serum, cystine-HCl, sodium thioglycollate or nerver suspension and covering medium with liquid paraffin each showed beneficial

effect. Hanks containing foetal calf serum, cholesterol with sodium thioglycollate or cystine-hydrochloride showed maximum multiplication. These combinations may be used for testing additional factors for further Improvement of the medium.

CHATTOPADHYAY, S. P. & GUPTA, C.M. Primary hyperpigmented cutaneous lesions in tuberculoid leprosy. **Indian J. Leprosy**, **60**(1):63-65, 1988.

ABSTRACT- Two cases of tuberculoid leprosy with primary hyperpigmented anaesthetic lesions are reported and subject is reviewed.

CHATTOPADHYAY, S.P. et al. Bilateral involvement of sole and palm in leprosy - a case report. **Indian J. Leprosy**, **61**(2):266-267, 1989.

ABSTRACT - A case of BT leprosy in reaction with lesions over uncommon (immune) sites like palm and sole has been reported.

CHATTOPADHYAY, S.P. et al. Multiple synovial swellings in BT leprosy - a case report. **Indian J. Leprosy**, **61**(2):263-265, 1989.

ABSTRACT - A case of Leprosy with multiple synovial swellings has been reported. Rarely these swellings may be an initial presentation and at sites other than dorsum of hand or ankle as was in this case. The literature on the subject is briefly reviewed.

CHAUDHARY, S.D. et al. Leukemoid reaction in erythema nodosum leprosum In a leprosy patient. **Indian J. Leprosy**, **60**(4):572-576, 1988.

ABSTRACT - A case of lepromatous leprosy

with erythema nodosum leprosum (ENU presenting as a myeloid leukemoid reaction is reported. Very high leucocyte count with immaturity of the cells in myeloid series was present in peripheral blood. High leucocyte alkaline phosphatase score, absence of hepatosplenomegaly and transient nature of leukemoid reaction differentiated it from chronic myeloid leukemia and acute myeloblastic leukemia. The possible mechanisms of leukemoid reaction in ENL are discussed.

COUTRIGHT, P.D. Defining the Magnitude of Ocular Complications from leprosy: Problems of Methodology. **Int. J. Leprosy**, **56**(4):566-573. 1988.

SUMMARY - A comprehensive review of all ocular surveys (4) of leprosy patients was undertaken. These surveys do not provide adequate information for defining the incidence or prevalence of ocular disease caused by *Mycobacterium leprae*. Furthermore, the level of disability and blindness from leprosy has not been addressed. The primary methodologic problems in these surveys are: a) lack of survey sampling techniques, b) institution-based or clinic-based populations as the study population, c) inadequate instruments for the detection of clinical signs, d) non-ophthalmically trained individuals as examiners, e) definition of 'ocular' disease that includes non-ocular condition, f) failure to analyze by disease type, and g) failure to analyze by duration of disease or therapy. All of these studies were cross-sectional in nature. While this type of study is beneficial to health administrators for prioritizing eye care in health planning, a longitudinal study is required to investigate the risk factors for ocular involvement and blindness in these patients,

COWLEY, S.A. et al. Nerve Damage Induced by Mycobacterial Granulomas in Guinea Pig Sciatic Nerves. **Int. J. Leprosy**, **56**(2):283-289, 1988.

SUMMARY - A possible model for nerve damage in leprosy has been developed in the sciatic nerve of the guinea pig. Intraneural injection of 10 BCG organisms into an unsensitized animal induces an epithelioid cell granuloma in 2 weeks similar to that found in tuberculoid leprosy patients. In contrast intraneural injection of 109 cobalt-irradiated *Mycobacterium leprae* organisms induces a macrophage granuloma in 5 weeks, similar to that found in lepromatous leprosy patients. Histological, immunohistochemical, electron microscopical and electrophysiological studies have demonstrated that the lesions induced in the experimental animals show many of the features documented in studies of nerve damage in leprosy patients.

DHAND, V.K. et al. Phrenic Nerve Conduction in Leprosy. **Int J. Leprosy**, **56**(3):389-393, 1988.

SUMMARY - Phrenic nerve conduction was performed bilaterally in 22 multibacillary (BL-LL) and 18 paucibacillary (BT-TT) leprosy patients and 25 control subjects. Prolonged phrenic nerve conduction time and/or reduced amplitude of diaphragm muscle action potential beyond 2.5 standard deviations of control mean values was observed in 9 BL-LL patients (4 bilateral) and 6 BT-TT patients (all unilateral). Out of the nine BL-LL patients with phrenic nerve involvement, median motor and/or sensory nerve conduction was also abnormal in seven patients. On fluoroscopy, diaphragm movements were normal in all patients. The study documents subclinical phrenic nerve involvement in leprosy - a fact not previously recognized.

DORAIRAJ, A.; REDDY, R. & JESUDASAN, K. An evaluation of the Semmes-Weinstein 6.10 monofilament as compared with 8 nylon in leprosy patients. **Indian J. Leprosy**, **60**(3):413-417, 1988.

ABSTRACT - In a previous study Birke and Sims (1986)¹ identified the 5.07 (10 y) Semmes-Weinstein monofilament, as the most useful tool, in measuring protective sensation in the sole of the foot of leprosy patients. This study has demonstrated that the standard 6 Nylon being used in Karigiri, is as good as the monofilament, in assessing protective sensation in leprosy patients. However there is a need for standardising procedures for measuring sensory loss in leprosy patients

D'SOUZA, Dods & THOMAS, I.M. Chromosome aberrations and sister chromatid exchanges (SCEs) in peripheral blood lymphocyte cultures of untreated leprosy patients. **Leprosy Rev.**, **59**:121-125, 1988.

SUMMARY - The frequencies of various chromosome aberrations and sister chromatid exchanges (SCEs) were studied in blood lymphocyte cultures of untreated leprosy patients. The frequency of chromosome aberrations was significantly higher in lepromatous ($P < 0,001$) and tuberculoid ($P < 0.02$) groups in comparison with that of controls. The frequency of SCEs was found to be within normal range in the tuberculoid group whereas in lepromatous group, a significant ($P < 0.001$) increase was observed. The findings indicate a probable correlation between the form of leprosy and chromosome damage.

GARG, R. et al. Adreno-cortical functions in leprosy. **Indian J. leprosy**, **80**(4):809-815, 1988.

ABSTRACT - Adreno cortical function was carried out in 43 cases of leprosy. These cases were further divided into tuberculoid, borderline, lepromatous and Lepre reaction. Serum and urinary electrolyte, urinary, 17-Ketosteroid and 17-Ketogenic

steroid and plasma cortisol levels were measured to assess the adrenocortical status. In these different forms of leprosy.

It was observed that these parameters were within normal limit. In tuberculoid leprosy except low value of urinary-Ketogenic steroid. The borderline and Lepromatous leprosy cases revealed low values of urinary sodium, potassium and 17-Ketogenic steroid and high level of serum potassium. However the cases of lepra reaction revealed low value of serum and urinary sodium and potassium, urinary 17-Ketogenic steroid. The basal plasma cortisol level was in this group but it was statistically insignificant.

GARG, R. et al. Hormone profile in leprosy. **Indian J. Leprosy**, **61**(4):428-431, 1989.

ABSTRACT - Hormone profile were carried out in 35 male cases of leprosy. They were divided into tuberculoid leprosy, borderline leprosy, lepromatous leprosy and lepra reaction. Serum testosterone, follicle-stimulating hormone, Leutinizing hormone, and Oestradiol level were measured in these cases of leprosy. It was observed that serum testosterone were significantly low in lepromatous leprosy ($P < 0.001$) and lepra reaction ($P < 0.01$). The serum levels of follicle-stimulating hormone and leutinizing hormone were significantly high in lepromatous leprosy ($P < 0.02$) and lepra reaction ($P < 0.05$). Serum Oestradiol was raised in approx. 60% cases in borderline leprosy, lepromatous leprosy and lepra reaction.

GHEI, S. K. et al. Dermatoglyphics in leprosy: (III) creases of palm. **Indian J. Leprosy**, **61**(1):96-102, 1989.

ABSTRACT - Palmar configurations of triradii and creases of 100 leprosy patients [50 lepromatous (BULL) and 50 tuberculoid (BT/LL)] were compared

with those of 100 normal persons selected from families of these patients.

The patterns of position of triradii were similar in controls and leprosy patients as such. But, the patterns in the two types of leprosy patients were different. As for palmar creases patterns, there was significant difference between those of controls and patients, double radial base crease occurring more often in patients. However, the differences between the two types of patients were not statistically significant.

GHORPADE, A. et al. Tuberculoid leprosy on hairy scalp: a case report. **Leprosy Rev.**, **59**:235-237, 1988.

SUMMARY - Involvement of the hairy occipital area of scalp in a patient having tuberculoid leprosy is reported. To the best of our knowledge, involvement of hairy scalp by a tuberculoid lesion has not been reported so far.

GIBBELS, E. et al. Unmyelinated nerve fibres in leprosy. A qualitative and quantitative study of sural nerve biopsies in 2 cases of lepromatous leprosy. **Leprosy Rev.**, **59**:153-162, 1988.

SUMMARY - Since morphometric analysis of unmyelinated nerve fibres is lacking in leprosy literature, they were investigated in sural nerves of 2 lepromatous cases. Despite normal or even increased total numbers of unmyelinated axons, tentative differentiation in not-yet-myelinated axons and genuine unmyelinated fibres or their regenerates according to associated Schwann cells and fibre calibres revealed a mild to severe loss of genuine unmyelinated fibres. A predominant involvement, surpassing loss of genuine myelinated fibres, could not be stated in either case. Quantification of degenerating unmyelinated fibres, denervated Schwann cell complexes, and Schwann cell nuclei -

both of the unmyelinated type - Is also presented and discussed.

GIRDHAR, A. et al. Leprosy in Infants - Report of Two Cases. **Int J. Leprosy**, **57**(2):472-475, 1989.

SUMMARY - Two infants, one 4 months old and the other 2 months old, having histologically confirmed indeterminate leprosy are reported. The route of infection, mode of transmission, and incubation period are discussed with reference to these two cases of infantile leprosy.

GUPTA, M.D et al. Reliability of direct skin smear microscopy in leprosy. **Indian J. Leprosy**, **60**(4):566-571, 1988.

ABSTRACT - Skin smear direct microscopy is an important tool for diagnosis of leprosy. The study was planned to understand the reproducibility of skin smear reading by a trained technician. Skin smears were collected from known patients of leprosy from the field area. They were stained for acid fast bacilli following the standard cold staining procedure and were read following the Riddley scale. A sample of smears was re-examined on two occasions by the same technician, following blind procedure. There was a systematic under reading on the second occasion, which was attributed to the defective storage of the slides. However the agreement between second and third examinations was very good (Concordance 81.34%, Kappa 0.74). The finding was confirmed on a repeat examination. It can be concluded that the Direct Skin Smear Microscopy is a reliable and reproducible technique under experimental conditions.

HALDAR, S. R. et al Tuberculoid granuloma in a clinically normal looking skin. **Indian J.**

Leprosy, **80**(2):277-279, 1988.

ABSTRACT - A case of tuberculoid leprosy showing well defined tuberculoid granuloma in the skin without any morphological changes is reported.

HODES, R.M. & TEFEREDEGNE, B. Tetanus In Leprosy Patients: Report of Five Cases. **Int J. Leprosy**, **56**(2):228-229, 1988.

SUMMARY - It has long been noted that tetanus is rare in leprosy patients. Five cases of tetanus are reported In leprosy patients in Addis Ababa, Ethiopia. Although natural immunity to tetanus occurs and this appears to be higher in leprosy patients than in the general population, it is not completely protective. Further research on the relationship between tetanus and leprosy is indicated. Although firm epidemiologic data are lacking, it is prudent to give leprosy patients at least one dose of tetanus toxoid.

JACOB, M. & MATHAI, R. Diagnostic Efficacy of Cutaneous Nerve Biopsy in Primary Neuritic Leprosy. **Int J. Leprosy**, **56**(1):56-60, 1988.

SUMMARY - The role of nerve biopsy In the diagnosis of primary neuritic leprosy was evaluated in a study of 77 patients who had symptoms of peripheral neuropathy without hypopigmented patches, positive skin smears, or a skin biopsy consistent with leprosy. A biopsy of a representative cutaneous nerve near the site of the neurological deficit was taken for histopathological examination and acid-fast staining. Nearly half of the patients had leprosy confirmed by nerve biopsy, and the entire spectrum of leprosy was represented. No significant relationship was seen by age or sex or type of neuropathy. The duration of symptoms did not correlate with the severity of nerve damage as seen histologically. The probability of false-positive or false-negative results is discussed In light of clinical

management. Being a relatively simple o, toe procedure, a cutaneous nerve biopsy is strongly recommended as an important diagnostic tool, particularly for primary neuritic leprosy.

JOB, C.K.; JACOBSON, R.R. & HASTINGS, R.C. Simultaneous Upgrading Reaction and Erythema Nodosum Leprosum in a Patient with Lepromatous Leprosy. **Int. J. Leprosy, 56(3):437-442, 1988.**

SUMMARY - A case of lepromatous leprosy with erythema nodosum leprosum (ENL) undergoing treatment with dapsona, rifampin, and thalidomide developed focal tuberculoid granulomas in the ENL lesions. This is the first report known to the authors of a lepromatous leprosy patient in whom ENL and an upgrading reaction occurred simultaneously.

JOB, C.K. et al. Single Lesion Subpolar Lepromatous Leprosy and its Possible Mode of Origin. **Int. J. Leprosy, 57(1):12-19, 1989.**

SUMMARY - Three case reports of patients with a single, nodular, subpolar lepromatous skin lesion, one on the left elbow, another on the posterior aspect of the left leg, and the third on the extensor ulnar aspect of the right forearm, are presented. The lesions, clinically and histopathologically, resemble lepromas which develop at the site of experimental Inoculation of *Mycobacterium leprae* in armadillos. These are sites on the body which are likely to be traumatized. With the distinct possibility of the presence of viable *M. leprae* in the soil of Louisiana and Texas from wild armadillos with the natural disease, it is suggested that these three patients acquired the infection from the environment and had inoculation lepromas.

KOHU, M. et al. Urinary Excretion of Renal Brush-

border Enzymes in Lepromatous Leprosy - a Preliminary Investigation. **Int. J. Leprosy, 57(1):20-23, 1989.**

SUMMARY - Activities of the brush-border enzymes, alkaline phosphatase, maltase, leucine aminopeptidase, and gamma-glutamyl transpeptidase, were measured in urine samples of 25 lepromatous leprosy patients and an equal number of age-matched healthy controls. None of the patients were shown to be suffering from any other systematic disease. The enzymatic activities were shown to be significantly elevated in leprosy patients when compared to controls.

KORANNE, R.V. & SRIVASTAVA, G. Primary drug resistance to both rifampicin and dapsona in a paucibacillary leprosy patient. **Indian J. Leprosy, 60(1):90-92, 1988.**

ABSTRACT - A thirty-one year old male patient was diagnosed and treated for a pure or better primary neuritic case of leprosy with dapsona (100 mg daily for 2 years) and rifampicin (600 mg daily for 6 months). From the very onset, the patient did not show any improvement; on the top of it he subsequently, developed a cutaneous patch, which on histopathological examination, revealed classical features of BT leprosy. Acid-fast bacilli were absent both in skin slit smear and histologic section. A primary resistance to both dapsona and rifampicin, even in paucibacillary patient, is speculated.

KUMAR, B. et al. Involvement of palate and cheek in leprosy. **Indian J. Leprosy, 60(2):280-284, 1988.**

ABSTRACT - Cases of bacillary positive leprosy with no apparent lesion in the oral cavity, soft or hard palate were studied for any evidence of pathological involvement. Granulomata were present

In 11 (65%) out of 17 cheek biopsies studied. *M. leprae* were Identified in four specimens only, 9 specimens (64%) out of 14 palate biopsies showed definite granulomata. *M. leprae* were seen in six specimens.

KUMAR, N.; SARASWAT, P.K & SHANKER, A.
Estimation of high density lipoprotein cholesterol
In the diagnosis of lepromatous leprosy. **Indian J. Leprosy**, **60**(4): 600-603, 1988.

ABSTRACT - A high incidence of increase plasma level of high density lipoprotein cholesterol (HDL-C) has been reported In cases of lepromatous leprosy. HDL-C levels were estimated in 96 (50 under treatment and 46 untreated) lepromatous leprosy patients and 84 randomly selected matched control patients suffering from other skin diseases attending skin out-patients department. HDL-C estimations were performed for the diagnosis of lepromatous leprosy in patients aged below 60 years, taking plasma HDL-C levels as 28-71 mg/dl in men and 34-91 mg/dl in women, as range of normal values. The study revealed that HDL-C levels in lepromatous leprosy group were raised and significantly different when compared with control group ($t = 35.1668$ and $P < 0.001$). The sensitivity of the test was very high, 97.9 per cent (94/96), but specificity was low 80.95 per cent (68/84). False positive and false negative results were 19.04 per cent (16/84) and 2.08 per cent (2/196) respectively. It is opined that a negative test will be mainly useful in excluding diagnosis of lepromatous leprosy.

KUMAR. R.; BAJAJ, M. M. & SWAROOP, B.
Conformation changes in the IgG molecule of lepromatous sera using laser raman spectroscopy. **Indian J. Leprosy**, **60**(3): 363-359 1988.

ABSTRACT - In the present work we report our studies on IgG separated from the serum of lepromatous patients and non-lepromatous leprosy cases using Laser Raman Spectroscopy. Striking spectral changes in LL cases have been observed in the following special regions:(a) the amide I and III, (b) the SS and C-S stretching (c) the skeletal bending and (d) skeletal stretching regions. These changes indicate a decrease In the amount of B- structure and a transition towards A-helical conformation.

KUMAR, V. et al. Ultrastructural studies of peripheral nerves in lepromatous leprosy patients. **Indian J. Leprosy**, **60**(3):360-362, 1988.

ABSTRACT - Ultrathin sections of the peripheral nerves taken from three lepromatous leprosy patients (One untreated, other treated and third in ENL, reaction) was examined in the electronmicroscope. In the untreated patient, solid *M. leprae* organism inside the Schwann cell and the degeneration of Schwann cell was seen. In contrast, the treated patient showed the degeneration of bacilli and myelinated fibres. However, the characteristics of cells in the ENL reaction showed close similarities with the untreated case.

LEVIS, W.R. et al. Testicular dysfunction in leprosy. relationships of FSH, LH and testosterone to disease classification, activity and duration. **Leprosy Rev.**, **60**(2):94-101, 1989.

SUMMARY - Luteinizing hormone (LH), follicle-stimulating hormone (FSH) and testosterone levels were determine by radioimmunoassay (RIA) in leprosy patients and analysed for effect of disease classification, disease activity and duration of disease, LH and FSH levels were found to be significantly elevated in lepromatous patients compared to borderline-lepromatous, mldborderline

and borderline-tuberculoid patients. A positive correlation was seen between LH and FSH and a negative correlation was seen between testosterone and both LH and FSH. No correlation was seen between hormone levels and measures of disease activity: bacillary index and IgM to phenolic glycolipid I, a *Mycobacterium feprae* antigen. A significant correlation was seen between duration of disease and FSH when age was taken into account, indicating that testicular dysfunction is probably cumulative and irreversible. It is recommended that LL patients be routinely screened for hypogonadism using FSH, LH and testosterone levels.

LORD, R. et al. Skin Test Studies on Close Contacts of Leprosy Patients in India. **Int J. Leprosy**, **57**(4):801-809, 1989.

SUMMARY - Skin-test studies with a series of tuberculin has been carried out in close contacts of multibacillary (MB) leprosy patients around three leprosy centers in India, and in casual contacts of the disease around two centers. The results show that the rate of acquisition of leprosin A positivity is associated with age and the closeness of contact with MB leprosy. At the age of 15 years, the differences between the two types of contact were highly significant ($p < 0.00001$). Many responses to leprosin A are directed toward the group iv, species-specific, antigens of the leprosy bacillus, and the significance of positivity is discussed in relation to protective immunity from leprosy. The differences from Iran show that positivity to leprosin A is not solely the effect of the degree of contact with the disease, but must also have a genetic or environmental element, the latter being favored. i

The results from Miraj show that the high levels of tuberculin, scrofulin, and vaccin positivity seen in Fathimanagar, and to a lesser extent in Karigiri, are not a consequence of contact with leprosy. BCG vaccination made little difference to the leprosin A positivity of close contacts of leprosy patients,

although It significantly enhanced positivity among casual contacts around Miraj ($p < 0.002$). BCG vaccination significantly Increased tuberculin positivity in Miraj and kKarigiri, and In those under 11 years of age in Fathimanagar. It made no difference to the already high level of positivity found in older persons around Fathimanagar. Gender was found to influence skin-test responses In close contacts tested around Fathimanagar who were BCG vaccinated, but made no difference among the nonvaccinated.

When used with care, leprosin A Is a valuable tool for the study of the effects of contact with leprosy, and illustrates the high infectivity of the organism, yet comparatively low Incidence of disease.

MARKS JR., S.C. & GROSSETETE, G. Fades Leprosy Resorption of Maxillary Anterior Alveolar Bone and the Anterior Nasal Spine in Patients with Lepromatous Leprosy in Mali. **Int. J. Leprosy**, **58**(1):21-25, 1988.

SUMMARY - Resorption of the anterior nasal spine and alveolar bone in the anterior maxilla was measured in 39 patients with lepromatous leprosy in Mali. Bone resorption occurred in both of these sites, but resorption in one did not predict resorption in the other. These data are interpreted to mean that resorptions of bone anterior (nasal spine) or inferior (alveolar bone) to bacillary populations In the nasal mucosa of patients with lepromatous disease In Mall occur independently.

MISHARA, B. et al. A borderline leprosy lesion on the palate: a case report. **Leprosy Rev**, **59**:71-74,1988.

SUMMARY - A patient with borderline tuberculoid leprosy was found to have involvement of hard palate which was histologically compatible with borderline leprosy (BB) in reaction. The possible

modes of involvement of palate are discussed.

MOHAN, L et al. A report on six cases of histoid variety of lepromatous leprosy in children. **Indian J. Leprosy**, **61**(1):103-108, 1989.

ABSTRACT - Six cases of histoid variety of lepromatous leprosy among children below 12 years of age were detected in over 3 years period. Bacteriological index was high (3 to 5+). None of the patients had received any anti-leprosy treatment. It is a public health problem because of infectious nature of the disease, therefore early detection and management of this entity among children is important.

MOUDGIL, K. D. et al. Serological pattern of hepatitis B virus markers (HBsAg, anti-HBs, IgM anti-HBc and HBV specific DNA polimerase) in leprosy patients. **Indian J. Leprosy**, **61**(1): 54-60, 1989.

ABSTRACT - Sera of 134 lepromatous (LLLBL) and 57 tuberculoid (TTIBT) leprosy patients were analysed for four HBV markers. HBsAg was detected in 6.71% of lepromatous and 3.5% of tuberculoid sera. The per cent positivity of lepromatous and tuberculoid sera for anti-HBs antibodies was 30.59% and 35.08%, respectively. The positivity of normal sera for HBsAg and anti-HBs was 3.60% and 21.69% respectively. The difference in the positivity of three groups of sera (lepromatous, tuberculoid and normal) for HBsAg or anti-HBs was not statistically significant. Anti-HBc (IgM) antibodies were detected in 6% of lepromatous sera. HBV-specific DNAPolymerase activity was found in 22.22% of HBsAg positive (but anti-HBc negative) sera, and 66.66% of anti-HBc positive (but HBsAg negative) sera. The pattern of acute HBV infection in leprosy patients followed the typical pattern prevalent in the normal population.

MUKHERJEE, A.; MISRA, R.S. & MEYERS, W. M. An Electron Microscopic Study of Lymphatics in the Dermal Lesions of Human Leprosy. **Int. J. Leprosy**, **57**(2):506-510, 1989.

SUMMARY - The dermal lymphatic vessels in lepromatous and tuberculoid leprosy lesions were studied by light and electron-microscopy. In the lepromatous patient, lymphatic vessels were seen in both infra- and per-granulomatous areas. The lymphatic lining cells contained lipid droplets, lysosomes, and numerous pinocytotic vesicles. Cells bearing bacilli were only occasionally seen. In the tuberculoid cases, lymphatic vessels were seen only along the edges of the granulomas and the lining cells were less prominent. Inflammatory cells, both lymphocytes and histiocytes, were found traversing the walls of lymphatic vessels in both groups of patients. The results of the study confirm the continued and increased functioning of the lymphatic drainage system in dermal leprosy lesions and indicates that it may be a major route for the clearance of lipids from the lipid-rich bacilliferous lesions in the lepromatous patient. The lymphatic pathway appears to be a minor pathway for the disseminations of *Mycobacterium leprae* in comparison with the blood vascular system.

MWATHA, J. et al. A comparative evaluation of serological assays for lepromatous leprosy. **Leprosy Rev.**, **59**:195-199, 1988.

SUMMARY: A comparative antibody analysis of sera from 26 patients with lepromatous leprosy showed consistently high titres to the phenolic glycolipid I disaccharide and to the ML04 epitope of the 35 kD protein antigen of *Mycobacterium leprae*. Antibody titres of these two specificities were positively correlated ($p < 0.01$) and both declined after chemotherapy, although this trend was apparent earlier after the onset of therapy for the anti-35kD antibody response. Two healthy subjects (out of 18

tested) from the leprosy endemic area had pronounced anti-PGL-1 but no demonstrable anti-35kD antigen activities. In contrast with the above results, antibody levels to lipoarabinomannan were much lower and with great individual variation between the LL patients. Finally, antibody levels to the M. leprae-specific 111E9 epitope (peptide 422-436) of the 65kD proteins antigen were not demonstrable in the majority of LL patients.

NAGESHA, C.N. et al. A concentration method for detection and quantitation of bacillaemia in leprosy and its comparison with other techniques. **Leprosy Rev.**, **59**:337-340, 1988.

SUMMARY - Detection and quantitation of bacillaemia in 50 untreated cases of leprosy were evaluated by the buffy coat method, the haemolysis method and the present Petroff's method. Bacillaemia was detected in 29 (58%) out of 50 cases and in 32 LL-BL cases it was detected in 28 patients with a success rate of 87.5%. Both the haemolysis method and Petroff's method were found useful in estimating the bacillary load per millilitre of blood. Importantly, the smears of concentrated deposit obtained by Petroff's method revealed only AFB free from any artefacts and also yielded high bacterial counts. In conclusion, Petroff's method of concentration was found superior over other methods for detection and quantitation of bacillaemia in the lepromatous spectrum (LL-BL) of the disease.

NAIK, R.; BHARATHI, S. & BAI, B. M. Squamous cell carcinoma developing in trophic ulcer in leprosy. **Indian J. Leprosy**, **60**(3): 380-384 1988.

ABSTRACT - Two cases of leprosy patients having trophic ulcer over the heel, later developed squamous cell carcinoma are reported along with follow up.

NAYAK, K.C. et al. A study of incidence of Australia antigen and derangement in liver function tests in leprosy. **Indian J. Leprosy**, **61**(1): 23-30, 1989.

ABSTRACT - The present study was conducted in 50 patients of various subtypes of leprosy (Lepromatous, Tuberculoid, Borderline borderline) and 25 healthy control, for detection of Australia antigen and various liver function tests (serum protein, cholesterol, alkaline phosphates, SGOT, SGPT, Bilirubin and liver biopsy) to see incidence of Australia Antigen and derangement in liver function. It was concluded that incidence of Australia antigen in study and control group was zero. Total serum protein and serum globulin was increased in lepromatous leprosy. A/G ratio was reversed in 34.3% and 50% in lepromatous and tuberculoid leprosy respectively. Granulomatous hepatitis was seen in 68.66% and 50% cases of lepromatous and tuberculoid leprosy respectively. No relationship was established between hepatic lesion. Australia antigen and liver function test.

NEYLAN, T.C.; NELSON, K.E.; SCHAUF, V. & SCOLLARD, D.M. Illness Beliefs of Leprosy Patients: Use of Medical Anthropology In Clinical Practice. **Int. J. Leprosy**, **58**(2):231-237, 1988.

SUMMARY - Illness beliefs of 61 patients identified as having leprosy were assessed by Kleinman's Explanatory Model Format. Our patients used a wide variety of etiologic theories which were grouped in categories such as venereal disease, heredity, dangerous food, sin, karma, and humoral disorders. Despite efforts at patient education, very few patients adopted the concept of bacterial infection to explain their illness. The patients identified their illness with a variety of different labels, some of which had associations with particular symptoms. Leprosy was perceived and experienced more as a

series of acute disorders not necessarily related to one another. The various theories of illness were instrumental in directing treatment choices which included a number of indigneous healing practices. Such information may be useful in improving patient care and compliance by providing practitioners with interpretive strategies for communicating with their patients.

NIGHAM, P. et al. Male gonads in leprosy - a clinicopathological study. **Indian J. Leprosy**, **80**(1):77-83, 1988.

ABSTRACT - Sixty male leprosy patients (mean age 27.2=5.04 years) selected at random, were studied for gonadal involvement with the mean duration of illness 4.17=3.27 years. Only lepromatous and borderline leprosy cases developed testicular and epididymal changes. Testicular pain and/or swelling (lepromatous 62.5%, borderline 30%) was the main presenting feature. Altered sexual function was observed in 34(56.6%) cases, and 11 patients revealed altered sexual hair pattern. Gynecomastia was seen in 9 cases. Reduced testicular size along with its soft feeling was present in 25% of cases while no testicular sensation was felt in 8 (13.3%) cases, and impaired testicular sensation in 9 (15%) of them. Spermogram revealed azoospermia in 19 (35%) and oligospermia in 16 (26.6%) cases. Histopathology revealed evidences of leprosy pathology irrespective of testicular size, semen picture and clinical manifestations. There was marked variation in histopathological findings in testes and hence it was difficult to categorise them into vascular, interstitial and obliterative phase.

NILSEN, R. et al. The role of nerve biopsies in the diagnosis and management of leprosy. **Leprosy Rev.**, **60**(1): 28-32, 1989.

SUMMARY - Skin and nerve biopsies from 81

patients clinically suspected to have leprosy were studied. Histologically 54% of the patients showed leprosy. Both nerve and skin biopsies were histologically diagnostic of leprosy in 64% of these cases while 32% were diagnostic in the nerve but not skin biopsy. In the 11 patients with multibacillary leprosy (BI>2) a multibacillary picture was seen in all nerve biopsies while 8 patients exhibited a paucibacillary leprosy of the skin and a multibacillary leprosy in the nerve. The present results emphasize that leprosy is a disease of peripheral nerves and that diagnostic criteria other than skin parameters is important to reach a proper diagnosis. The evident possibility of having patients with a multibacillary leprosy in peripheral nerves and paucibacillary in skin emphasize the need for clinical studies to clarify the criteria for the diagnosis of paucibacillary leprosy and the drug regimen for this group of patients.

NOORDEEN, S. K. The challenge of leprosy. /Editorial/. **Indian J. Leprosy**, **80**(2):149-158, 1988.

It gives me great pleasure to be able to participate in the XV Biennial Conference of the Indian Association of Leprologists here in this beautiful city of Vishakapatnam, and meet many of my old friend and colleague. I am grateful to the organizers of the Conference for making it possible. The Indian Association of Leprologists is the largest and one of the most important professional groups in the field of leprosy in the world today, and I recall with pride my close associations with IAL till a few years ago. In fact the growth and development of IAL rightly reflects the immense growth and development of leprosy work in India in recent years.

What exactly are the challenges facing leprosy and leprosy work today. In what way are they different from the challenges faced in the past? There is no doubt that the basic challenges remain the same but the emphasis in several areas has changed substantially. To understand this better it is important

to take into consideration some of the achievements in recent years that have benefited or promises to benefit leprosy work.

PARIKH, D.A. et al. Penile and scrotal lesions in leprosy: case reports. **Leprosy Rev.**, **80**(4):303-305, 1989.

SUMMARY - Six leprosy patients in the Ridley-Jopling spectrum of BT-BL showing lesions on penis and scrotum are presented, as we believe that this common enough clinical feature is not well documented in the literature.

PATKI, A.H.; JADHAV, V. H. & MEHTA, J.M. A study of dermatological conditions in leprosy in-patients. **Indian J. Leprosy**, **61**(1): 92-95, 1989.

ABSTRACT - Three hundred and sixty six in-patients in a leprosy hospital were examined for other dermatological conditions. Eighty eight of them displayed ichthyosiform changes. A peculiar condition of a verrucous hyperkeratotic growth on the anterior aspect of ankle, not described previously, was observed in four patients. It was noted that 11 out of 12 patients with scabies did not have the classical lesions in the spaces of the hands.

PATNAIK, J.K. et al. Hepatic Morphology in Reactional States of Leprosy. **Int. J. Leprosy**, **57**(2):499-505, 1989.

SUMMARY - Liver function tests and liver biopsies were studied in 23 leprosy patients in reaction and 10 without reaction. The liver biopsies in leprosy patients with reaction showed exudative lesions, epithelioid and tuberculoid granulomas, and foam-cell granulomas. Portal vasculitis was encountered in a few cases. Neutrophilic infiltration

into the foam-cell granulomas was seen in a few cases of lepromatous (LL) leprosy with reaction. In six cases of borderline (BL, BB and BT) leprosy with reaction, a spectrum of lesions bearing footprints of exudative lesions were seen evolving into epithelioid-cell granulomas. Foam-cell granulomas and tuberculoid and epithelioid granulomas along with exudative lesions were encountered in two cases on individual biopsy strips. An altered albumin-to-globulin ratio was the chief functional derangement observed in these cases. The spectrum of changes observed in borderline leprosy with reaction could be discrete steps in the evolution of upgrading reaction.

PAVITHRAN, K. Chromoblastomycosis in a residual patch of leprosy. **Indian J. Leprosy**, **80**(30): 444-447, 1988.

ABSTRACT - A middle age male who had adequate dapsone monotherapy for borderline tuberculoid leprosy developed chromoblastomycosis within the residual analgesic patch during the post-treatment follow up period. *Cladsporium carrionii*, the causative fungus was isolated from culture in Sabouraud's agar. There was prompt therapeutic response to oral ketoconazole. The possible factors for development of chromoblastomycosis in this patient are discussed.

PAVITHRAN, K. Vitiligo following type II lepra reaction. **Indian J. Leprosy**, **61**(1):44-48, 1989.

ABSTRACT - A middle-aged male with lepromatous leprosy developed bouts of skin lesions of depigmented macules and patches of vitiligo, just following attacks of type II lepra reaction each time. In view of the present concept of autoimmunity playing a role in the pathogenesis of vitiligo as well as lepra reaction, their association in our patient appears to be more than fortuitous, the depigmented

macules persisted even after regression of skin of leprosy following chemotherapy. The vitiligo macules responded partially to topical and systemic psoralen therapy.

QIN-XUE, Wu; GAN-YUN, Ye & XIN-Yu, U. Serological Activity of Natural Disaccharide Octyl bovine Serum Albumin (ND-OBSA) In Sera from Patients with Leprosy, Tuberculosis, and Normal Controls. **Int. J. Leprosy**, **56** (1):50-55, 1988.

SUMMARY - We studied the natural disaccharide-octyl-bovine serum albumin (ND-OBSA) enzyme-linked immunosorbent assay (ELISA) in sera from 151 leprosy patients, 20 tuberculosis patients, and 42 normal persons from a nonendemic area. The three ELISAs, whole *Mycobacterium leprae* (WML), phenolic glycolipid-I (PGL-I), and ND-O-BSA, are all highly sensitive for detecting antibodies against *M. Leprae*. The results indicate that the serological activity has highly significant, positive correlations among the three types of antigens used. Their positivity rates are 100% with PGL-I and 97.4% with WML and ND-O-BSA in leprosy patients, and 0% with any antigen used in normal persons at NV-a (a supposed theoretical normal value). However, all three antigens show crossreactivity with tuberculosis patients at different levels. At NV-c (a supposed practical normal value, PNV), this crossreaction significantly decreased in the WMKL EUSA (PNV = 0.28) and the PGL-I EUSA (PNV 0.18), and disappeared in the ND-O-BSA EUSA (PNV m 0.20). Under the same conditions, the same conditions, the positivity rates did not decrease significantly in leprosy patients, especially in multibacillary patients. Therefore, we suggest that the PGL-I EUSA in combination with the ND-O-BSA EUSA may be very useful for clinical applications, serodiagnosis, and for the study of subclinical infection in leprosy.

RAJAGOPALAN, M.S.; BALAKRISHNAN, S. & RAMU, G. Sub clinical infection and the relative risk of developing leprosy: a statistical approach. **Indian J. Leprosy**, **61**(2):169-172, 1989.

ABSTRACT - Subclinical infection in contacts of leprosy patients was identified by FLA-ABS test and Serum Antibody Competition Test (SACI). The risk of developing leprosy and the confidence intervals were worked out. The importance of expressing the risk ratio and confidence interval of the tests is brought out. This method is a useful adjunct to the routine statistical methods in epidemiological studies.

RANGDAENG, S. et al. Studies of Human Leprosy Lesion In Situ Using Suction-induced Blisters. 1. Cellular Components of New, Uncomplicated Lesions. **Int. J. Leprosy**, **57**(2):492-498, 1989.

SUMMARY - The cellular contents of blisters induced by suction over new, uncomplicated leprosy lesions, and in the skin of cured, control patients, have been examined with enzymed immunohistochemical staining over a period of 4 days. The total cellularity of the blisters varied over a wide range, not correlated with the type of leprosy. Mononuclear cells predominated at all times studied, with nearly equal percentages of monocytes and T lymphocytes. The T-helper: suppressor ratio was significantly greater in BT than in BL and LL lesions at 48 hr. Suction blisters offer a painless, quantitative, reproducible, multiple-sampling method for obtaining cells from the cutaneous infiltrates of leprosy for phenotyping or functional analysis.

RAO, T. & RAO, P.R. Serum immune complexes in erythema nodosum leprosum reactions of leprosy. **Indian J. Leprosy**, **60**(2):189-195, 1988.

ABSTRACT - Serum estimations of Immunoglobulins, complement components and their presence in circulating immune complexes were carried out in 39 Lepromatous, 44 ENL and 22 Post ENL leprosy patients. Serum IgG, IgA, 19M, C3 and C4 levels were determined by single radial immunodiffusion. Serum immune complexes were precipitated with Polyethylene Glycol (PEG) and IgG, IgA, 19M, C3 and C4 were estimated by single radial immunodiffusion and expressed as % of precipitation of their serum level. Decreased IgG, IgM; increased IgA and C3; and no change in C4 levels are observed in ENL than Lepromatous and Post ENL patients. However, a gradual insignificant reduction of 19G, IgA, and IgM was found from Lepromatous to ENL and Post ENL patients in the PEG-precipitates. Similarly, C3 and C4 was found reduced insignificantly in ENL than Lepromatous and Post ENL patients. The significance of these estimations in relation to immune status of ENL reactions are discussed.

RAZACK, E.M.A. et al. Multicentric reticulohistiocytosis masquerading lepromatous leprosy. **Indian J. Leprosy**, **60**(4):604-608, 1988.

ABSTRACT - a 23-year old male presented for evaluation of skin coloured, non-scaly, asymptomatic papulonodules of sizes varying from 0.5 cm to 2 cm of 4 years duration distributed all over the body including the ears. The plaques present on the face gave the appearance of a leonine fades. Clinically mistaken for lepromatous leprosy in reaction the patient was treated with antileprosy and anti-inflammatory drugs in 3 other centres for months with no improvement. Systemic involvement included painful swelling of both knee joints, pericardial effusion, episcleritis and enlarged liver. Negative slit smears for AFB from the nodules repeatedly and the histology of one on the skin nodules clinched the diagnosis of multicentric reticulohistiocytosis. The

case is reported not only for its rarity, and varying clinical lesions simulating lepromatous leprosy but also to alert the leprologists to avert unreasonable delay in diagnosis.

REA, T.H. A Comparative Study of Testicular involvement in Lepromatous and Borderline Lepromatous Leprosy. **Int. J. Leprosy**, **56**(3):383-388, 1988.

SUMMARY - To measure the comparative prevalence of testicular involvement in borderline lepromatous (BL) and lepromatous (LL) leprosy patients, serum FSH, LH, and total testosterone levels were measured in 42 LL and 21 BL subjects. Serum FSH levels were elevated in 19% of BL and in 88% of LL patients. Serum LH values were increased in 10% of BL and in 79% of LL patients. Total serum testosterone values below the normal limit of 280 ng/dl were not found in BL subjects but were present in 31% (13) of the LL cases. By measuring serum free testosterone in patients with low-normal total values, one BL and an additional five LL patients could be identified as below normal limits, i.e., <50 pg/ml. Thus, androgen deficiency was present in 5% of BL and 43% of LL subjects. All of these differences between the BL and LL patients were statistically significant.

SANE, S. 8. & MEHTA, J. M. Malignant transformation in trophic ulcers in leprosy: a study of 12 cases **Indian J. Leprosy**, **60**(1):93-99, 1988.

ABSTRACT - Twelve cases of carcinomata arising in trophic ulcers of leprosy are presented. Out of these, 10 were on the plantar surface more commonly on the proximal part of foot, one on lower leg and dorsum of foot, and one in an ulcer over the lateral malleolus. Almost all presented with infected growths and regional lymphadenopathy. Three cases

presented with advanced disease with fungatir.d inguinal nodes and were fatal. Nine cases underwent below knee amputation under antibiotic cover as a definitive treatment and the lymph nodes were kept under observation. Histologically, all were low grade squamous cell carcinomas. In most cases lymph nodes regressed after removal of primary and In one case lymph nodes were positive for malignancy.

This study was conducted at Dr. Bandorawalla Leprosy Hospital, Kondhawa, Pune 22 from the year 1981 to 1987.

SAXENA, N.; SHARMA, R.P. & SINGH, V.S. Study of serun zinc level in leprosy **Indian J. Leprosy, 60(4):556.561, 1988.**

ABSTRACT - Serum Zinc level was estimated in different types of leprosy by "Dithiazone extraction" method In 75 leprosy patients comprising 15 each of Tuberculoid - Tuberculoid (TT); Borderline Tuberculoid (BT); Borderline Borderline (BB): Borderline Lepromatous (BL) and Lepromatous Lepromatous (LL). These findings were evaluated in comparison to 15 normal subjects serving as controls. Serum zinc level was observed to be significantly low in all types of leprosy except tuberculoid leprosy (TT). No significant difference was observed in serum zinc levels before and after 90 days of dapsone therapy. The findings of our study are of considerable importance as zinc deficiency can be one of the factors involved in non-specific supression of cell mediated Immunity (CMI) In lepromatous leprosy.

SEN, R. et al. Bacillaemia and bone marrow involvement in leprosy. **Indian J. Leprosy, 61(4):445-452, 1989.**

ABSTARCT - Fifty patients (24 new and 26 receiving specific treatment) of leprosy were investigated to study the concentration and

morphological index (MI)of the lepra bacilli in skin, peripheral blood and bone marrow. The organisms were detected in 28 skin slit smear examination, in 38 cases on bone marrow examination and in 38 cases on smears made from buffy coat of peripheral blood. Out 22 cases negative for the bacilli on skin slit smears, 15 had the organisms either in buffy coat or bone marrow or both. Acid fast bacilli in peripheral blood and bone marrow with skin smear negativity were mainly observed in patients with paucibacillary type of the disease and In those who were receiving treatment. Examination of buffy coat and bone marrow for presence of lepra bacilli is suggested to establish the diagnosis in doubtful cases.

SIDDAPPA, K. et al. Calcification of ulnar nerve in a patient with tuberculoid leprosy - a case report. **Indian J. Leprosy, 61(1): 107-110, 1989.**

ABSTRACT - A case of Tuberculoid Leprosy who showed Evidence of Calcification of Right Ulnar Nerve at Elbow on radiological Examination is reported.

SIRUMBAN, P. et al. Diagnostic value of cardinal signs/symptoms in paucibacillary leprosy. **Indian J. Leprosy, 60(2): 207-214, 1988.**

ABSTRACT - With the help of sensivity and specificity criteria, an attempt is made to quantify the gain in certainty in diagnosis with the use of various cardinal signs/symptoms (S/s) of leprosy in order to study their predictive value in correct diagnosis of paucibacillary leprosy (PB) by the Paramedical Workers. The study was based on the findings in 326 new cases of paucibacillary leprosy detected by 10 paramedical workers durign a recent field survey. Observation in the present study confirm the scientific basis of presently used combinations of cardinal S/s for correct diagnosis of leprosy especially the combination of (skin) patch with

loss/impairment of sensation. The detailed observations made in the study are discussed in this communication.

SMITH, W.C.S. Are hypersensitivity reactions to dapsone becoming more frequent? **Leprosy Rev.**, **59**:53-58, 1988.

SUMMARY - Hypersensitivity reactions to dapsone, which were common in the late 1940s and early 1950s and then virtually disappeared, have now reappeared in the last 5-6 years. Review of the literature and a postal survey of centres using dapsone on a mass scale confirms that the reaction has reappeared. The explanation for this is unclear but may be related to the use of dapsone combined with other drugs. These reactions are rare and some centres treating large numbers of patients with dapsone have not experienced any cases. Dapsone must still be regarded as a safe preparation.

SONI, N.K. Epistaxis in leprosy. **Indian J. Leprosy**, **60**(4): 562-565, 1988.

ABSTRACT - Forty-four leprosy patients with epistaxis were analysed. Aetiopathogenesis of epistaxis in leprosy is discussed in the light of available literature. It has been suggested that epistaxis is more frequent and severe in leprosy patients and more liable to have complications. Epistaxis in leprosy with nasal lesions may alarm the physician that patient has some systemic disorder.

SONI, N.K. Gustatory rhinorrhoea syndrome: result of misreinnervation in leprosy. **Indian J. Leprosy**, **60**(3): 418-421, 1988.

ABSTRACT - A case of excessive rhinorrhoea in response to taste stimulus, due to misdirection of regenerating nerve fibres following recovery of facial

nerve. In leprosy is described under title of 'Gustatory Rhinorrhoea Syndrome'. The pathophysiology of such conditions are discussed in the light of available literature.

SONI, N.R. Radiological study of the paranasal sinuses in lepromatous leprosy. **Indian J. Leprosy**, **60**(2): 285-289, 1988.

ABSTRACT - Thirty patients of lepromatous leprosy have been studied by radiological investigation for affection of paranasal sinuses. It has been found that leprosy involves all groups of sinuses and maxillary antrum is found to be more commonly affected. Diffuse hypertrophy type of lesion is more commonly recorded in maxillary antrum, in x-ray of paranasal sinuses. The clinical significance and importance of extension of disease in the sinuses is discussed in the light of available literature.

SOSHAMMA, G. & SURYAWANSHI, N. Eye lesions in leprosy. **Leprosy Rev.**, **60**(1):33-38, 1989.

SUMMARY - Out of 742 out-patients screened for ocular disease, 177 (24%) had eye lesions due to leprosy. These were more in the lepromatous spectrum of the disease and showed increasing trend with age of patient and duration of the disease. Madarosis was the commonest lesion (76%). The serious and sight threatening lesions like lagophthalmos, corneal anaesthesia, corneal opacities and ulcers, iritis and complicated cataract constituted 8-22% of the lesions. Blindness due to corneal opacity and complicated cataract developed in 8 patients, constituting 3-4% of eye lesions with a prevalence rate of 0-8% among all the leprosy patients. Although the blinding lesions occurred in a very small percentage of patients, most of these are preventable through early recognition and institution of appropriate treatment. The simple techniques of

examination to detect potentially sight threatening lesions should be taught to all leprosy workers to prevent blindness among leprosy patients.

SRINIVASAN , H. & SUMPE, B. Value of thermal sensibility testing In leprosy diagnosis In the field - field trial of a pocket device. **Leprosy rev.**, **80**(4):317-326, 1989.

SUMMARY - A handy thermal sensibility testing device has been developed and field tested in different centres in Africa and India The device performed satisfactorily under field conditions and made testing for thermal sensibility In the field practicable and easy. Examination of the results of testing 260 persons, most of them having a few lesions of early leprosy, showed that the expected Increase in the rate of diagnosis of sensory impairment in the skin lesions, and so in the diagnosis of leprosy, would be about 15-25% when thermal sensibility testing using this device was added to the other sensibility tests routinely used in the field. Regular use of this device in the field will help to bring more leprosy patients under treatment than at present.

TALWAR, S. Spina bifida occulta with atrophy of toes. **Indian J. Leprosy**, **80**(2):306-308, 1988.

ABSTRACT- A case of lumbosacral spinabifida occulta presented with resorption of toes which started at six years of age. Its differential diagnosis with neural leprosy is discussed.

THANGARAJ, H. et al. Epidermal Changes in Reactional Leprosy: Keratinocyte Ia Expression as an Indicator of Cell - mediated Immune Responses. **Int. J. Leprosy**, **56**(3):401-407, 1988.

SUMMARY - Significant epidermal changes were observed In lesions of leprosy patients undergoing type 1 (reversal) and type 2 (erythema nodosum leprosum, ENL) reactions. Using indirect immunofluorescence and frozen sections stained with the appropriate monoclonal antibodies, an increase in epidermal cell layers, the presence of Ia on keratinocytes, an Increase in Langerhans'cell numbers, and scattered T cells within the epidermis were seen In both types of reactions. Although borderline tuberculoid patients with type 1-reactions showed the consistent presence of Ia on all keratinocytes, lepromatous patients undergoing ENL reactions showed only a patchy distribution. Taken together, these studies Indicate that local T-cell activation leading to the production of terminal lymphokine, such as Interferon-gamma, with subsequent induction of Ia on epidermal cells may be an important event in reactional leprosy states. It is of interest that the hitherto considered "anergic" lepromatous patients should recover temporary T-cell reactivity during the natural course of the disease.

VAISHNAVI, C. et al. Leprosy and hepatitis B surface antigen. **Indian J. Leprosy**, **61**(2): 211-215, 1989.

ABSTRACT - An EUSA technique has been developed to detect HBsAg in the sera of leprosy patients. Out of ninety-two serum samples taken from untreated leprosy patients, 10 samples were positive for HBsAg. The EUSA used In the present Investigation is a low cost, reliable and sensitive marker of HBsAg. It is better than lesser sensitive (haemagglutination and counterimmuno electrophoresis), costly and hazardous (radioimmunoassay) techniques and is therefore recommended for routine use.

AYTERKIN, A.H. & SAYLAN, T. Leprosy in Turkey. **Leprosy Rev.**, **59**:231-234, 1988.

SUMMARY - An account is given of the historical development of leprosy work and control measures in Turkey. Detailed information is recorded on the distribution of the disease according to year of registration; age; sex; classification. After through examination of the patient registers and other sources of information, it can now be confidently stated that reliable data exist for a total of 3851 leprosy patients in Turkey. Studies of distribution of cases in the provinces and regions reveal some curious discrepancies between areas of high and low prevalence, not explained by socio-economic or other factors. The systematic examination of registers and other records, as described in this article, may be of value in other countries, especially when the incidence rate is decreasing, in defining the overall problem and maintaining the interest of health authorities and personnel.

BHATKI, W.S. Case detection; are the present survey methods effective? A review of leprosy surveys in Bombay. **Leprosy Rev.**, **59**:239-244, 1988.

SUMMARY - The results of active surveys carried out in Bombay during the last 15 years show that such surveys predominantly detect non-infectious cases with 1-2 skin lesions. Considering the work input in terms of field workers' days required to detect each case, particularly an infectious case, the present survey methods are not cost effective. Health education is found to be more effective and efficient in case detection than active surveys.

Modified methods which can identify infectious cases at an early stage are discussed and suggested.

CHATURVEDI, R.M. Epidemiological study of leprosy in Malwani suburb of Bombay. **Leprosy Rev.**, **59**:113-120, 1988.

SUMMARY - The present investigation was undertaken to study epidemiology of leprosy in Malwani, a western suburb of Bombay, which has a population of 63,321. A total of 691 cases were detected in a 4-year follow-up period between April 1979 and April 1983. The prevalence rate in school children was 13.88% and the peak incidence occurred in the age group 10-19 years. In this study, the females predominated the males with the male to

female ratio being 1:1.33. The disease was found to be more prevalent in the low socio economic group and in overcrowded families. Extremities were most commonly affected. A large number of cases occurred in contacts of infectious lepromatous patients. The exact reasons for this could not be ascertained from this rather small sample. It could be related to droplet infections or skin contact

DEWAPURA, D.R. The current state of leprosy control activities in Sri Lanka. **Leprosy Rev.**, **60**(1):39-44, 1989.

SUMMARY - In Sri Lanka the overall prevalence of leprosy was 0.14 per 1,000 population and the incidence 0.07 per 1000 population at the end of 1987. Although the endemicity is low in the island, disease transmission has not yet been achieved as the annual detection of new cases and the child rate has been gradually rising. The major activities of the leprosy control programme are case-finding, treatment and defaulter retrieval, health education, rehabilitation and training. The field programme is implemented through 15 specially trained paramedical workers. In addition there are 5 medical officers attached to the Anti-leprosy Campaign. The Director of the Anti-leprosy Campaign is in overall charge of the National Leprosy Programme and is also project manager for the Sri Lanka Emmaus Leprosy Control Project.

GOYDER, E.C. Leprosy control in a Bombay slum - a general assessment. **Leprosy Rev.**, **59**:245-253, 1988.

SUMMARY - During the course of a medical student elective period, the author collected data from one of the largest leprosy control projects in the slums of Bombay, where the disease is hyperendemic. Particular attention was given to case-detection rates over a period of 5 years, drop-out rates, disability-deformity, stigma and socio-economic conditions. In this retrospective study, carried out during a limited period of time in one project, it seems that compliance, regularity of attendance and utilization by the patients of the excellent services offered all run at a level which is

often disappointingly low. The current priority is for improved case-holding and some of the factor needed to bring this about are discussed.

JEYASEELAN, L & RAO, P.S.S. Determination of sample sizes for epidemiological surveys using cluster sampling technique. **Indian J. Leprosy**, **61**(1):84-91, 1989.

ABSTRACT - Cluster sampling often provides a convenient and low cost device, in epidemiological surveys. The sample size needed under cluster sampling is generally larger than that in an individual based scheme due to the intra-class correlation existing in a cluster. This intra-class correlation coefficient is usually not known and some assumptions or estimates are essential. The strengths and weaknesses of cluster sampling over other sampling plans are presented and briefly discussed in this paper with particular reference to leprosy control programmes. One particular model of multistage cluster sampling technique is suggested in the evaluation of a District level programme, which includes determining the effectiveness of Multi-Drug Therapy, monitoring efficiency of paramedical workers and estimating the incidence of leprosy.

KAUR, P. et al. Epidemiology of leprosy in tribals of Adhaura plateau. **Indian J. Leprosy**, **60**(4):577-580, 1980.

ABSTRACT - A door to door survey was carried out in the Adhaura plateau of Bihar, to find out the magnitude of leprosy problems in that area. Out of a total of 7,521 persons, mostly tribals, 5,476 were examined giving a coverage of 72.8%. Prevalence rate of leprosy was 20.6%/1000 population. Maximum prevalence was seen in the age group of 55 and above. The disease was more common in males and in the literate and educated group. The ratio of tuberculoid was 57.5% borderline 29.0% and lepromatous 10.0%, indeterminate type constituted 3.5%. The population had a poor nutritional status with caloric intake of 1471 cal per day.

LORETTI, A. Leprosy control: the rationale of integration. **Leprosy Rev.**, **60**(4):306-316 1989.

SUMMARY - After considering the situation

and the perspectives of integration and the drawbacks that a vertical approach can represent for leprosy control, the author proposes the framework of control programmes as a systemic model for comprehensive health care. The structure that health services in developing countries are adopting in order to implement PHC allows for an horizontal integration of specific activities: conversely, activities which have already proved their value for leprosy control can easily enlarge their scope and include other prevalent conditions, Integration leads to an improvement in patients and health workers' attitudes; provided that the necessary supervision is guaranteed, integration is feasible and warrants more effective patients' care and a better exploitation of resources In order to reduce the specific risk in the community.

MISHRA, R. S.; RAMESH, V. & NIGAM, P.K. Leprosy in low endemic areas of India: an appraisal and suggested measures for control. **Indian J. Leprosy**, **61**(3):345-350, 1989.

ABSTRACT - Prevalence of leprosy in the low endemic areas of India is described based on the observations of patients attending an Urban Leprosy Centre in the Union Territory of Delhi from the neighbouring states. The rising incidence in these so-called low to moderate endemic places is closely linked to factors related to urbanisation, movement of people in search of employment, etc., which necessitate fresh surveys in these areas. A significant number of leprosy patients attending the Centre were irregular (37.7%) in therapy and many absconded after the initial visit (35.3%), the reasons for which are discussed. These figures are compared to that from similar low endemic areas and known high endemic parts of the country. Suitable modifications to the control programme in these areas are suggested under the Purview of the National Leprosy Eradication Programme.

NADKARNI, N. J. et al. Childhood leprosy in Bombay: a clinico-epidemiological study. **Indian J. Leprosy**, **60**(2):173-188, 1988.

ABSTRACT - During the years 1976-1985, 2138 cases of leprosy were detected in children aged 0-14 years, in L and M wards of Greater Bombay. Out of these, records of 1084 patients were available for detailed analysis. These were mainly from the deprived sections of society. Most cases were detected through surveys, though in recent years, there is an increasing trend for voluntary reporting. The relevant epidemiological and clinical findings are presented and compared with the data of other workers in this field.

REVANKAR, C.R. et al. Leprosy survey in industries in Bombay. **Indian J. Leprosy**, **61**(3): 367-372 1988

SUMMARY - Population surveys for leprosy in industrial cities like Bombay revealed that about 60% of adult subjects especially males could be examined. The fact that the prevalence rate of leprosy particularly multibacillary type is much higher in this segment of population as compared to other groups indicates the importance of examining this population at their workspot like industries.

22287 industrial workers were examined for leprosy by paramedical auxiliaries in their establishments and 270 leprosy cases were detected (P.R. 12/1000). However, only 13 multibacillary cases (P.R. 0.5/1000) could be unearthed. 12 patients were with grade II and above. 184 (83%) were untreated. 161 (60%) patients reported for treatment.

With available resources, case holding of patients who are not within the control area of the project becomes a challenging job for paramedical workers though large number of leprosy cases are detected amongst industrial worker. If industrial management arranges treatment for leprosy patients without dislocating them from their service, the pool of infection in the urban community will be reduced and can contribute tremendously towards urban leprosy control programme.

REVANKAR, C.R. et al. Management information system for leprosy eradication programme – an alternative information system. **Leprosy Rev**, **60**(2):129.134, 1989.

SUMMARY - For efficient monitoring of multidrug therapy programmes for leprosy both at microlevel (individual patient monitoring) as well as macrolevel (programme monitoring), DANIDA decided to develop an alternative, simple and quick information system using a computer. A patient data base system was designed using dBase III package. The field workers of the National Leprosy Eradication Programme were trained in transcribing data on to coded data sheets. The data of 1750 patients of six leprosy control units from the 4 MDT districts were processed and feedback reports were sent to paramedical workers and programme managers. The initial experience in the field over the past year has shown that a computerized management information system is feasible and well accepted by the field staff for the purpose of improving monitoring.

PONNIGHAUS, J.M. et al. The Lepra Evaluation Project (LEP), an epidemiological study of leprosy in northern Malawi. II: Prevalence rates. **Leprosy Rev.**, **59**:97-112, 1988.

SUMMARY - Prevalence data obtained during a population survey carried out by the Lepra Evaluation Project (LEP) in Karonga District in Northern Malawi (Central Africa) are presented and analysed. Three different prevalence measures are presented: of individuals with current clinical leprosy who are likely to benefit from (further) antileprosy treatment (the 'clinical' prevalence rate), of individuals with either current clinical leprosy or residual signs only (the 'visible' prevalence rate), and of individuals with any physical or historical evidence of present or past leprosy (the 'cumulative' prevalence rate). Effects of past treatment and leprosy control efforts come to light in the difference between the 'visible' rate and the 'cumulative' rate and indicate that about 61% of the leprosy patients in this area who have received antileprosy treatment in the past, from the Lepra Control Project, are now without remaining signs of clinical leprosy. Past BCG vaccination campaigns and active case finding through school surveys appear to have affected the current age and sex patterns of the disease. Prevalence rates are higher among females than males in the older age groups. The paper demonstrates how the observed pattern and extent of leprosy are a function of the prevalence measure used.

FOSTER, R.L. Nutrition .in Leprosy: A Review. /Editorial/ **Int. J. Leprosy**, **56**(1):66-81, 1988.

SUMMARY AND CONCLUSIONS - The literature relating diet to leprosy is abundant between 1900 and 1960, peaking around 1940. Dietary factors that appear to influence the etiopathogenesis of Hansen's disease include:

vitamin A
 vitamin B group
 vitamin C vitamin D vitamin E calcium
 zinc

We noted a frequent lack of detailed dietary data in much of the literature cited. This is particularly true when the thrust of the investigation is not dietary.

The literature strongly suggests the beneficial influence of adequate diet on the outcome of Hansen's disease and the deleterious effect of a deficient diet. In contrast with the paucity of reported hard data in the previous reviews concerned with the effect of nutrition and diet on leprosy, is the increasing volume of literature reviews and experimental studies showing the profound impact of nutrition and diet on the Immune system of man and laboratory animals.

That diet has a global, if poorly understood, effect on the immune system is being increasingly recognized. The difficult question that remain is how to use this information in the control and prevention of disease. Therefore, we believe that more emphasis should be given to diet in the study of this important worldwide disease in light of the current understanding of biochemistry and immunology.

RAO, K.N. & SAHA, K. Undernutrition and Iepromatous leprosy. Serum vitamin A and E levels in leprosy spectrum. **Indian J. Leprosy**, **60**(1):66.70, 1988.

ABSTRACT - Serum vitamins A and E were estimated by spectrophotocolorimetric methods in 67 leprosy patients comprising 9 BT, 10 BB, 15 BL, 27 LL, including 12 Histoid cases. These findings were evaluated in comparison to 55 normal subjects serving as controls. A significant reduction in the mean serum levels of Vitamins 'A' and 'E' were observed in the leprosy groups as compared to normal controls. These findings are of considerable importance and need to be taken nota of in the light of delineating these alterations to the cause or effect of the disease. As far as we know, this is the first report discribing serum levels of Vitamins 'A' and 'E' in the leprosy spectrum.

SHEELA, G.R. at al. Leprosy teaching in medical colleges in Bombay - a questionnaire study. *Indian J. Leprosy*, **61**(2):233.237, 1989.

ABSTRACT - An attempt was made to study the adequacy of leprosy teaching, at the undergraduate level of the four medical colleges In Bombay, and to suggest possible routes towards the reorientation of leprosy teaching.

Over 55% of the medical faculty contacted expressed dissatisfaction with the existing pattern of leprosy teaching.

The survey reveals ample evidence pointing to the necessity of redesigning the curriculum at the undergraduate level, so as to provide increase weightage to both the theoretical and the practical aspects of leprosy. A heartening feature of the study Is the inclination shown by a majority of medical teachers to associate themselves with the PSM Department in order to help improve leprosy teaching and thereby help in leprosy control. This offer should definitely be taken advantage of for furthering the cause of leprosy eradication as a part of achievement of "Health for All by 2000 AD".

TARE, S.P. A Review of Health Education in Leprosy. /Editorials/ **Int. J. Leprosy**, **56**(4):611-618, 1988.

SUMMARY - Leprosy of Hansen's disease Is an age-old problem that has yet to be completely controlled. It is estimated that there are between

10-12 million leprosy cases in the world. However, only half the number of world leprosy cases were registered as of 1985. Leprosy may be viewed as a risk in areas where the prevalence of cases is over 1 per 1000. Therefore, 56 countries in the world may be thought of as at risk for leprosy. Health education is an integral part of leprosy control. Unfortunately, health education is often underrated in value and misunderstood as to its proper place in leprosy disease control. Joshi says "the present day leprosy control programme is based on three activities namely survey, education (regarding health) and treatment." Joshi further states that "treatment is emphasized equally by all, but regarding survey and health education it is observed that most of the workers emphasize only on survey and practically neglect health education work."

STES, P. & MALÂTRE, X. Will the leprosy endemic in Rwanda soon be under control? **Leprosy Rev.**, **60**(2): 139-146. 1989.

INTRODUCTION - It appears that leprosy in Rwanda is becoming a rather rare disease. By the end of 1987, 1142 cases were still under treatment, a prevalence rate of 0.17 per thousand. Prevalence rates declined from 0.26 per thousand in 1982, by an average of 0.018 per thousand a year. However, it is necessary to know whether the number of known patients reflects reality, and if case finding has been adequate. In other words: has the detection rate been a reliable indication of the incidence rate? This paper studies the problem, and tries to see if any conclusions can be made about the transmission of leprosy in the Rwandan population.

In the past, it has been suggested that a prevalence survey would be the most accurate way to evaluate leprosy prevalence. A preliminary study of the project however showed that, if we wanted to obtain acceptable margins of error, the sample to examine would be of about 225,000 persons. A survey of such size would be costly in time, money and personnel. Unfortunately, these disadvantages would outweigh any advantages to be gained from this procedure. So, we had to look for other methods to evaluate the importance of the leprosy problem in Rwanda, and particularly evaluate some epidemiological indices relating to the incidence rate.

SYLAN, T. at al. The characteristics and mode of detection of the new patients encountered in the leprosy endemic province of Van within the last five years. **Indian J. Leprosy**, **61**(2): 225-228, 1989.

ABSTRACT - Between 1983-1987, the Istanbul Leprosy Centre (ILC) organized in Van a leprosy education program for medical personnel and the local population. Subsequently whole population surveys and case contact surveys were carried out independently in different regions.

66 new cases were detected during those years 56(85%) patients were diagnosed by ILC teams at the field and at the hospital.

in 49 (74%) of the 66 there was one or more close contact within the family, in 17 (26%) there was none, but old patients in the village or nearby.

It is concluded that the education of the local medical authorities and the population is of utmost importance for the early diagnosis and patient-close contact surveys are the best for our country.

CREE, I.A. et al. Reproducibility of Histology in Leprosy Lesions. **Int. J. Leprosy**, **56**(2):297-301, 1988.

SUMMARY - The variability of three commonly used histological parameters in leprosy histology was examined within and between lesions on individual patients by taking two biopsies, either from opposing edges of the same lesion or from the edge of two separate lesions. There was little variation in granuloma fraction (GF), bacterial index (BI), or histological classification on the Ridley-Jopling scale between biopsies from opposing edges of the same lesion, but there was considerable variation in the GF between biopsies from the edge of different lesions. A lesser degree of variation was seen in the BI between different lesions, and there was little difference in histological classification between established lesions. Thus, it appears that local factors influence the size of the leprosy granuloma, but its histological composition and bacterial load are determined systemically.

JOB, A. & CHACKO, C.J.G. Reactional States in the Nasal Mucosa: A Clinical and Histopathological Study. **Int. J. Leprosy**, **56**(4):523-526, 1988.

SUMMARY - Twenty leprosy patients in the reactive phase of the disease were studied clinically and histologically for evidence of reactive lesions in the nasal mucosa. Ten of 4 patients with erythema nodosum leprosum (ENL) showed characteristic polymorphonuclear leukocytic infiltration and two patients showed vasculitis. The histological changes of reversal reactions in the nasal mucosa, one with upgrading reaction and the other with downgrading reaction, are reported.

MALATY, T. et al. Histopathological Changes in the Eyes of Mangabey Monkeys with Lepromatous Leprosy. **Int. J. Leprosy**, **56**(3):443-448, 1988.

SUMMARY - Leprosy is the third leading cause of preventable blindness; however, little is known about the spread of infection to the eye. We have studied the eyes of three sooty mangabey monkeys. Two were experimentally infected with *Mycobacterium leprae*; the third was not infected. In one of the infected animals there was histopathological evidence of lepromatous leprosy as evidenced by a chronic inflammatory infiltrate at the limbus, and detection of acid-fast bacilli in the corneal stroma, blood vessel walls, and corneal nerves. The latter were damaged as a result of the bacillary invasion. Electron microscopy revealed involvement and distortion of keratocytes with *M. leprae* and invasion of the corneal stroma by macrophages containing bacilli. Both infected animals showed focal collections of lymphocytes in the superficial stroma of the conjunctiva and in the ciliary body. This is the first report of the ocular manifestations of leprosy in any primate, including man, in which the duration of infection is known.

MUKHERJEE, A. & MISRA, R.S. Comparative histology of skin and nerve granulomas in leprosy patients. **Leprosy Rev.** **59**:177-180, 1988.

SUMMARY - Biopsies were taken from infiltrated lesions and thickened nerves in 23 patients with leprosy. The lesions were histologically graded and the histological features semiquantitated and compared at the 2 sites. No significant difference in the overall histological picture in the skin and the nerve was seen. Two features seen more in nerve granulomas were caseation and a higher granuloma fraction, neither of which was thought to have any significant bearing on the comparative immunohistological grading at the 2 sites.

PONNIGHAUS, J.M. & FINE, P.E.M. A comparison of sensory loss tests and histopathology in the diagnosis of leprosy. **Leprosy Rev.**, **60**(1): 20-27, 1989.

SUMMARY - Three different sensory loss tests, for anaesthesia to light touch, for diminished pain sensation and for loss of thermosensation, were compared with histopathological examination results in the diagnosis of suspected tuberculoid leprosy in 120 individuals with 126 lesions. Though none of the 3 tests used in this study was found to be

strikingly superior to any of the others, the results indicate potentially important differences in their usefulness in different subgroups of suspected patients. The methodological problems inherent in such studies are discussed.

SHENOI, S.D. & SIDDAPPA, K. Correlation of clinical and histopathologic features in untreated macular lesions of leprosy - a study of 100 cases. **Indian J. Leprosy**, **60**(1):202-206, 1988.

SUMMARY - Clinical and histopathological correlative studies carried out in 100 cases of leprosy with macular lesions revealed an overall parity in 47% of the cases. Disparity was observed in TT, BT, BB, BL and IL series but not in LL series. The variable tissue response in the disease spectrum due to the variability of CMI is responsible for the disparity in various types of leprosy, irrespective of the type of lesions, whether macular or elevated.

WABITSCH, K.R. & MEYERS,

W.M. Histopathologic observations on the persistence of *Mycobacterium leprae* in the skin of multibacillary leprosy patients under chemotherapy. **Leprosy Rev.**, **59**:41-346, 1988.

SUMMARY - In the study of 782 biopsy specimens from 195 patients during and after chemotherapy we compared the numbers of *Mycobacterium leprae* stained by the Fite-Faraco (FF) and the Gomori methenamine-silver (GMS) techniques. In many patients large amounts of non-acid-fast *M. leprae* or remnants thereof remained 66 months after starting effective multidrug therapy. The GMS stain is a useful method for assessing the efficacy of methods for enhancing bacillary clearance in multibacillary leprosy patients.

AGIS, F. et al. Use of anti-M. leprae Phenolic Glycolipid-I Antibody Detection for Early Diagnosis and Prognosis of Leprosy. **Int. J. Leprosy**, **56**(4):527-536, 1988.

SUMMARY - Untreated patients suffering from tuberculoid, lepromatous and indeterminate leprosy, their domiciliary contacts, and healthy controls, all living in Guadeloupe, West Indies, were tested by an ELISA for detecting IgM antibodies to the terminal disaccharide of the phenolic glycolipid-I antigen of Mycobacterium leprae. On most subjects, a Mitsuda test was also performed. A large majority of the tuberculoid patients and healthy subjects were Mitsuda positive. The seropositivity rate reached 44% among tuberculoid patients, and 6% among healthy subjects, with low antibody levels. Lepromatous patients were all Mitsuda negative and seropositive, with antibody production varying from low levels, as seen in tuberculoid patients, to much higher levels.

Indeterminate leprosy patients included 62% Mitsuda-positive subjects and 54% seropositive subjects with a large dispersion of antibody levels. Comparing the results of the Mitsuda test to those of the ELISA by factorial analysis allowed us to define several subgroups among this population: some (25%) showed a "lepromatous-like" immune status (Mitsuda negative, seropositive); others (54%) exhibited "tuberculoid-like" profiles (Mitsuda positive without antibodies or with low antibody levels). "Lepromatous-like" cases were significantly older than "tuberculoid-like" patients. A group of subjects (17%) was Mitsuda negative and seronegative, thus displaying a true "indeterminate" immune profile, which had not been seen in other forms of the disease and had been observed in only 2 out of 51 healthy controls.

A large majority of contacts was Mitsuda positive, with 33% of them being seropositive, indicating that the prevalence of M. leprae infection greatly exceeds that of overt leprosy in this population. Only a few contacts displayed lepromatous-like immune responses to M. leprae (Mitsuda negative, seropositive) or exhibited an "indeterminate" pattern (Mitsuda negative, seronegative).

BIGGINS, T. et al. T and B cells in borderline (BB) leprosy. **Indian J. Leprosy**, **60** (1):21-25, 1988.

ABSTRACT - The response to standard Dharmendra lepromin and the circulating T, B cell numbers in the peripheral blood were quantitated in 15 patients with Borderline (BB) Leprosy. On the basis of lepromin response, the patients fall into three groups (a) negative (b) = reaction (c) rarely positive. No significant difference in the numbers of E-rosette and EAC rosette forming cells was observed in the BB patients in comparison to controls.

CHAKRABARTY, A.K. et al. Solubilization of Preformed Immune Complexes in Sera of Patients with Type 1 and Type 2 Leprosy Reactions. **Int. J. Leprosy**, **56**(4):559-565, 1988.

SUMMARY - Serum complement activity in leprosy patients has been studied using solubilization of preformed immune complexes as an index. The solubilization capacity of sera from lepromatous patients with or without erythema nodosum leprosum (ENL) as well as from type 1 reactional patients was found markedly reduced as compared to controls. Solubilization did not improve at all in the ENL patients after remission of the reaction phase. The addition of fresh normal sera failed to bring about any significant restoration of solubilizing capacity of the deficient sera. Mycobacterium leprae sonicate significantly reduced the solubilization capacity. Our results suggest that circulating mycobacterial breakdown products possibly interfered with the capacity of the ENL patients' sera to solubilize immune complexes.

CHIRMULE, N. B.; CHATUVERDI, R. M. & DEO, M. G.
Immunogenic "Subunit" of the ICRC Antileprosy
Vaccine. **Int. J. Leprosy**, **56**(1):27-35, 1988.

SUMMARY - The administration of a vaccine containing ICRC bacilli, which is currently undergoing clinical trials in India, induces persistent lepromin conversion in lepromatous leprosy (LL) patients and lepromin negative healthy subjects, with "upgrading" of tissue response in the former. A sonicate of ICRC bacilli, when subjected to gel-filtration chromatography using high-pressure liquid chromatography (HPLC), yields a high molecular weight glycolipoprotein (PP-I) with an apparent molecular weight of 106 daltons. PP-I, which brings about lepromin conversion in lepromin-negative healthy subjects, is a major immunogen of the organism, and carries epitopes for both B and T cells. A similar high molecular weight glycolipoprotein (PP-I Mycobacterium leprae) has been isolated from the sonicate of M. leprae. The two PP-I fractions exhibit a close antigenic relatedness at both B- and T-cell levels. However, they differ in their chemical composition and carry different charges.

PP-I of ICRC is not only a good immunogen. Its high lipid content provides the necessary built-in adjuvant that would make it a good candidate for a "subunit" antileprosy vaccine. Also, since it carries epitopes for both B and T cells, PP-I ICRC could be used for "molecular engineering" to obtain molecules which selectively stimulate T-cell immunity which is the dominant host defense against M. leprae.

CREE, I. A. et al. Mucosal immunity to mycobacteria in leprosy patients and their contacts. **Leprosy Rev.**, **59**:309-316, 1988.

SUMMARY - Since the development of leprosy may follow the formation of an initial lesion in the nose, mucosal immune responses might be important in the protective immune response to Mycobacterium leprae. Salivary antibody responses to M. leprae and other mycobacteria were therefore investigated in leprosy patients and healthy contacts using EUSAs against whole mycobacteria and an M. leprae-specific glycolipid constituent (PGL1) of the external surface of M. leprae. Lower levels of salivary IgA directed against M. leprae were found in household contacts (at high risk of developing

leprosy) than in hospital contacts (low risk of leprosy). Samples from the local indigenous population with no known leprosy contact showed an intermediate number of positive salivary IgA responses against M. leprae and untreated patients were less likely to be positive than treated patients.

Correlation was found between salivary antibody responses to M. leprae, M. scrofulaceum and M. tuberculosis, suggesting the presence of some cross-reacting antibody. Few patients and no healthy subjects had detectable antibody responses against an epitope of PGL1, suggesting that this important serum antibody response is not a major component of the mucosal immune response to M. leprae. Since there appears to be a secretory IgA response to M. leprae which is least likely to be found amongst those with the disease and in those individuals with increased risk of developing leprosy, we suggest that the mucosal immune system might be of importance in a putative protective response to infection by the leprosy bacillus.

CREE, I. A. et al. Serum antibody responses to mycobacteria in leprosy patients and their contacts. **Leprosy Rev.**, **59**:317-327, 1988.

SUMMARY - The aim of this descriptive study was to investigate the relationships between serum antibody responses to different mycobacteria in leprosy patients and contacts. The results of EUSAs for serum antibody against whole mycobacteria (Mycobacterium leprae, M. tuberculosis, and M. scrofulaceum) were compared with the results of M. leprae-specific ELISA for antibody against an epitope of PGL1. The IgG response was found to be predominant in ELISAs for antibody directed against whole M. leprae, while the IgM response was greatest in the assay for antibody against PGL1. Some healthy hospital workers were found to have appreciable levels of IgM anti-PGL1. Since infection in this group is unlikely chronic exposure may result in humoral (responses to PGL1 in addition to subclinical leprosy. None of the ELISAs studied were able to give greater than a 55% sensitivity at 95% specificity and none were considered suitable for serodiagnostic use.

Significant correlation was found between the results from the whole mycobacterial EUSAs, which could be explained on the basis of cross-reaction between antibodies directed against common antigens. However, similar correlations were found between the results of the M. leprae-specific ELISA

and the assay for antibody against whole *M. tuberculosis* and *M. scrofulaceum* which were greater than those for antibody against whole *M. leprae*. Infection with *M. leprae* may produce general stimulation of immunological memory for common mycobacteria; antigens result in responses to antigens belonging to other mycobacteria to which the host has been exposed previously.

DESFORGES, S. et al. Specific Anti-*M. leprae* PGL-I Antibodies and Mitsuda Reactions in the Management of Household Contacts in New Caledonia. **Int. J. Leprosy**, **57**(4):794-800, 1989.

SUMMARY - Household contacts of leprosy patients have been tested for anti-phenolic glycolipid-I IgM antibodies (anti-PGL-I IgM) by an ELISA using the natural disaccharide (NDO) and natural trisaccharide (NTO) synthetic antigens. A group of healthy subjects without known exposure to *Mycobacterium leprae* served as controls. The percentages of positivity observed in multibacillary patients, paucibacillary patients, and household contacts were significantly higher than those of the negative controls. The absorbance values using NDO and NTO correlated well (range 0.59-0.91) when analysis of each subject group was performed. As reported here, NDO and NTO antigens seem to be equal in detecting leprosy cases; 100% of multibacillary and 21.43% of paucibacillary cases were detected as seropositive. For the screening of household contacts, NDO appears to be more sensitive and NTO more specific. There were more seropositive cases in the young age groups of household contacts, suggesting a higher rate of transmission of *M. leprae* infection in those age groups. Lepromin and anti-PGL-IIgG tests were also performed in contacts who were followed. The 2 paucibacillary subjects (1 borderline tuberculoid, 1 indeterminate) were Mitsuda negative. At diagnosis, their anti-PGL-I IgM levels were much higher than those of previous results: their anti-PGL-I IgG levels showed an increase in one and a decrease in the other. However, for the entire group anti-PGL-I IgM and

anti-PGLI IgG levels were positively correlated. The data reported here suggest that an increase in specific anti-*M. leprae* levels in Mitsuda-negative household contacts could reveal the development of overt disease.

DOUGLAS, J. T. et al. Evaluation on inexpensive blocking agents for ELISA in the detection of antibody in leprosy. **Leprosy Rev.**, **59**:37-43, 1988.

SUMMARY - In leprosy research, ELISA is currently being used to quantitate antibody concentrations in leprosy patients and their contacts. The advent of *Mycobacterium leprae* specific synthetic antigens has tremendously increased the sensitivity and specificity of the detection system being used. It allows researchers to monitor the effectiveness of chemotherapy and also permits early detection of lepromatous patients likely to spread the disease and those contacts who have contracted it. The use of this detection system has now gained popularity amongst researchers in various countries throughout the world. However, its use in some countries is still being hampered by availability and high costs of reagents, particularly, blocking agents. We compared 5 blocking agents commonly used and found 10% skimmed milk or nonfat dry to be the most suitable. It is as effective a blocking agent as those popularly used. It did not adversely affect the pattern of the ELISA response expected of high and moderate reacting sera. It is relatively inexpensive compared to bovine serum albumin (BSA) or normal goat serum (NGS), readily available (it can be purchased at local grocery stores), stable at room temperature and very simple to prepare.

FAT, R. F. M. L. A. et al. In Vitro Synthesis of Antimycobacterial Antibodies with Different Specificities in Various Tissues of Leprosy Patients. **Int. J. Leprosy**, **58**(4):552-558, 1988.

SUMMARY - For the detection of the synthesis in vitro of anti-*Mycobacterium leprae* antibodies in various tissues of leprosy patients, biopsy specimens of skin lesions, nasal mucosa, larynx, lymph nodes, and bone marrow were cultured in a medium containing ¹⁴C-labeled lysine and isoleucine. The culture fluids were analysed by crossed immuno-electrophoresis with

intermediate gel and autoradiography. The results show that synthesis of anti-*M. leprae*, antibodies occurs at the investigated sites of leprosy patients and that the specificities of the synthesized antibodies differ between sites in individual patients. It is conceivable that these antibodies play a role in the local defense against *M. leprae*.

FINE, P. E. M.; PONNIGHAUS, J. M.; BURGESS, P.; CLARKSON, J. A. & DRAPER, C. C. Seroepidemiological Studies of Leprosy in Northern Malawi Based on an Enzymelinked Immunosorbent Assay Using Synthetic Glycoconjugate Antigen. **Int. J. Leprosy**, **56**(2):243-254, 1988.

SUMMARY - A total of 6002 blood samples from total population samples in four separate areas within Karonga District, Northern Malawi, were tested for anti-*Mycobacterium leprae* antibody using an EUSA based on synthetic glycoconjugate, antigen. Results are presented using different criteria for seropositivity. Regardless of the criterion used, the proportion of individuals classified as "positive" rose to a peak at 20-30 years of age and then fell, and it was higher at all ages in females than in males. There was no difference in seropositivity levels between individuals with or without BCG scars. Although leprosy cases, in particular those with positive smears, had higher antibody levels than nonleprosy cases, analysis of age-standardized data revealed only weak evidence for a correlation between the prevalence rates of clinical leprosy and of seropositivity within the four areas. There was no evidence for higher seropositivity levels in household contacts of leprosy cases compared to noncontacts. The implications of these results for the epidemiology of leprosy in this population are discussed.

GANAPATI, R. et al. A Pilot Study of Three Potential Vaccines for Leprosy in Bombay. **Int. J. Leprosy**, **57**(11):33-37, 1989.

SUMMARY - Three vaccines, BCG Glaxo alone (vaccine A), BCG Glaxo plus 107 killed *Mycobacterium vaccae* (vaccine B), and BCG Glaxo plus 107 killed *M. leprae* (vaccine C), were given to groups of selected children. The effects of these vaccines on subsequent quadruple skin testing 1-3 years after vaccination were compared. All three vaccines equally and significantly ($p < 0.00001$) increased positivity to tuberculin, but on

vaccine B was found to significantly enhance development of skin-test positivity to leprosin A ($p < 0.002$). The data support the evidence previously obtained in rural Iran that the combination of BCG with killed *M. vaccae* is likely to be a better vaccine for leprosy than is BCG alone.

GILL, H. K.; MUSTAFA, A. S. & GODAL, T. Vaccination of Human Volunteers with Heat-Killed *M. tepee*: Local Responses in Relation to the Interpretation of the Lepromin Reaction. **Int. J. Leprosy**, **56**(1):36-44, 1988.

SUMMARY - The early (Fernandez) and late (Mitsuda) lepromin reactions were closely examined in a group of healthy, BCG-vaccinated individuals who were given four doses of a heat-killed, armadillo-derived vaccine, i.e., 1.5×10^7 , 5×10^7 , 1.5×10^8 , and 5×10^8 bacilli. There was a clear dose-response relationship for both the early and late reactions with no leveling of the responses within the range of doses examined. While the early response was negative in most of the volunteers, the late response was positive in all of the volunteers. No association was found between the early lepromin test and the pre-vaccination skin test to PPD. There was also no association between the early lepromin test and the pre-vaccination skin test response to a soluble *Mycobacterium leprae* antigenic preparation (MLSA) in general, but there was a good correlation between these two parameters at the highest vaccine dose. The late lepromin response showed no association with either the pre-vaccination or post-vaccination skin test response to PPD. However, there was a significant correlation between the late lepromin response and the post-vaccination skin test response to MLSA. In general, no association could be found between the in vivo skin tests and the in vitro lymphocyte transformation test (LTT). Thus, the lepromin test is essentially a vaccination which elicits a specific response to *M. leprae* antigens provided that the dose of armadillo lepromin given is higher than 5×10^7 . Therefore, it is unsuitable as a diagnostic test for leprosy. The variability of the early lepromin responses, especially in the lower range of lepromin doses, precludes its use as a measure of previous sensitization. However, the more consistent late lepromin response.

GUPTA, M. D. & ANANTHARAMAN, D. S. Use of soluble antigens in leprosy epidemiology. **Leprosy Rev.**, **59**:29-335, 1988.

SUMMARY - Rees and Convit antigens prepared from armadillo-derived *Mycobacterium leprae* are presently available. This study was undertaken to understand the skin test reactions produced by these antigens in comparison to tuberculin. A standard teste skin-tested about 250 individuals. The indurations were read at the end of 48h for Rees. and Convit and at the end of 72 h for tuberculin by a standard reader who read these reactions following blind procedures again after 2 h. The values of standard deviations for the mean differences were 1.0, 2.6 and 2.4 mm for tuberculin, Rees and Convit antigens respectively. Standard deviations for the mean differences for two different tests using the same antigen on the same individual twice, were 3.0, 6.0 and 5.3mm respectively. Two batches of Rees antigen gave reasonably consistent results, but the skin-test readings with 2 batches of Convit antigen differed substantially. The available antigens need further improvement.

HASAN, R. et al. Quantitative Antibody ELISA for Leprosy. **Int. J. Leprosy**, **57**(4):766-776, 1989.

SUMMARY - Quantitative enzyme-linked immunosorbent assays (ELISAs) were established to measure IgM and IgG antibody levels to soluble *Mycobacterium leprae* sonicate (CD60) and to the synthetic disaccharide antigen based on the phenolic glycolipid-I antigen of *M. leprae* coupled to bovine serum albumin in 46 leprosy patients. Separate reference pools for IgM and IgG antibody were established. The reciprocal of the antibody titer was expressed as the number of arbitrary units in the reference pools which was subsequently used as the calibrator for assessment of units in individual test sera. The dose-response relationship for both IgM and IgG was highly specific and reproducible for both isotypes, as indicated by the intra- and inter assay coefficients of variation. The distribution of antibody levels are in general agreement with the results from previous studies against different *M. leprae* antigens. The lepromatous group showed 10- to 100-fold higher IgM anti-bodies to both the soluble sonicate antigen and the disaccharide as compared to the control group. Very low to undetectable levels of

IgM antibodies were observed in the tuberculoid group of leprosy patients. IgG antibodies, on the other hand, were not only present but showed considerable overlap with the lepromatous patient group.

Optimized ELISAs, such as the one described in this study, would allow one to address issues such as antibody changes with treatment, antigen clearance, and correlation with other immune parameters associated with disease pathogenesis and protection.

KAUR, I. et al. Lymphocytotoxicity in leprosy. **Indian J. Leprosy**, **61**(2):184-168, 1989.

ABSTRACT - Lymphocytotoxic antibodies (LCAs) were assayed in serum samples from 60 patients of leprosy spectrum before starting multi-drug therapy (MDT). Seventeen healthy volunteers without any history of viral infection provided control samples. Posttreatment follow up samples were also included in the study.

In all pretreatment sera of LL, BL and BT/TT patients the levels of LCAs were elevated, the figures were 39.05 = 23.87, 44.89 = 20.74 and 34.16 = 17.50 respectively. With treatment a significant fall in LcAS production was observed in all types of leprosy patients.

MOUDGIL, K. D. et al. Evaluation of an enzyme immunoassay based on sonicate supernatant antigens of *Mycobacterium W.* for immunodiagnosis of leprosy. **Indian J. Leprosy**, **60**(2):159-172, 1988.

ABSTRACT - An enzyme immunoassay (EIA) based on sonicate supernatant antigens of a cultivable, atypical bacterium, *Mycobacterium W.* (M.w), for immunodiagnosis of leprosy is described. M.w was selected after screening of sonicate supernatant antigens of seven cultivable mycobacteria in EIA. The results of the assay were compared with that of EIA using phenolic glycolipid-I (PGL-I). The M.w assay was more

sensitive than PGL-I based EIA, for detection of leprosy patients of all categories, including long term treated patients with low bacterial load. The M.w assay was highly sensitive (93.49%) for detection of active LL patients, and the difference in the positivity of the two assays for LL patients was statistically significant ($p < 0.05$). The combined positivity of the assays with M.w and PGL-1 for LL was higher than that with either antigen alone. M.w assay, in addition, was also highly sensitive for detection of patients with active pulmonary tuberculosis.

MOUDGIL, K. D.; SINGH, G. & TAWAR, G. P. Detection of lepromatous patients shedding M. Leprae in nasal droppings by enzyme immunoassay. **Indian J. Leprosy**, **60**(4):549-533, 1988.

Enzyme immunoassays (EIAs) for detection of lepromatous leprosy (LL) patients harbouring M. leprae in nasal mucosa are described. One EIA measures IgM antibodies against the synthetic disaccharide (ND-BSA) residue of phenolic glycolipid I of M. leprae, whereas the other titrates primarily IgG antibodies against sonicate supernatant antigens of Mycobacterium w. (M.w.). Fifty coded leprosy sera were analysed by EIAs under a double blind code. Amongst the 20 LL patients with positive nasal smear, 18 (90%) were positive in EIA based on ND-BSA, in comparison to 19 (95%) in EIA using M.w. antigens. The assays can be performed on fresh serum samples or on blood samples collected on filter paper discs. These assays can be useful for leprosy control programmes.

MOUDGIL, K. D.; GUPTA, S. K. & TALWAR, G. P. Generation and characterization of a human monoclonal antibody against phenolic glycolipid-I of M. leprae. **Indian J. Leprosy**, **61**(4): 479-484, 1989.

ABSTRACT - The development of an Epstein-Barr virus transformed human B-cell line secreting a monoclonal antibody (MoAb), KR2/B5 is described. KR2/B5 is an IgM type antibody and is highly specific for phenolic glycolipid-I (PGL-I) a component unique to M. leprae. The MoAb appears

to be directed against the terminal sugar residue of the immunodominant trisaccharide component of PGL-1.

MULLINS, R.J. & BASTEN, A. Effect of Preincubation on the Proliferative Response to Antigen by Cells from Leprosy Patients and Healthy Controls. **Int. J. Leprosy**, **57**(4):777-787, 1989.

SUMMARY - One of the postulated mechanisms contributing to the selective T-cell hyporesponsiveness in patients with leprosy is receptor blockade, the characteristic feature of which is reversibility following preincubation of cells in vitro. To test this hypothesis, peripheral blood mononuclear cells (PB MC) obtained from 17 leprosy patients and 10 healthy Mantoux-positive and -negative controls were cultured freshly or after a period of preincubation in serum-containing medium, and the proliferative responses to Mycobacterium leprae, BCG, and streptokinase-streptodornase (SKS D) were measured. On the basis of the response to M. leprae, the leprosy patients could be divided into low, intermediate and high responders. Preincubation for 2-16 hr resulted in enhanced proliferation by cells from moderate responders, but not from low or high responders. Although the effect was serum dependent, it was neither antigen specific nor was it confined to cells from leprosy patients. Thus, an increase in response to both the crossreactive and unrelated antigens BCG and SKSD occurred, and the same trend was observed when cells from healthy controls were preincubated in serum-containing medium. Furthermore, cells from different individuals displayed varying responses to different antigens following preincubation, suggesting that the effect of this step was neither confined to isolated individuals nor to particular antigens. The addition of pronase to the preincubation step did not further enhance the response to antigen over and above that obtained with preincubation alone. It was therefore concluded that the enhanced proliferative response to antigen following preincubation was an in vitro phenomenon dependent upon, the culture conditions employed, was not specific to leprosy, and was not related to receptor blockade.

MUSTAFA, A. S. Identification of T-cell-activating Recombinant Antigens Shared Among Three Candidate Antileprosy Vaccines, Killed *M. leprae*, *M. bovis*, BCG, and *Mycobacterium w*. **Int. J. Leprosy**, **56**(2):265-273, 1988.

SUMMARY - Antigenic crossreactivity among three candidate antileprosy vaccines, killed *Mycobacterium leprae*, BCG, and *Mycobacterium W*, was studied using T-cell lines and clones raised from BCG- and killed- *M. leprae*-vaccinated subjects. To identify the crossreactive antigens, the T-cell lines and clones were tested against *Escherichia coli* lysates containing 65-, 36-, 28-, 18-, and 14 kilodalton (kDa) and 1393 *M. leprae* antigens and 65-, 19-, and 12-kDa *M. tuberculosis* antigens. The short-term T-cell lines, which compared to T-cell clones are easy to raise and maintain, were equally effective in identifying the T-cell-activating recombinant antigens. The reactivity pattern of the T-cell lines and the clone suggest that 65-kDa *M. leprae* and *M. tuberculosis* antigens are present in *M. leprae*, BCG, and *Mycobacterium w* 18-kDa *M. leprae* antigen is shared between *M. leprae* and *Mycobacterium w*, 1383 *M. leprae* antigen is possessed by *M. leprae* and BCG. These and other unidentified T-cell-activating antigens shared among candidate leprosy vaccines may be the basis for induction of in vivo sensitization to *M. leprae* antigens after vaccination with BCG or *Mycobacterium w*.

MUSTAFA, A. S. & QVIGSTAD, E. H. LA-DR-restricted Antigen-induced Proliferation and Cytotoxicity Mediated by CD4+ T-cell Clones from Subjects Vaccinated with Killed *M. leprae*. **Int. J. Leprosy**, **57**(1):1-11, 1989.

SUMMARY - Thirteen CD4 + T-cell clones raised against *Mycobacterium leprae* from three *M. leprae*-vaccinated subjects were studied for major histocompatibility complex (MHC) restriction in proliferative and cytotoxicity assays. These T-cell clones recognize at least nine different epitopes, ranging from *M. leprae*-specific to broadly crossreactive. Restriction studies with a panel of antigen-presenting cells (ARCS) suggest that all of the T-cell clones recognized antigens in the context of the DR locus. Three T-cell clones with three different reactivities from a DR1, 2-positive subject

responded to *M. leprae* in proliferation and cytotoxicity when the antigen was presented in the context of DR1-positive APCs. Four T-cell clones responding to *M. leprae*-specific or crossreactive epitopes from the second donor, who was DR4,DW4, DR4, Dw 14-positive, and a single *M. leprae*-specific T-cell clone from the third subject, who was DR3,4:Dw4, recognized the antigens in the presence of Dw4 APCs. Four crossreactive T-cell clones from the second subject responded in the presence of Dw 14-positive APCs, and one limited crossreactive clone recognized the antigen in the context of DR4 and DR7-positive cells, suggesting that its response was restricted by a common determinant. The T-cell clones that recognize the 65-kDa, 18-kDa, and 1383 recombinant *M. leprae* antigens in proliferative assays were cytotoxic for autologous adherent cells pulsed with the respective antigens. The response of the respective T-cell clone to the recombinant antigens in proliferating and cytotoxicity was restricted by similar class II molecules as for killed *M. leprae*, i.e., the 65-kDa antigen was recognized in the context of DR1, the 18-kDa antigen in the context of DR4, Dw4, and the 1383 antigen in the context of DR4 and DR7 class II MHC molecules. The experiments with Dw4 and Dw14-positive mixed adherent cells and appropriate T-cell clones suggest that cytotoxicity requires direct interaction between CD4 + T cells and antigen-presenting cells.

MUTIS, T.; SHOOTEN, C.A. Van & VRIES, R. R. P. de A Peptidoglycan protein Complex Purified from *M. leprae* Cell Walls Contains Most or All Immunodominant *M. leprae* T-Cell Antigens. **Int. J. Leprosy**, **57**(4):788-793, 1989.

SUMMARY - The outcome of an infection with *Mycobacterium leprae* is correlated with the T-cell-mediated immune response developed against this pathogenic agent. The identification of *M. leprae* antigens that are recognized by T cells is therefore of great importance. In this paper we present the results of in vitro lymphoproliferation assays in which T-cell reactivity was measured against a peptidoglycan-protein complex (PPC) which was purified from the cell wall of *M. leprae*. Twelve *M. leprae*-reactive T-cell clones with different antigen specificities from a tuberculoid (TT) leprosy patient showed proliferative responses, but only when PPC was presented by HLA-DR-matched antigen-presenting cells (APCs). Four of these

clones were known to react with the recombinant mycobacterial 65-kDa protein. A tetanus-toxoid-reactive T-cell line from a healthy control was not stimulated by this complex, supporting the idea that the stimulation by PPC was antigen specific. Both PPD-reactive and *M. leprae*-reactive T-cell lines from healthy individuals were stimulated by PPC. However, when this complex was presented to PPD-reactive T-cell lines derived from two lepromatous (LL) leprosy patients, we did not observe any proliferative responses. From these results we conclude that PPC contains most or all of the antigens which stimulate *M. leprae*-reactive T cells in association with relevant HLA class II molecules, including the 65-kDa protein or at least some immunogenic parts of it.

PETCHCLAI, B. at al. A Passive Hemagglutination Test for Leprosy Using a Synthetic Disaccharide antigen. **Int. J. Leprosy**, **56**(2):255-257, 1988.

SUMMARY - There is a need for a simple, sensitive, and specific test for the serodiagnosis of leprosy. A passive hemagglutination (PHA) test for leprosy was developed to meet these requirements. A synthetic disaccharide, conjugated to bovine serum albumin and specific for the phenolic glycolipid of *Mycobacterium leprae*, was sensitized to aldehyde preserved and tanned sheep erythrocytes (SRBC). The sensitized SRBC were used for testing sera from leprosy and tuberculosis cases and normal controls at 1:64 and 1:128 serum dilutions. It was found that if the hemagglutination reaction at 1:128 is considered positive, the test was positive in 84.2% of 38 cases of multibacillary leprosy, 16.7% of 24 cases of paucibacillary leprosy, 16.7% of 6 contacts of multibacillary leprosy, 11.8% of 51 cases of tuberculosis, and 3.7% of 54 blood donors. If the cutoff value used was 1:64, the test was more sensitive but less specific. The results are similar to that of an EUSA for IgM antibody to the same synthetic antigen. The present PHA test is simple and sensitive, but moderately specific. Its simplicity and sensitivity make it highly suitable for large-scale screening of contacts in leprosy-endemic areas.

RAMOS, Tereza at al. T-Helper Cell

Subpopulations and the Immune Spectrum of Leprosy. /Editorials/ **Int. J. Leprosy**, **57**(1):73-81, 1989.

RANA, N. S.; GUPTA, H. P. & SINGH, N. B. Use of non conventional antigen: *M. Haban* in detecting *M. leprae* antibodies from leprosy patients and contact in Fla-ABS test. **Indian J. Leprosy**, **60**(4): 593-599, 1988.

ABSTRACT - An indirect immunofluorescent (FLA-ABS) test has been developed to detect *M. Leprae* specific antibodies in the active and subclinical cases of leprosy. An antigenically related mycobacterium, *M. habana*, was used as an antigen to detect *M. leprae* specific antibodies in the sera sample of leprosy patients. A comparison was made with *M. leprae* antigen using same set of sera samples. *M. habana* is capable of detecting anti-*M. leprae* antibodies in the serum samples of leprosy patients, previously absorbed with various mycobacterial antigens, cardiolipin and lecithin, almost to the same percentage as *M. leprae*. Possible use of *M. habana* antigen as an alternative to *M. leprae*, in the serodiagnosis of leprosy, has been discussed.

SAIDI, K. G. at al. Vaccination and Skin Test Studies on Children Living in Villages with Differing Endemicity for Leprosy and Tuberculosis. **Int J. Leprosy**, **57**(1): 45-53, 1989.

SUMMARY - The purpose of this study carried out in Iranian Azerbaijan was to determine the pattern of skin-test positivity to mycobacterial antigens in children living in the valley, and to assess the effect on this of a series of vaccines against mycobacterial disease. Set up in 1978, 1707 tuberculin-negative children without scars of previous BCG vaccination were vaccinated with BCG Glaxo alone (vaccine A) or with the addition of a suspension of killed *Mycobacterium vaccae* (vaccine B). One hundred children were vaccinated with BCG Glaxo plus a suspension of *M. leprae* (vaccine C). Eight to 10 years later about half of the children were found for follow up. At this time further children were skin tested, and the results obtained were related to whether or not they had scars of

vaccination with BCG Pasteur (Teheran) given by the local health authorities.

Between setting up the study and the first follow up, cases of leprosy or tuberculosis had occurred in some of the villages, although not among those we had vaccinated. Differences between the effects of the vaccines were only found in villages with cases of leprosy. In these villages positivity to leprosin A was significantly greater after vaccine B (49%) than after vaccine A (36%; $p = 0.04$). The results for scrofulin and vaccin were the same after both vaccines, and significantly lower than in the villages without cases of leprosy. The general reduction in skin-test positivity in the villages with leprosy cases was mainly due to a loss of category 1 responder to group i, common mycobacterial, antigens.

It was concluded that where casual contact with cases of leprosy occurs the combination of BCG with killed *M. vaccae* is likely to be a better vaccine for leprosy than is BCG alone. Although few children received the combination with *M. leprae*, the results obtained were not particularly promising.

SAMPATAVANICH, S. at al. Immunoepidemiological Studies on Subclinical Infection Among Leprosy Household Contacts in Thailand. **Int. J. Leprosy**, **57**(4):752-765, 1989.

SUMMARY - Three-thousand-fourteen leprosy house-hold contacts in Thailand were surveyed by their personal history, physical examination, and immunological tests. The results were compared with those obtained from villagers in leprosy-endemic and nonendemic areas. The percentages of young people, students, children and grandchildren of the patient, the contacts of multibacillary leprosy cases, long duration of contact, BCG vaccination, FLA-ABS and Dharmendra's lepromin in-positive responders were significantly higher in the household contacts than those in the villagers. The percentages of neural and dermal symptoms were not significantly different between the household contacts and the villagers in the endemic area, but the percentages were higher than those of the villagers in the nonendemic area. A PPD skin test was more frequently negative in the former two groups than in the latter. Both FLA-ABS and lepromin tests showed a significant correlation with the age of the contacts, their occupations, blood relation to the

Hansen. Int. 14(2):168-189, 1989.

patient, the duration of contact, BCG vaccination, dermal signs such as an ill-defined plaque or macule with or without sensory loss, but did not correlate with sex, type of leprosy in the patient, or other skin diseases. The FLA-ABS test in the household contacts and the villagers in an endemic area showed a significant correlation with the neural signs, such as enlargement of the peripheral nerve without sensory loss. These suspicious dermal and neural signs and symptoms were therefore considered signs of *Mycobacterium leprae* infection. The FLA-ABS test was sufficiently sensitive for detecting this infection and did not correlate with the lepromin or PPD skin tests. FLA-ABS-positive but lepromin-negative responders were found in 33.5% of the household contacts. They were considered to be a high-risk group who may develop clinical leprosy. Nearly half of them were treated with dapsone or BCG according to the results of the PPD skin test. Follow up of these contacts, together with the remaining contacts without treatment, is in progress.

SENGUPTA, U. at al. Soluble antigen of *M. leprae* coupled with liposomes elicits both "early" and "late" delayed hypersensitivity skin reactions. **Int. J. Leprosy**, **56**(1):45-49, 1988.

SUMMARY - The soluble antigen(s) of *Mycobacterium leprae* was (were) coupled to liposomes and used for skin testing of leprosy patients, hoping that this mode of antigen presentation would be identical to that of integral lepromin. The liposomized antigen(s) elicited both early (24-48 hr) and late (3-4 weeks) delayed-type hypersensitivity reactions, true to the nature of lepromin, unlike the soluble antigen(s) alone which elicit(s) only the early reaction.

SHIVRAJ, L. et al. Antibodies to HIV-1 in Sera from Patients with Mycobacterial Infections. **Int. J. Leprosy**, **58**(4):548-561, 1988.

SUMMARY - Sera from 478 persons (348 leprosy patients, 33 tuberculosis patients, 29 healthy contacts of leprosy patients, 38 normal healthy Indians, and 30 normal healthy Europeans) were screened for anti-HIV-1 IgG antibodies by ELISA. None was positive. In addition, 132 samples (from

43 leprosy patients, 21 tuberculosis patients, 5 healthy contacts of leprosy patients, 33 normal healthy Indians, and 30 normal healthy Europeans) were also tested by Western blot assay for anti-HIV-1 IgG antibodies. Only 1 of the 63 healthy subjects expressed a prominent p 17 band. One or more bands were found in 44 (leprosy patients 33/43, tuberculosis patients 7/21, and leprosy contacts 4/5) of the remaining 69 sera. Antibody to the HIV-1-specific antigen p24 was expressed by 17 of these subjects (14/43 leprosy patients, 1/21 tuberculosis patients, and 2/5 leprosy contacts), either as a single band or in combination with other bands. This raises the possibility of a common antigenic pattern between HIV-1 and mycobacteria, especially *Mycobacterium leprae*.

SINGH, N. B. & CHOUDHARY, A. Detection of leprosy antigenuria through DOT-EUSA. **Indian J. Leprosy**, **60**(4): 526-529, 1988.

ABSTRACT - Fifty-five samples of urine from different grades of leprosy patients and normal persons were processed for detection of PGL-1 antigen through DOT-ELISA on nitrocellulose paper strips using anti-human IgG horse raddish peroxidaseconjugate. About 66.6% of the paucibacillary and 100% of the multibacillary leprosy cases were detectable through this technique on the basis of differential colour development on the strips. Possibility of its use in the field conditions has been discussed.

SIRINIVASAN, R. & RAO, P. R. Humoral immune responses in dapsone treated *M. tepee* infected mice. **Indian J. Leprosy**, **61**(2):151-159, 1989.

SUMMARY - Humoral responses in *M. leprae* infected mice were studied through 52 weeks and were found to be directly related to the bacterial load. However, treatment with dapsone (DDS) in the last 12 weeks of infection resulted in an initial enhancement of the humoral responses followed by a gradual decrease, though they were still significantly high at the end of the study.

STANFORD, J. L. et al. Vaccination and Skin Test Studies on the Children of Leprosy Patients. **Int. J. Leprosy**, **57**(1):38-44, 1989.

SUMMARY - In an attempt to achieve maximal skin test positivity to leprosin A in children of leprosy patients living in Baba Baghi Leprosy Sanatorium in Iranian Azerbaijan, two new vaccines have been employed. Children without scars of previous BCG and without response to leprosin A were given a vaccine containing 108 viable units of BCG Glaxo plus 107 killed *Mycobacterium vaccae* per dose (vaccine B). Children with BCG Pasteur (Teheran) scars but without response to leprosin A were given a vaccine containing 108 killed *M. vaccae* alone (vaccine D). Eight years later skin testing was repeated, and both new vaccines were found to have significantly increased the numbers of children responding to leprosin A above the level that would have been expected had they received BCG Pasteur alone. This increase was due in large part to increases in the proportions of individuals responding to group 1 (common mycobacterial) antigens, and known as category 1 responders. The use of suspensions of killed *M. vaccae* in conjunction with BCG may represent a considerable advance in inducing protection from multibacillary leprosy in close contacts of leprosy patients if leprosin A positivity is truly a correlate of protective immunity. A comparison, using the same criteria, with the other proposed vaccines for leprosy would be very interesting.

VADIEE, A. R. et al. Armadillo IgG and IgM Antibody Responses to Phenolic Glycolipid-I During Experimental Infection with *M. leprae*. **Int. J. Leprosy**, **56**(3):422-427, 1988.

SUMMARY - The kinetics of antibody responses of *Mycobacterium leprae*-infected armadillos to phenolic glycolipid-I (PGL-I) were studied by means of ELISA. The levels of both IgG and IgM antibodies to PGL-I increased with time. Some animals were less susceptible to disseminations of *M. leprae* infection and lived longer than others. These animals had high absorbance values (> 0.7) for IgG anti-PGL-1 compared to more susceptible armadillos that had lower absorbance values for IgG anti-PGL-1.

VADDIE, A. R. et al. Partial Characterization of Antigens from *M. leprae* Evoking IgG and Antibodies in Armadillos. **Int. J. Leprosy**, **56**(2):274-282, 1988.

SUMMARY - Armadillo IgG and IgM antibody responses to *Mycobacterium leprae* were analyzed using isotypic-specific antisera by means of Immunoblotting. Blots developed for IgG antibodies to *M. leprae* showed multiple protein antigens (Mr = 12-90 K) in some heavily infected armadillos. In contrast, blots developed for IgM antibodies to *M. leprae* showed a single, broad, diffuse band of immunoreactivity at approximately 33 kDa. The 33-kDa immunogen was detectable with silver stain modified for carbohydrate reactivity, suggesting the presence of a polysaccharide component. In addition, binding of 125 I-concanavalin A to the 33-kDa component demonstrated the presence of mannose and/or glucose residues.

VAISHNAVI, C. et al. Effect of in vitro formed immune complexes on macrophage functions of *Mycobacterium leprae* infected mice. **Indian J. Leprosy**, **60**(2):242-251, 1988.

ABSTRACT - Nonspecific macrophage functions were studied in *Mycobacterium leprae* infected and preformed immune complex (IC) administered normal (NI) and thymectomized/irradiated (TRI) mice at different time periods. Uninfected controls given IC were also included. Significant decrease in the chemotaxis, phagocytosis and bactericidal activities of macrophages obtained from infected groups compared to their controls were observed. Phagocytic and chemotactic activities of macrophages were normal but intracellular killing was seen to be depressed. In studies conducted in normal and thymectomized immunosuppressed groups (Vaishnavi et al., 1985), (Kumar et al., 1987) which were not administered with preformed IC.

VAISHNAVI, C. et al. Effect of suppressor cells on antibody producing cells in mice infected with *M. leprae*. **Indian J. Leprosy**, **81**(1):72-78, 1989.

ABSTRACT: Swiss albino mice were transfused with suppressor cells obtained after in vivo stimulation of mice with Con A (NS group). Some of the animals were infected with *Mycobacterium leprae* (NSI-group). Half of these animals were treated with dapsone (NSIT group). Adequate normal (NC) and infected (NI) controls

were included. A plaque assay was carried out at different time periods to elucidate the effect of suppressor cells on antibody producing cells. No significant difference was seen in the number of plaque forming cells (PFC) in infected and dapsone treated animals (NSIT) when these were compared with controls. However, significant increase was seen in the number of IgM plaque forming cells at 5 months in NI and NSI groups and IgG PFC in NI group could be due to the peak footpad infection during this period. The significant decrease in the number of IgG PFC in NS and NSIT group compared to NC at 0 month is probably due to the suppressor cell activity in these groups.

WALTER, J. The post-lepromin scar and its significance in the control of HD. **Indian J. Leprosy**, **61**(3):379-386, 1989.

SUMMARY - In the past little attention has been paid to the post-lepromin scar (PLS) and its use in controlling Hansen's disease (HD), particularly in the prognosis, classification and measurement of CMI response. The immuno-information of the Mitsuda reaction is thought to be informative only in the extreme range of 10 + mm or in its absence. Previous studies have shown that the range of PLS formation increases proportionally to the degree of lepromin positivity. PLS positive HD patients have a stable form of the disease with good prognosis. Those unable to form a PLS have a marked tendency to downgrade towards the lepromatous form of HD. PLS formation appears to indicate a CMI response to *M. leprae* implying immunity. It is thought that there exists a correlation between the PLS and the lymphocyte transformation test (LTT), both reaching their optimum measurement three months after the *M. leprae* injection, either with lepromin or *M. leprae* suspension used for the anti-HD vaccine. It is proposed to study the use of the PLS in HD control programs on a trial basis with the objective of its general introduction as part of the management of HD control. Considerable improvements in the prognosis, classification and application of treatment can be expected from such a measure. The discovery of the armadillo as a source of *M. leprae* by Kirchheimer and Storrs facilitates the availability of lepromin A and its purified version, lepromin Ap. The relevant studies have shown that a 40 M/bact/ml lepromin A suspension should be used for the application of lepromin in control programs.

It is concluded that the routine reading of the PLS, particularly under field conditions where alternative tests are difficult to perform, will be of considerable benefit for the HD patient.

WATSON, J. D. Prospects for New Generation Vaccines for Leprosy: Progress, Barriers, and Future Strategies. /Editorials/. **Int. J. Leprosy**, **57**(4):834-843, 1989.

YANDAVA, C. N. et al. Lymphoproliferation and in Vitro Antibody Synthesis in Leprosy Patients. **Int. J. Leprosy**, **57**(3):633-640, 1989.

SUMMARY - An in vitro system to assess B-cell function in leprosy patients is described. In vitro lymphoproliferation and antibody synthesis by peripheral blood mononuclear cells (PBMC) in response to pokeweed mitogen (PWM) and Formalin-treated *Staphylococcus aureus* Cowan I (FSA) from 31 leprosy patients and 13 healthy controls were studied. DNA synthesis was induced by both PWM and FSA in PMBC from all of the leprosy patients and control subjects. Lepromatous

leprosy (ILL) patients' cells showed higher responses to both PWM and FSA. However, these increases were not statistically significant. The levels of secreted IgM, IgG, or Ig were examined in the 7-day culture supernatans of PBMC cultured with or without PWM or FSA using an enzyme linked immunosorbent assay. Wide individual variations were observed in in vitro antibody synthesis. IgM secretion in PBMC from normal subjects and various groups of leprosy patients in response to PWM and FSA was comparable. In vitro IgG secretion in response to PWM was the highest in cells from LL patients; it was significantly decreased in cells from tuberculoid leprosy (TT) patients ($p: 0.01$). The levels in cells from borderline leprosy (BB) patients were intermediate in response to the same mitogen. Cells from leprosy patients as a group showed a higher spontaneous secretion of IgA in comparison with cells from normal subjects. Overall, the in vitro Ig secretion by PBMC in different patient groups appears to reproduce the spectrum of antibody levels observed in patients in vivo. Thus, the present in vitro culture system may help to delineate the mechanisms of B-cell dysregulation in leprosy.

ABDULKADIR, S. Bacteriology of Infected hands and feet leprosy patients. **Indian J. Leprosy**, **61**(1):65-67, 1989.

ABSTRACT - 70 cases of infected hands and feet admitted to ALLERT Hospital during 1986/1987 (3/10/86 - 5/5/87) were studied for the infecting organisms and the sensitivity of these organisms to available antibiotics. Single organisms were isolated in 56 cases (95%), two organisms were isolated in 3 cases (5%), no organisms were isolated in 11 cases (15,7%). *Proteus* was the commonest organism. Most effective drug was Ampicillin. Three organisms isolated in 7 cases proved resistant to all drugs tested. The study shows that commonly available drugs are effective in the great majority of secondary infections in leprosy patients.

ABEL, L. et al. Genetic Susceptibility to Leprosy on a Caribbean Island: Linkage Analysis with Five Markers. **Int. J. Leprosy**, **57**(21):465-471, 1989.

SUMMARY - Our recent segregation analysis, carried out on 27 large pedigrees from a Caribbean island (Desiradel, has shown the presence of recessive major gene(s) controlling susceptibility to leprosy per se and nonlepromatous leprosy, respectively. Linkage analysis was performed between each of these two detected genes and each of five markers typed in the Desfrade population: HLA, ABO, Rhesus, Gm and Km. No positive significant lod score was observed. However, for leprosy per se close linkage was excluded with Rhesus and Gm (and also with ABO and HLA, considering a lower value for the frequency of the gene controlling susceptibility to leprosy per se). The highest lod score, although not significant, was obtained between the gene for nonlepromatous leprosy and ABO. Our overall results, joined with previous studies and experimental data, suggest that the gene controlling susceptibility to leprosy per se and that controlling susceptibility to nonlepromatous leprosy might be different, acting at successive stages of the immune response to infection with *Mycobacterium leprae*.

BHATHIA, V. N. Filamentous phase in life (7): a preliminary communication. **Indian J. Leprosy**, **60**(3):422-426, 1988.

ABSTRACT - Certain structures which indicate

probable involvement of a filamentous phase in life cycle of *M. leprae* have been noted in preserved skin biopsy suspensions from lepromatous leprosy cases. These include (i) filaments with empty or pink round spaces within them (ii) conidia-like structures and (fill membranes with acid fast bacilli. These structures were rare in the fresh material.

BATHIA, V. N.; CHERIAN, E. & HARIKRISHNAN, S. Auramine staining in detecting small number of bacilli in skin smears. **Indian J. Leprosy**, **60**(1):13-16, 1988.

ABSTRACT - Auramine staining has been compared with Ziehl-Neelsen's staining of *M. leprae* in skin smear slide. The auramine method was found to be more sensitive than Ziehl-Neelsen's method and may be useful in detecting small number of *M. leprae* in skin smears. The inter-observer variance was minimal with auramine staining.

BHATHIA, V. N. Bacteriological study of urine samples from leprosy patients: a preliminary communication. **Indian J. Leprosy**, **61**(2): 472-475, 1989.

ABSTRACT - A.F.B. and biological structures related to its multiplication reported previously from skin and blood of patients were seen also in their urine. Implications of these findings in transmission and possible application in detecting sub-clinical infections should be studied.

BATHIA, V. N. & RAO, S. Morphology of *M. leprae* in VS3 medium-A preliminary communication. **Indian J. Leprosy**, **61**(2):160-163, 1989.

ABSTRACT - In a previous attempted culture of *M. leprae* in VS2M medium non-acid fast organisms were seen initially and acid fast organisms appeared later. A drop of a sonicated suspension from a subculture of this was inoculated in VS3E medium. The inoculum consisted mostly of acid fast granules. The culture yielded pure growth of acid fast organisms. Morphology typical of *M. leprae* could be seen only after 60th day of culture.

BERA, A. & BANERJEE, A. Studies on lipids in mycobacterial cell wall: their importance structure and function relating to pathogenicity and their biological activity. **Indian J. Leprosy**, **61**(2): 143-150 1989.

ABSTRACT - The lipids cord-factor, mycosides and sulpholipids are supposed to be vitally linked with the pathogenicity of mycobacteria. In this paper an attempt has been made to clarify the understanding of the occurrence, organisation and possible interaction of the diverse lipids present in the mycobacterial cell wall and their possible structure and function.

CHATTERJEE, B. R. & ROY, Roma Das. Growth of *Mycobacterium leprae* in a redox system: III evidence of growth at low temperature (Psychrophilia) and, further refinement of growth medium. **Indian J. Leprosy**, **61**(4):458-466, 1989.

ABSTRACT - Considerable growth enhancement, largely as non-acid fast, slender and long rods has been seen when incubated at 10°C. Concentration of some of the media constituents have been reduced that has improved the quantum of growth. A remarkable proneness to physical disintegration of the grown bacilli has been seen and its significance discussed. Also, the possible immunogenic advantage of non-AF *M. leprae* has been discussed. The question of identification is still not solved, and work is in progress.

COLOGLU, A. A. Process of deintegration and degradation of *M. leprae*: study of tissue imprints and tissues. **Indian J. Leprosy**, **61**(4):485-494, 1989.

ABSTRACT - The existence, distribution and behaviour of degradation products of *M. leprae* in leprosy lesions were investigated in tissue specimens fixed in neutral formalin and embedded in paraffin. Cytopathologic findings using tissue imprints were unsatisfactory. Sections were stained

with hematoxylin-eosin, acid-fast stains, silver methenamine and by an immunochemical (PAP) technique using serial paraffin sections. A comparison in respect of the distribution of the bacilli within the macrophages showed considerable differences between the superficial and deep granulomas. This corresponds roughly with the central, intermediary and peripheral locations. In a small granuloma seen in BL lesions, there were two zones: central and peripheral. In a large LL granuloma, three zones were seen, central, intermediary and peripheral zones. It is suggested that the degradation of disintegrated particles of bacilli might be due to the lysozymal activity of macrophages. The phagocytized bacilli are slowly degraded with long incubation periods, but the undigested debris remain inside the phagosomes. The chemical complexity of cytoplasm, cell wall and lipid fractions of *M. leprae*, and it is such that the lipid fractions of *M. leprae* mask some other antigenic components, which may be responsible for the cellular response and lysozymal production. According to our findings we believe that chemotherapy kills *M. leprae* but degraded products are not removed. These components are chemically complex and digested with difficulty. Lysozymal enzymes could be inhibited from production by the bacterial debris or the lipid fractions could serve as a mask to delay lysozymal production in the cell. These aspects need further study.

COLSTON, M. J. & LAMB, F. I. Molecular biology of the mycobacteria. /Editorial/. **Leprosy Rev.** **60**(2):89-93, 1989.

ABSTRACT - The molecular biology of the mycobacteria is poised at the threshold of making major contributions to the understanding of the biochemistry and pathogenic mechanisms involved in mycobacterial infections. The application of molecular biology to the study of mycobacteria has recently begun, with preliminary studies on the nucleic acids of mycobacteria, cloning and expression of a number of mycobacterial genes and the development of mycobacteria themselves as gene cloning systems. In this review, we will discuss the progress that has been made so far and the likely direction of future work.

CREE, I. A. et al. The influence of antimycobacterial chemotherapy on delayed hypersensitivity skin-test reactions in leprosy patients. **Leprosy Rev.**, **59**:145-151, 1988.

SUMMARY - Skin tests using purified proteins derivative (PPD) and Rees' skin test antigen (RSTA), a soluble extract of *Mycobacterium leprae*, were performed in 53 treated leprosy patients, 52 newly diagnosed untreated leprosy patients and 78 household contacts of untreated leprosy patients in northern Bangladesh. In addition, a small group of 20 leprosy hospital workers and a further group of 50 indigenous subjects with no known exposure to leprosy were studied.

Untreated paucibacillary and multibacillary patients showed significantly fewer positive reactions than comparable groups of treated patients to both PPD and RSTA. It appears from these results that treatment of leprosy patients is associated with enhanced ability to produce a delayed-type hypersensitivity response to mycobacterial antigens. The mechanisms underlying this phenomenon may include both general and specific suppression of antimycobacterial delayed-type hypersensitivity. The household contacts and indigenous subjects showed similar skin test responsiveness, but virtually all of the hospital workers responded to both PPD and RSTA. The implications of these results for studies of immunity in leprosy patients are discussed.

DHANDAYUTHAPANI, S.; NAUNI, N. & BHATIA, V. N. LDH isoenzyme as a tool for the identification of mycobacteria. **Indian J. Leprosy.** **61**(1):61-64, 1989.

ABSTRACT - Using Polyacrylamide gel electrophoretic technique, the lactate dehydrogenase (LDH) isoenzyme patterns have been studied in four slow growing mycobacteria viz. *Mycobacterium tuberculosis*, *M. avium*, *M. micro6*, and *M. bovis* and four rapid growing mycobacteria viz. *M. fortuitum*, *M. parafortuitum*, *M. thermoresistibile* and *M. delmhoferi*. Each mycobacterial species exhibited distinct isoenzyme pattern for LDH.

FOSTER, R. L. et al. Effect of diet on growth of *M. leprae* in mouse footpads. **Indian J. Leprosy**, **61**(1):360-366, 1989.

ABSTRACT - Semipurified diets, with equal amounts of vitamins, minerals and fibre, but varied in protein and fat content from pork, barbel fish or soya beans were tested for their possible effect on the growth of *M. leprae* in mouse footpads. 105 BALB/c male weanling mice were randomly divided into five diet groups of 21 mice each and fed for six months. Differences between bacterial counts of diet groups were found. The mouse foot pad model is suitable for dietary study in leprosy.

GELBER, R. H. et al. Serum Antibodies to Defined Carbohydrate Antigens During the Course of Treated Leprosy. **Int. J. Leprosy**, **57**(4):744-751, 1989.

SUMMARY - Sequential monitoring of 724 sera for antibodies to a neoantigen based on phenolic glycolipid-I (PGL-I) and native lipoarabinomannan (LAM) in 90 leprosy patients undergoing therapy in San Francisco was conducted. Untreated lepromatous patients frequently (91%) had significant antibodies to both moieties. Antibodies were less frequently found in tuberculoid patients (74% to neoantigen and 37% to LAM). In the first 3 years of treatment, average serum antibodies to both moieties fell significantly. Antibodies to LAM fell during each of the first 4 years of therapy, but decreasing antibody levels to the PGL-I neoantigen did not appear to fall consistently after the third year of treatment. A wide variation in the rate of fall of serum antibodies was noted. Sequential changes in the amounts of serum antibodies to the neoantigen and LAM in general paralleled one another but were at times discrepant. Both in San Francisco and Malaysia, skin-smear negative, long-term treated, lepromatous leprosy patients frequently harbored significant antibodies to both PGL-I and LAM.

GEORGE, J.; BATHIA, V. N. & BALAKRISHNAN, S. Microbiological assay versus spectrophotometry for determination of rifampicin in urine. **Indian J. Leprosy.** **60**(1):47-52, 1988.

ABSTRACT - A comparative study on the microbiological and spectrophotometric methods for estimation of rifampicin in urine was carried out in 15 individuals. The urinary levels of rifampicin were determined on 2nd, 8th and 15th days at 3 hours.

6 hour and 24 hour samples by the above methods after administration of 600 mg rifampicin. The results suggest that the microbiological assay is more sensitive than spectrophotometric method. The difference was highly significant in all the cases by paired t-test. Incidentally it was also noticed that urinary excretion of rifampicin was comparatively more on 15th day.

GORMUS, B. J. et al. A second sooty mangabey monkey with naturally acquired leprosy: first reported possible monkey to monkey transmission. **Int. J. Leprosy**, **56**(1):61-65, 1988.

SUMMARY - The existence of naturally acquired leprosy in a second sooty mangabey monkey has been documented. The disease has the clinical and histopathological characteristics of subpolar lepromatous leprosy (LLs), and microbiological studies thus far confirm the etiologic agent as *Mycobacterium Ieprae*. This mangabey had been housed in direct contact with the first mangabey in which naturally acquired leprosy was diagnosed in 1979. Clinical symptoms appeared in the second mangabey in 1986, almost 7 years after the appearance of skin lesion in the first monkey. It is likely that the second mangabey contracted leprosy from the first mangabey or that both animals contracted the disease by contact with an unknown common third source. This is the only known possible natural transmission of leprosy from monkey to monkey, and suggests that a potential zoonosis exists in wild monkeys that may serve as a reservoir for the disease in areas where human leprosy is endemic.

GORMUS, B. J. et al. Serologic Responses to *Mycobacterium Ieprae*-specific Phenolic Glycolipid-I Antigen in Sooty Mangabey Monkeys with Experimental Leprosy. **Int. J. Leprosy**, **56**(4):537-545, 1988.

SUMMARY - Four pairs of sooty mangabey monkeys (*Cercocebus atys*) were inoculated with serial, 10-fold dilutions of *Mycobacterium Ieprae*. The highest-dose pair received 4.8×10^{10} *M. Ieprae*. Serum samples were obtained and clinical signs of leprosy were recorded at intervals of 35 months. Longitudinal serum samples were assayed by an ELISA method for the presence of IgG and IgM

antibodies to the *M. Ieprae*-specific phenolic glycolipid-I (PGL-I) antigen.

In general, the onset of disease symptoms paralleled the number of *M. Ieprae* inoculated, but the ultimate course of disease depended upon individual animal susceptibility. Both IgG and IgM anti-PGL-I isotype were observed in variable levels and patterns, related to the disease stage, among the eight mangabeys.

The data suggest that high IgG and low IgM anti-PGL levels correlated with less severe disease; whereas initial high IgM titers and/or rising or sustained high IgM titers, especially together with low IgG anti-PGL-I titers, preceded or corresponded to periods of progressive leprosy.

The results show that IgG and IgM anti-PGL-I antibodies can be present in significant titers among mangabeys early after infection with *M. Ieprae*. It appears likely that the relative levels of these anti-PGL-I isotypes may be correlated with the susceptibility of individual animals to the development of lepromatous leprosy.

GROSSET, J. H. of al. Activit of Ofloxacin Against *Mycobacterium Ieprae* in the Mouse. **Int. J. Leprosy**, **56**(2):259-164, 1988.

SUMMARY - Mice Inoculated with 4800 *Mycobacterium Ieprae* in the left hind foot pad were treated from day 62 to day 150 after infection with 50 mg or 150 mg of ofloxacin per kg body weight, 150 mg pefloxacin per kg, or 50 mg prothionamide per kg. These drugs were administered by esophageal cannula 5 days weekly with dapsone (0.01 g per 100 g diet). Multiplication of *M. Ieprae* in the treated and in untreated control mice was assessed by monthly harvests.

The treatment of mice with the smaller dosage ofloxacin, with pefloxacin, prothionamide, or dapsone uniformly resulted in a delay of multiplication of 4 months, compared to the multiplication of *M. Ieprae* in the untreated controls. The delay of multiplication (4 months) being 1 month longer than the duration of drug administration (3 months), all of the treatments may be considered as bacteriostatic or moderately bactericidal. In contrast with these results, treatment of mice with 150 mg ofloxacin per kg resulted in no growth of the organisms whatever as late as 18 months after inoculation, strongly suggesting that, in that dosage, ofloxacin had killed all of the *M. Ieprae*. Such a profound killing activity has been

observed only with rifampin. Although the pharmacokinetic characteristics of ofloxacin are different in man from those in the mouse, the daily dosage of 150 mg ofloxacin per kg body weight in the mouse is equivalent to 400 mg per day in man which is the usual therapeutic dosage; thus, the results obtained in the mouse may be extrapolated to man. Therefore, ofloxacin appears a very promising drug for the chemotherapy of leprosy.

HARADA, K. & SUZUKI, K. Improved staining of leprosy bacilli in tissues. **Leprosy Rev.**, **60**(2):124-128, 1989.

SUMMARY- A technique which reliably demonstrates *Mycobacterium leprae*, *M. tuberculosis* and fungi in tissues is described. It is based on the oxidation of cell wall lipid substances by chromic or periodic acid, and the subsequent release of aldehydes which are then capable of reducing ammoniacal silver salt solutions to metallic silver. The organisms so demonstrated appear uniformly solid. The sensitivity of the method and the ease of examination and recognition of bacilli and their products are recommendations for the use of the method in diagnosis and research, disregarding morphological appearances.

HARRIS, E. B. et al. Inhibition of Phenolic Glycolipid-I Synthesis in Extracellular *Mycobacterium leprae* as an Indicator of Antimicrobial Activity. **Int. J. Leprosy**, **56**(4):588-591, 1988.

SUMMARY - The effects of 22 antimicrobial agents on the incorporation of [¹⁴C] palmitic acid ([¹⁴C]PA) into the unique phenolic glycolipid-I (PGL-I) antigen of *Mycobacterium leprae* were studied. Nude-mouse-propagated *M. leprae* were incubated in a modified Dubos medium in the presence of antimicrobial agents for 4 days. [¹⁴C] PA was then added and incubation was continued for 8 days. The antileprosy agents dapsone, rifampin, and clofazimine (2 mg/ml each) caused a significant reduction in [¹⁴C] PA incorporation into PGL-1. Among other agents, the most active were erythromycin, chloramphenicol, and cerulenin. Low concentrations of ethionamide, tetracycline, and minocycline stimulated label incorporation.

This system may prove useful in the evaluation of antileprosy agents.

HERRERA, J. L. & ROJAS-ESPINOSA, O. Serum Lactate Dehydrogenase in Murine Leprosy: Source and Isozymes. **Int. J. Leprosy**, **57**(3):641-646, 1989.

SUMMARY - The bulk of the lactate dehydrogenase (LDH) that increases in the serum of mice infected with *Mycobacterium lepraemurium* (MLM) derives from the liver and corresponds to the isozyme V. MLM-induced granulomas continuously arise in the liver and steadily increase in size until the animal's death. Growing granulomas push the adjacent hepatocytes away and cause them to disrupt and to release their cytoplasmic contents, including LDH. The LDH is then picked up by the infiltrating phagocytes and/or admixed with the circulating blood. Other LDH-containing organs (including the testis with its additional isozyme LDH-X) in the infected or normal animals do not seem to significantly contribute to the serum levels of LDH.

The study of the liver-associated histochemical and biochemical changes in this controlled model of murine leprosy allows us to gain insight into the overall pathology of this mycobacteriosis. In so,ne respects this sheds light on the liver involvement in human leprosy; a subject on which results of all sorts have been published.

JAGANNATHAN, R.; PATIL, D. & MAHADEVAN, P.

R. Correlation of in vitro Fc receptor assay with in vivo mouse foot pad method. **Indian J. Leprosy**, **61**(4):517-525, 1988.

ABSTRACT - Resistant strains of *M. leprae* have been reported to the various Antileprosy drugs. There is currently no accepted test to identify the susceptibility pattern of *M. leprae* to the drugs in a short period. The only accepted test is the mouse foot method which takes a long period to yield results. The Fc receptor assay using the ability of viable *M. leprae* to alter the membrane of the macrophage is well established. It takes only ten days and is inexpensive. In 6 cases of leprosy patients the susceptibility pattern was worked out both with the in vitro Fc receptor assay and the In vivo mouse foot method. The results correlated very well leading to the fact that the assay system is

reliable. Hence it can be used not only to study the status of a patient, but also to shortlist the number of compounds to be teste on the mouse foot pad a s anti-leprosy drug candidates.

JOB, C. K.; SANCHEZ, R. M. & HASTINGS, R. C. Lepromatous ' Meningoencephalitis in the Nine-banded Armadillo (*Dasybus novemcinctus*). **Int. J. Leprosy**, **56**(2):291-295, 1988.

SUMMARY - The brains from 10 nine-banded armadillos with lepromatous leprosy were studied histopathologically. All of them showed evidence of lepromatous meningitis. In two there was invasion by *Mycobacterium leprae* into the brain tissue, with neuronal cells and glial cells containing intracellular bacilli. To our knowledge, this is the first report of meningoencephalitis in a lepromatous nine-banded armadillo.

JOB, C. K.; Mc CORMICK & HASTINGS, R. C. Intracellular Parasitism of Parenchymal Cells by *Mycobacterium lepra* **Int. J. Leprosy**, **57**(3):659-669, 1989.

SUMMARY - The liver, skeletal muscle, and adrenal gland obtained from two nine-banded armadillo infected with *Mycobacterium leprae* were studied using an electron microscope. *M. leprae* were found in varying numbers inside hepatocytes. Kupifer's cells, striated muscle cells, adrenal cortical and adrenal medullary cells, endothelial cells, and macrophages. There was evidence to suggest that *M. leprae* were actively phagocytosed by the liver and skeletal muscle cells. The inert nature of *M. leprae* and its behavior as an almost ideal parasite of parenchymal cells are emphasized. The question of whether this unique parasitism of parenchymal cells and the possible processing and presentation of *M. leprae* antigens by these cells could be responsible for aberrant immune responses is raised.

KATOCH, V. M. et al. In vitro methods for determination of viability of mycobacteria: comparison of ATP content morphological index and FDA-EB fluorescent staining in *Mycobacterium leprae*. **Leprosy Rev.**, **59**:137-143, 1988.

SUMMARY - Bacilli were purified from the 23 cases of multibacillary type of leprosy. The ATP content of these bacilli was assayed by a firefly bioluminescent technique which is capable of detecting a very small number of cultivable mycobacteria as assessed by colony counts. The ATP content was compared with morphological index (MI) and FDA-EB staining of bacilli from the same specimens. It was observed that when MI was 1% or more, the ATP content/solid bacillus was fairly constant in 15 cases studied. It ranged from 2.02 x 10⁻¹⁵ g to 5.60 x 10⁻¹⁵ g/solid bacillus (mean 3.46 x 10⁻¹⁵ g) and was in the same range as ATP content of viable cultivable mycobacteria. In the same 15 cases, when the green-staining bacilli was considered as supposedly viable bacilli, ATP content/green-staining bacillus varied up to 9-fold (0.22-15 x 10⁻¹⁵ g to 1.98 x 10⁻¹⁵ g/green-staining bacillus) and this did not correlate. The percentage of green-staining bacilli (FDA-EB) and solid staining bacilli (MI) was different in all the cases. In 2 cases with 0% MI in which ATP levels were also zero, 7.5% and 21.5% green-staining bacilli were present which implies that the enzymes responsible for green-staining character may persist for some time after death. The cases with 0% MI had 0% green-staining bacilli and zero ATP levels, whereas in another 3 cases with zero MI significantly high levels of ATP were detected.. It is inferred that solid-staining bacilli may be the viable bacilli but when MI is 0% (1% or less) sampling error or clumping may be responsible for missing out the solid bacilli in some cases. It is concluded that the ATP content of *M. leprae* appears to be an easy, rapid and sensitive tool for determining the viability for monitoring the therapy. On the other hand MI and FDA-EB staining appear to have their limitations.

KATIOCH, V. M. et al. Application of ATP assay forin vitro drug screening testing against human derived *M. leprae*. **Indian J. Leprosy**, **61**(3):333-344, 1989.

ABSTRACT - In this study, the ATP content of *M. leprae* exposed to various antimicrobial agents has been measured to evaluate its usefulness in drug sensitivity screening. Purified *M. leprae* suspensions from human biopsies have been incubated at 30°C in a modified Dubos medium in the presence of different concentrations of various drugs viz. Rifampicin, Ethionamide, Ethambutol,

Cycloserine, Dapsonet, Clofazimine, Erythromycin and Tetracycline. ATP levels were estimated at 0,7 days of incubation by the procedur..a modified and standardised at this laboratory. ATP decay was accelerated by ethionamide, rifampicin, clofazimine, dapsone, erythromycin and to a lesser extent by cycloserine, whereas ethambutol and tetracycline did not have any significant effect. The rate of decay depended on the concentrations of these drugs. ATP assay promises to be a useful system for in vitro drug sensitivity screening against *M. leprae* isolated from patients.

KHANOLKAR, S. R. et al. Identification of *Mycobacterium leprae* Antigens in Tissues of Leprosy Patients Using Monoclonal Antibodies. **Int. J. Leprosy**, **57**(3):652-658, 1989.

SUMMARY - Five monoclonal antibodies (MAbs) directed against antigens of *Mycobacterium leprae* were tested for their ability to bind to components of tissue sections prepared from biopsies taken from patients with various forms of leprosy. Immunoperoxidase was the most successful marker system used, although immunofluorescence and alkaline phosphatase were also successful in certain cases. Positivity was high all five antibodies successfully staining those sections containing a bacterial index of 3 + or more; sections with 0 bacterial counts also had areas staining positively with two of the MAbs. The positive staining positively with two of the MAbs. The positive staining in the tissues was confined to areas infiltrated by inflammatory cells; however it was not identifiable as being associated with individual bacteria. These findings suggest that immunostaining with specific monoclonal antibodies can help to identify leprosy in diagnostic samples in which acid-fast bacilli are not identifiable by standard histochemical means. Immunohistochemical techniques are likely to be valuable in studies of the distribution of *M. leprae* antigens and their association with individual tissue elements.

LYONS, N. F. et al. Association of IgG and IgM antibodies to phenolic glycolipid - 1 antigen of *Mycobacterium leprae* with disease parameters in multibacillary leprosy patients. **Leprosy Rev.**, **59**:45-52, 1988.

SUMMARY - IgG and IgM antibodies to the phenolic glycolipid-1 (PGL-1) antigen of *Mycobacterium leprae* were assessed using an enzyme-linked Immunosorbent assay (ELISA) in 77 multibacillary leprosy patients. No correlation was found when their absorbance values were compared to: disease type and duration, bacillary load, reactional status, or concurrent secondary infection. A statistical difference was seen between patients with and without neurological deficiency.

MAROLIA, J. & MAHADENAN, P. R. Reactive Oxygen Intermediates Inactivate *Mycobacterium leprae* in the the Phagocytes from Human Peripheral Blood. **Int. J. Leprosy**, **57**(2):483-491, 1989.

SUMMARY - Reactive oxygen intermediates such as hydrogen peroxide, superoxide, and hydroxyl radicals are important microbicidal components, and they could also play a role in an infection with *Mycobacterium leprae*. A comparative study of the level of hydrogen peroxide and superoxide produced by peripheral blood phagocytes from normal healthy individuals and lepromatous leprosy patients showed a deficiency in super-oxide production in the patients. In the phagocytes from normal healthy individuals, there was good release of superoxide ions, and this mediated the killing of *M. leprae*. The lack of superoxide production allowed the viability of *M. leprae* inside the macrophages from leprosy patients. This deficiency could be rectified by the use of an immunomodulator, the delipidified cell wall of *M. leprae*. This modulation resulted in the ability of the patients' phagocytes to respond to *M. leprae*, to produce reactive oxygen intermediates such as superoxide, and also to kill the bacteria. These observations indicate that delipidified cell wall could have significant potential to positively modulate the immune-deficient cells of leprosy patients.

MEYERS, W. M. et al. Histologic Responses in Sixty Multibacillary Leprosy Patients Inoculated with Autoclaved *Mycobacterium leprae*; **Int. J. Leprosy**, **56**(2):302-309, 1988

SUMMARY - Sixty lepromatous or borderline lepromatous patients were submitted to immunotherapy with a mixture of autoclaved *Mycobacterium leprae* and BCG. The histopathologic findings in skin biopsy specimens taken before and after immunotherapy were evaluated independently by six histopathologists in a workshop setting. Their pooled observations on diagnosis and classification were analyzed to assess the histopathologic changes following various periods of immunotherapy. Expressing the results as the average value of five to six independent observations, there were changes in classification of reversal or upgrading toward the tuberculoid end of the leprosy spectrum in 90.5% of the patients initially classified as lepromatous (LL), and in 83.3% of those initially classified as borderline lepromatous (BL). The histopathologic findings amply support the clinical, bacteriologic and immunological changes following immunotherapy from LL or BL, to BL, mid-borderline (BB) or even borderline tuberculoid (BT) leprosy.

MUUYIL, J. & THANGAVEL, N. Status of multi bacillary patients "lost to follow up". **Indian J. Leprosy**, **61**(2): 229-232, 1989.

ABSTRACT - Completeness of coverage with MDT is essential if one were to hope for a reduction in the incidence of leprosy in an endemic area. Patients who are lost to follow up are generally declared as "Permanently left" (PL) and deleted from the known case register. A special effort was made to study the true status of multibacillary patients who had been declared "PL" in the leprosy control programme area of the Christian Medical College, Vellore, 38% of the 40 patients followed up were found to be still residing in the same area, 40% of them were BI Positive. The reasons for these erroneous deletions varied. The study shows that declaration of "PL" need to be verified carefully. Further, it was found that the present system of reporting may exaggerate the actual number of patients who have been lost to follow up.

NOMAGUCHI, H. at al. Overproduction, Affinity Purification and Characterization of 65-kDa Protein of *Mycobacterium leprae* in *Escherichia coli*. **Int. J. Leprosy**, **57**(4):817-824, 1989.

SUMMARY - The 65kDa protein of

Mycobacterium leprae was produced in an *Escherichia coli* strain carrying a plasmid harboring the redone gene coding for the protein. The protein was purified through affinity chromatography prepared with the IgG fraction of a monoclonal antibody which was prepared against the 65-kDa protein. The purified 65-kDa protein also reacted immunologically with the monoclonal antibody 111E9, which recognizes the epitope for *M. leprae*, prepared by Buchanan, at al. BALB/c mice were inoculated with *M. leprae* and 4 months later were skin tested with the purified 65-kD protein. Gross changes were observed at the skin-test site. The role of the protein in protective immunity against *M. leprae* foot pad infection in mice was also studied.

PORTAELS, F. at al. Effects of Freezing and Thawing on the Viability and the Ultrastructure of in Vivo Grown *Mycobacteria*. **Int. J. Leprosy**, **56**(4):580-587, 1988.

SUMMARY - The influence of different frequencies of freezing-thawing cycles on the viability of in vivo grown *mycobacteria* was investigated. Pieces of armadillo tissues naturally or experimentally infected with *Mycobacterium leprae* were analyzed. The viability of *M. leprae* was determined by mouse foot pad titration. The viability of cultivable *mycobacteria*, sometimes present in armadillo tissues, was determined by culture. Electron-microscopic studies were performed on fresh or frozen-thawed armadillo tissues with natural leprosy and on livers of C57BL/6 mice experimentally infected with /Aavium or *M. lepraemurum*. We found that the percentage of viable *M. leprae* bacilli is identical for naturally infected and experimentally infected tissues, frozen and thawed once.

When the tissues were subjected to a second freezing-thawing cycle, a considerable loss of viability was observed (65%-97%). A third freezing-thawing cycle was lethal for most of the *M. leprae* cells, and after four freezing-thawing cycles no viable bacilli were found. The cultivable *mycobacteria* present in some armadillo tissues were found to be more resistant than *M. leprae* to freezing-thawing since these *mycobacteria* could still be cultivated after four freezing-thawing cycles. The results of the electron-microscopy study support the conclusion that *M. leprae* is more sensitive to freezing-thawing than the cultivable *mycobacteria* and show that the cytoplasmic

membrane appears to be the target for the lethal action of freezing-thawing on mycobacterial cells. These results emphasize the importance of avoiding repeated thawing and refreezing of *M. leprae*-infected tissues when viable *M. leprae* cells need to be studied. Also, the history of each sample regarding the number of freezing-thawing cycles must be precisely recorded in order to anticipate the quality of the samples in terms of viability of the leprosy bacilli.

RAO, P. S. et al. A study into bacteriological positivity and treatment of beggar leprosy patients. **Indian J. Leprosy**, **61**(2):216-221, 1989.

ABSTRACT - Hundred beggar leprosy patients were medically examined and skin smears were taken for bacteriological positivity for A.F.B. Information regarding their treatment was collected. 20% of them were found bacteriologically positive and 40% of the positive cases were not taking treatment. Epidemiological and operational implications of the findings are discussed.

REDDI, P. P. et al. Repetitive DNA Sequence of *Mycobacterium tuberculosis*: Analysis of Differential Hybridization Pattern with Other *Mycobacteria*. **Int. J. Leprosy**, **56**:592-598, 1988.

SUMMARY - In order to generate specific DNA probes for *Mycobacterium tuberculosis*, restriction fragment length analysis was carried out with some of the mycobacterial species that fall within the tuberculosis complex. The presence of specific bands of 5.6 kb and 4.8 kb was revealed in the AluI DNA digest of *M. tuberculosis*. The hybridization profile of the 5.6-kb AluI DNA sequence, as judged by the Southern blot and dot blot hybridization experiments, revealed the presence of this sequence in *M. tuberculosis* H37Rv, *M. tuberculosis* H37Ra, *M. bovis* BCG as multiple copy and *M. kansasii* single copy but this sequence was not present in *M. avium*, *M. smegmatis*, or *M. vaccae* genomes. Genomic

clones corresponding to the 5.6-kb AluI fragment from *M. tuberculosis* H37Rv library made in the Dgt11 expression vector were isolated.

ROJAS-ESPINOSA, O. et al. Transitory Macrophage Activation in the Granulomatous Lesions to *Mycobacterium lepraemurium*-induced Lepromatoid Leprosy in the Mouse. **Int. J. Leprosy**, **56**(3):428-436, 1988.

SUMMARY - A kinetic study on the evolution of granulomas that appear in the liver of NIH mice inoculated with 108 *Mycobacterium lepraemurium* by the intraperitoneal route has been performed. The liver was chosen because of its nonlymphoid histology which allowed us to visualize the appearance and maturation of the cell infiltrates generated as a consequence of the mycobacterial infection. The study analyzes both the macrophage activation within the granulomas and the fate of bacilli within the macrophage. The results showed that this mycobacteriosis induces a relatively early macrophage activation (a very likely result of a cell-mediated immune response triggered by the bacilli) that peaks between 45 and 60 days post inoculation, fades thereafter, and practically disappears several days later. Bacilli are susceptible to the microbicidal effects of activated macrophages, but when the macrophages are turned off (probably due to active suppressive mechanisms), the surviving bacilli reinitiate the infection with no further macrophage opposition. As a result, more phagocytes are attracted to the infection sites and the cell infiltrates grow steadily to become confluent, increasing the granuloma fraction and eventually replacing the liver parenchyma. The findings suggest that in murine "leprosy" infection, early immunological changes occur that enable the macrophages present in the granulomas to kill the infecting *M. lepraemurium* regardless of the eventual lepromatoid evolution of the granulomas. Lepromatoid granulomas in the mouse and lepromatous granulomas in man are equivalent structures in regard to their histology and bacteriology.

RUNGRUANG, S. Further observations on the breeding and rearing of BALB/C nude (nunu) mice under normal laboratory conditions. **Leprosy Rev.**, **59**:25-30, 1988.

SUMMARY - An account is given of the breeding and rearing of BALB/C (nu-nu) mice under normal laboratory conditions, in a research institute in Thailand. Starting with twenty pairs of mice in 1980 over 4.000 have now been successfully bred and reared in this unit on reaching adult age (30 days), the mortality rate is nil.

A detailed description is given of the housing unit, cages, bedding, diet, animal husbandry and neonatal management. The approach used is demanding in terms of professional time and the need for constant attention to detail - but it is successful.

Our experience is in striking contrast to published evidence on the absolute need for specific pathogen-free conditions of this animal model.

SAMUEL, N. M. et al. Ultrastructure of human foetal Schwann cells in tissue culture infected with *Mycobacterium leprae*. **Leprosy Rev.**, **59**:17-24, 1988.

SUMMARY - Human Schwann cells from foetal peripheral nerves were grown in tissue culture and infected with *Mycobacterium leprae*. After fixation for electron microscopy the ultrastructural features of infected Schwann cells were studied. The findings reproduce previous ultrastructural findings of adult human Schwann cells in tissue culture and clearly demonstrate that *M. leprae* cultured Schwann cells. Most of the *M. leprae* remained electron dense, suggesting retained viability, and did not appear to induce any toxic change in the Schwann cells.

SANCHEZ, A. & FOSTER, R. L. Effects of dietary composition on growth of *M. leprae* in mouse footpads. **Indian J. Leprosy**, **61**(4):432-436, 1989.

ABSTRACT - The number of bacteria per mouse footpad were measured at intervals beginning with the third month in male, weaning BALB/c mice infected with *M. leprae* and fed for a period of 6 months to test the effects of diet on multiplication of bacteria. The mean bacteria count per foot pad in mice remaining at 6 months in the two high fat diets was higher ($p = 0.014$) than the mean of the two low fat diets. Likewise, the pooled mean bacterial count of mice fed the two diets of animal origin had a tendency to a higher mean

bacterial count compared to mice fed the two diets of plant origin. Low level of dietary protein in early life also seemed to predispose to *M. leprae* multiplication. Our data in mice suggest that the association of diet with human leprosy should be investigated.

SILVA, M. T.; PORTAELS, F. & MACEDO, P. M. New Data on the Ultrastructure of the Membrane of *Mycobacterium leprae*. **Int. J. Leprosy**, **57**(1):54-64, 1989.

SUMMARY - In previous reports on the ultrastructure of *Mycobacterium leprae*, we described the occurrence of symmetric membranes in normal-looking bacilli from fresh or frozen samples primarily fixed with aldehydes. In those reports we admitted that such a symmetric profile, which is not found in the other normal mycobacteria, would not represent the structure of the normal membrane of the leprosy bacillus. We, therefore, re-analyzed the ultrastructure of the membrane of *M. leprae*. In the present work the micromorphology of the *M. leprae* membrane was studied by transmission electronmicroscopy after the fixation of fresh samples by 0504 plus calcium followed by glutaraldehyde plus formaldehyde and calcium followed by uranyl acetate. The study of samples from two patients with lepromatous (LL) leprosy, three armadillos with natural leprosy, and one nude mouse with experimental leprosy showed that normal-looking bacilli present in lead-stained sections had asymmetric membranes with a thickness of 6.49 ± 0.36 nm. These membranes showed periodic acid-Schiff (PAST-positive components exclusively located in the outer half of the bilayer. We demonstrated that the symmetric profile of the *M. leprae* membrane described in our previous reports corresponds, as admitted in those reports, to an abnormal membrane structure. Such an abnormality was now found to result from the use of primary fixation with aldehydes or of samples stored frozen before fixation. These results indicate that, although ultrastructurally similar to that of the other mycobacteria, the membrane of *M. leprae* has a peculiar sensitivity to fixation by aldehydes. Such a characteristic, which was not found in *M. lepraemurium*, *M. aurum*, *M. avium*, and *M. tuberculosis* H37Ra, must reflect a unique membrane molecular structure, which is presently unknown.

SINGH, N. B. et al. Relative cross reactivity of habanin, lepromin and tuberculin in guineapigs sensitized with homologous and heterologous mycobacteria. **Indian J. Leprosy**, **60**(3):407-412, 1988.

ABSTRACT - An atypical strain *Mycobacterium habana* has been studied for its antigenic cross reactivity with delayed type of hypersensitivity responses in guinea pigs. Guinea pigs sensitized with *M. habana*, *M. leprae* and *M. tuberculosis* when challenged with habanin, lepromin and tuberculin in criss-cross fashion have demonstrated strong cross reactivity with each other. Possibilities of developing *M. habana* as a vaccine against tuberculosis and/or leprosy has been discussed.

SMIDA, J.; KAZDA, J. & Stackebrandt, E. Molecular-Genetic Evidence for the Relationship of *Mycobacterium leprae* to Slowgrowing Pathogenic Mycobacteria. **Int. J. Leprosy**, **56**(3):449-454, 1988.

SUMMARY - A total of 1170 nucleotides of the 16S rRNA from *Mycobacterium leprae* were compared to the homologous regions of *M. tuberculosis*, *M. bovis* Vallée, *M. avium*, *M. scrofulaceum*, *M. phlei*, *M. fortuitum* and one representative each of the genera *Corynebacterium*, *Nocardia*, and *Rhodococcus*. Homology values were calculated and a phylogenetic tree was constructed from the evolutionary distance values. Despite differences in DNA G + C content and genome size, *M. leprae* is a true member of the slowgrowing pathogenic mycobacteria, branching off intermediate to the other members of this subgroup. Slow- and fast-growing mycobacteria are phylogenetically well separated but constitute an individual branch of the actinomycetes proper. Significant structural variation of certain regions of the 16S rRNA may allow construction of *M. leprae*-specific probes used for rapid identification.

SREEVATSA & DESIKAN, K. V. Evaluation of the efficacy of candidate vaccines against *M. leprae* infection in mice. **Indian J. Leprosy**. **60**(2): 252-259, 1988.

ABSTRACT - Delayed-typed hypersensitivity (DTH) response and protection value of some of the candidate vaccines alone and in combination with BCG has been investigated. It was observed that both M.w. and BCG gave heightened DTH and good protection. On the other hand both *M. leprae* and ICRC evoked moderate DTH and gave poor protection. However on coming any of these candidate vaccines with live BCG, the lowering of DTH and poor protection was observed except in the *M. leprae* combination which in spite of low DTH gave better protection.

TOMIOKA, H. et al. Susceptibilities of *Mycobacterium leprae* and *M. avium* complex to the H202 -Fe-mediated Halogenation System Supplemented with Antimicrobial Agents. **Int. J. Leprosy**, **57**(3):628-632, 1989.

SUMMARY - The susceptibilities of *Mycobacterium leprae* and *M. avium* complex (MAC) to the H₂O₂-Fe mediated halogenation system supplemented with antimicrobial agents were evaluated by fluorescein diacetate-ethidium bromide (FDA/EB) staining. In the case of *M. leprae*, the number of green-stained bacteria (intact cells) was reduced in the presence of the H₂O₂-Fe-mediated halogenation system supplemented with agents possessing antileprosy activity, such as rifampin, 4,4'-diaminodiphenylsulfone (dapsone), clofazimine, and ofloxacin. In the case of the MAC strain, although viable units of the organisms were reduced by the halogenation system alone, the number of green-stained cells in the FDA/EB stain was not reduced, even when the halogenation system was used in combination with ofloxacin. Because stainability of the cells is related to structural and functional intactness of the membrane, differences between *M. leprae* and the MAC strain imply possible differences in the rigidity of the cell membrane.

TZE-CHUN, L; ZHONG-MIN & SKINSNES, O. K. Light-and Electron-microscopic Study of *M. leprae*-infected Armadillo Nerves. **Int. J. Leprosy**, **57**(1):65-72, 1989.

SUMMARY - Lesions in peripheral nerves of armadillos experimentally infected with *Mycobacterium leprae* were studied by light- and electron-microscopy. Bacilli could be found clearly inside axons of unmyelinated nerve fibers. Heavily bacillated Schwann cells were seen embracing unmyelinated axons with interrupted cytoplasmic membranes. This indicated the initiation of rupture of those cells which were responsible for the liberation of bacilli into the axons. The nerve lesions were divided into three grades according to their severity: grade I showed lesions focalized in the perineurium; grade II lesions were scattered inside nerve tissue; and in grade III lesions the nerve tissues were diffusely affected. No regressive changes, such as fibrosis or scar formation, were seen in the nerve lesions. Bacillated macrophages were not as foamy as those of human lesions, indicating that these bacillated cells were younger or more easily disrupted with a higher turnover than the cells in human lesions. This would promote the spread of lesions in armadillos, and would explain the less foamy appearance of the cells. We found bacilli inside lymphatics surrounding the nerves, substantiating the opinion that lesions spread to peripheral nerves not only by a hematogenous route but also by the lymphatics.

GIRDHAR, M. et al. Pattern of leprosy disabilities in Gorakhpur. (Uttar Pradesh). **Indian J. Leprosy**, **61**(4):503-513, 1989.

ABSTRACT - Out of 514 leprosy cases studied, 229(44.56%) had disability. Disability was most commonly seen in lepromatous leprosy. There was an increasing trend in disability with increasing age of patient and duration of disease. Disability rate was higher in males as compared to females. Nerve thickening and reactional states were more common in disabled cases. Dapsone treated group showed a disability rate of 63.8% as compared to 30.0% in untreated group. Hand was the most commonly affected site and mobile claw hand was the single most common disability. The overall disability index-D.I. (2) of Bechelli was 1.25 and lepromatous cases had highest D.I. (1.89). Disability index was higher in males and was found to increase with increasing age of patient and duration of disease.

HAMMOND, C. J. & KLENERMAN, P. Protective sensation in the foot in leprosy. **Leprosy Rev.**, **59**:347-354, 1988.

SUMMARY - Plantar ulceration is a significant problem in leprosy patients and accounts for a large proportion of hospital admissions. Three methods of sensory testing were employed to see if a high-risk group of people with loss of protective sensation might be selected, so that the serious first ulcer might be prevented. Three groups of patients were studied: 41 leprosy patients with ulcers, 41 without ulcers and 48 control subjects without leprosy. The results show that either or both Semmes-Weinstein nylon monofilaments and biosthesiometer may prove a more reliable method of sensory testing than the standard WHO pencil stimulus.

KAPLAN, M. & GELBER, R. H. Care of plantar ulcerations: comparing applications, materials and non-casting. **Leprosy Rev.**, **59**:69-66, 1988.

SUMMARY - We have reviewed our experience with plantar ulcer care in our population of 525 patients treated between 1982 and 1987. Patients were treated with standard plaster of Paris casts, alternative methods of casting, and without casting. Of the 24 patients who received casts, all

healed, while 23 of the 30 patients healed without casting. The average healing time for those who were tested was 5.6+-2.6 weeks and for those uncasted, 8.1+-6.6 weeks (P = 0.1). It was concluded that ulcers can heal without casting and that alternative casting procedures offer certain significant advantages. Such approaches are especially applicable to the current leprosy population being treated in the community and remaining ambulatory.

MAX, E. & SHEPARD, D. S. Productivity Loss Due to Deformity from Leprosy in India. **Int. J. Leprosy**. **57**(2):476-482, 1982.

SUMMARY - The productivity loss in India due to deformity from leprosy was assessed in a random sample of 550 leprosy patients from a rural and an urban area in the state of Tamil Nadu. Logistic and log-linear regression analysis on these leprosy patients showed that elimination of deformity would: a) raise the probability of gainful employment from 42.2% to 77.6%; b) increase annual earnings per patient gainfully employed from Rs 2948 to Rs 6469; and c) raise overall earnings for all patients from Rs 1259 to Rs 5023 per year. The earnings of 550 control subjects (adult family members of the leprosy patients) were consistent with these predictions. Extrapolation to all of India's estimated 6-5,000 leprosy patients with deformity suggests that elimination of deformity would raise productivity by \$130 million per year. The authors conclude that the development and evaluation of programs to eliminate deformity from leprosy deserve high priority.

MISHRA, B. et al. Leprosy deformities. I. An epidemiological study in a rural area of Rajasthan. **Indian J. Leprosy**, **60**(1):53-62, 1988.

ABSTRACT - Leprosy deformities have been the cause of debilitation, destitution and social ostracism. Present study was planned and conducted in a rural area situated in eastern districts of Rajasthan. Out of 426 cases of leprosy, ninety cases were found suffering with deformities. The influences of various host factors and disease factors, In causation of deformities have been discussed.

MIS HRA, B. et al. Leprosy deformities. II. As parameters to monitor the effectivity of leprosy control programme. **Indian J. Leprosy**, **64**(2):260-266, 1988.

ABSTRACT - Leprosy deformities have been considered as the main reason for debilitation and social ostracism. Prevention of deformities is considered as one of the most important objectives of leprosy control programme. In present work based on deformity status, efforts have been made to evolve new parameters and their possible application in assessment of leprosy control programme.

NAIK, S. S. et al. Involvement of students in a leprosy health education programme - an experiment **Leprosy Rev.**, **59**: 255-258, 1988.

SUMMARY - The students participation at college and high school level can be obtained for leprosy health education programmes if proper motivation is given, involving non-leprosy agencies such as the student community will help to overcome the stigma of leprosy in society. The experiment of 'Involvement of College Volunteers' and 'Mitra' are described and have the potential to spread to other regions.

OKHANDIAR, R. P. et al. Morphometric study of stratum corneum in leprosy. **Indian J. Leprosy**, **61**(1):49-51, 1989.

ABSTRACT - Abnormalities in Stratum Corneum (SC) in leprosy lesions have been demonstrated as evidenced by poor hydration power of SC and increased SC turn-over. In continuation of the same study morphometric studies of the SC in leprosy was undertaken as per measurement of the Thickening of the SC, Mean

epidermal thickness and Basal layer: Granular layer cell ratio (8:G ratio) of the H.E. stained tissues, Further, on freshly frozen tissues the SC cell-layers were also counted.

The findings suggest increased proliferative activity of the epidermis which may lead to formation of defective SC in leprosy.

SHOREY, P. et al. Ocular changes in reactions in leprosy. **Leprosy Rev.**, **60**(2): 102-108, 1989.

SUMMARY - A study of ocular changes in reactions in leprosy was undertaken to assign these changes, their proper place in the wide spectrum of ocular morbidity in leprosy, 76.1% of eyes of Type I reaction and 89.7% of eyes with Type II reaction showed some ocular involvement Corneal hypoaesthesia, superficial punctate keratitis, a decrease of corneal film break up time (BUT), prominent corneal nerves, pigment on the endothelium of the cornea and a pigmented trabecular meshwork were the common ocular findings. The incidence of iridocyclitis in Type II reactions was low (8.1%). The significance of the ocular involvement in reactions in leprosy and the pathogenesis of iridocyclitis in Type II reactions is discussed.

SIRINIVASAN, H. Do we need trials of agents alleged to improve healing of plantar **ulcers?** **Leprosy rev.**, **60**(4):278-282. 1989.

SUMMARY - The assumptions underlying trials of agents claiming to heal plantar ulcers 'faster' and 'better' are shown to be fallacious and it is pointed out that in most cases these ulcers fail to heal for lack of attention and not for want of a specific topical agent Clinical trials in this area are difficult and are not worth the trouble as they do not add our knowledge about these ulcers or their management in the clinic or in the field.

BEINE. A.O.; SAMPATH, S. R. & CORDEIRO, R. A. Modification of the surgical correction of the thumb - a long term follow up. **Indian J. Leprosy**, **61**(1):17-22, 1989.

ABSTRACT - A modification of the commonest (4) surgical procedure to restore Abduction - Rotation using the flexor superficialis transfer with Y-insertion is described. The modification consists of doing a triple insertion at the thumb instead of Y-insertion. After introducing the triple insertion the procedure shows 80-90% or more good results, whereas 50% or more failures are reported in the existing literature (9), when a Y-insertion only is used which cannot safely prevent 2° deformity, 60 cases were followed up.

RAO, V. A. & KAWATRA, V. K. Cataract extraction in leprosy patients. **Leprosy Rev.**, **59**:67-70, 1988.

SUMMARY - Forty-one eyes of 36 leprosy patients were operated on for cataracts. The ocular findings contributing to blindness among the 41 operated eyes were corneal opacity (26.8%), old uveitis (36.6%) and glaucoma (7.3%). Shallow anterior chamber in the early postoperative period was observed in 26.8% of cases. The use of systemic corticosteroids definitely reduced the incidence of postoperative uveitis (2.4%). Thirty-seven (90.24%) eyes showed improvement in their visual acuity of two Snellen's lines or more after surgery. We conclude that cataract surgery may help in rehabilitation of already disabled and handicapped leprosy patients.

RAO, K. S. & SWAMY, M. K. S. Sensory recovery in the plantar aspect of the foot after surgical decompression of posterior tibial nerve. Possible role of steroids along with decompression. **Leprosy Rev.**, **60**(4): 283-287, 1989.

SUMMARY - In leprosy, Involvement of the posterior tibial nerve leads to sensory loss in the plantar aspect of the foot. As a result plantar ulcers are common and lead to deformity and disability. Restoration of plantar sensation can prevent ulcer formation.

Posterior tibial decompression was done for the recovery of sensation in the plantar aspect of the foot. Seventy-two patients underwent went decompression on 84 feet, 25 received steroids pre and post-operatively. The recovery of sensation was better if surgery was done before 6 months of onset of anaesthesia. Decompression along with steroid gave better results than decompression alone in patients with active neuritis especially in BT cases whereas in BB, BL and LL cases there was no significant improvement of sensation. The results are discussed.

SURYAWANSHI, N. & RICHARD, J. Cataract Surgery on Leprosy Patients. **Int. J. Leprosy**, **56**(2):283-242, 1988.

SUMMARY - All patients who had cataract surgery at the Schieffelin Leprosy Research and Training Centre, Karigiri, India, between January 1979 and April 1985 were studied to find out the outcome of that surgery. These patients included 191 leprosy cases and 89 nonleprosy cases. Postoperative complications were slightly higher among leprosy patients compared to the nonleprosy cases. Visual recovery was marred by preoperative corneal opacities in some of the leprosy patients. Eyes with chronic insidious type of iridocyclitis did not produce any devastating results postoperatively. Patients whose skin smears were still positive for leprosy bacilli did not show any major complication. All leprosy patients should be offered the benefit of cataract surgery for restoring sight because blindness in leprosy would mean a double handicap if they are already suffering from insensitive, deformed hands and feet.

ASCHHOFF, M. et al. Secondary and primary dapsone resistant leprosy: an analysis of 199 patients from St. Thomas Hospital and leprosy project, Chettupattu, South India. **Indian J. leprosy**, **60**(1): 34-46, 1988.

ABSTRACT - The occurrence of secondary and primary dapsone resistance in 199 patients in our control area and the influence of certain variables such as age, initial bacteriological and morphological indices, duration of regular dapsone monotherapy, on the emergence of dapsone resistance was investigated. Ninety one of 122 patients and 29 out of 77 showed secondary (SDR) and primary (PDR) resistance to dapsone respectively. Very low BI (B1:2.5) group also showed both SDR (60%) and PDR (40%). Low or high MI group exhibited the same degree of resistance. Multiplication of *M. leprae* was obtained even when the MI of the inocula was zero. Even in the group who had 1 to 5 years duration of regular dapsone treatment, 85% patients showed SDR. Significance of such results are discussed in relation to chemotherapy. The overall minimum prevalence of SDR was found to be 5.6% and 21% in the case of PDR in our control area.

AYTEKIN, A. H. & SAYLAN, T. Close-contact surveys and mass-screening, studies for leprosy in Turkey. **Leprosy Rev.**, **59**:225-229, 1988.

SUMMARY - Beginning in 1984, the Department of Dermatology at Istanbul University Medical School and the Department of Public Health of Uludag University Medical School embarked on: a, close contact surveys; and b, mass-screening studies in the Province of Van in Turkey. Methodology and results are described in detail. The total number of cases in the whole country is unlikely to exceed 4300 and leprosy cannot be considered to be a serious public health problem. However there is room for improvement, notably in compliance to prescribed medication, the reduction of disability rates and the better use of general health units.

BALAKRISHNAN, S.; KARTHIKEYAN, S. & RAMU, G. Investigations into the haemolytic effects of dapsone therapy in leprosy patients. **Indian J. Leprosy**, **61**(1):10-16, 1989.

ABSTRACT - Investigations into the haemolytic effects of dapsone therapy were carried out in forty four leprosy patients admitted to the Sacred Heart Leprosy Centre, Kumbakomam. They received weight based dapsone dosages varying from 1.3 - 3.3. mg/kg body weight. Blood levels and urinary Dapsone/creatinine ratio were assessed at day, 7 days and 30 days of Dapsone treatment. At the same point of time, haematological observations were also carried out. Serum bilirubin as well as blood methaemoglobin were also examined. The findings showed a reduction in Hb levels at 30 days observation in a good proportion of cases on 100 mg. In one case (child) weighing 15 kg and receiving 50 mg dapsone increased methaemoglobin was observed. It is suggested that dapsone dosage be regulated to body weight and preferably not to exceed 1.5 mg/kg body weight.

BHATNAGAR, P. et al. Dapsone drug compliance study among leprosy patients: a comparison between qualitative and quantitative methods. **Indian J. Leprosy**, **61**(3):373-378, 1988.

ABSTRACT - The methods currently employed to monitor self-administration of dapsone have been evaluated by comparing the results of the qualitative spot test and quantitative DDS/creatinine ratio test. Random urine samples of 242 leprosy patients, periodically attending the Leprosy Clinic were tested.

Although a good correlation between the results of the two was evident, the DDS/creatinine ratio technique appeared to be more sensitive than the spot test. The concentration of DDS and its metabolites in urine specimens found to be negative by the spot test, ranged from 3.32-12.37 mg of DDS/mg creatinine. The spot test was found to be more specific and stays to be the method of choice, when rapidity and reproducibility are the prime objectives, and sensitivity can be marginally compromised. Acidification of urine prior to the spot test was found to be desirable to rule out false negative and false positive reactions.

BOERRIGTER, G.; PONNIGBAUS, J. M. & FINE, P. E. M. Preliminary Appraisal of a WHO-recommended Multiple Drug Regimen in Paucibacillary Leprosy Patients in Malawi. **Int. J. Leprosy**, **56**(3):408-417, 1988.

SUMMARY - A study was undertaken within the framework of the LEPROA Evaluation Project and the LEPROA Control Project in Malawi (Central Africa) to study the incidence rates of type 1 reactions and of relapses in paucibacillary leprosy patients treated with the current World Health Organization-recommended multiple drug regimen (WHO/MDT). Of 503 patients recruited into the study, 488 were reviewed at the end of treatment and 480 have now been followed for 1 year after completion of treatment. At the end of treatment the skin lesions had completely disappeared in 27.4%, but were judged to be still active in 4.3%. During the follow-up period two patients were found with new active skin lesions, giving a relapse rate of 4.17 (2 of 480) per 1000 person years during the first year after completion of WHO/MDT (95% confidence interval 1.14 to 15.06 per 1000 person years). The incidence rate of marked type 1 reaction (renewed inflammation in previously inactive lesions) during the first year after completion of WHO/MDT was 47.8 per 1000, person years in self-reporting patients but zero in patients identified by active case finding. Data are presented which suggest that the incidence rate of late type 1 reactions is closely related to the classification and stage of the disease at detection.

CARTEL, J. et al. Implementation of Chemoprophylaxis of Leprosy in the Southern Marquesas with a Single Dose of 25 mg per kg Rifampin. *Int. J. Leprosy*, 57(4):810-816, 1989.

SUMMARY - Between 1967 and 1987 in the Southern Marquesas, a remote archipelago in French Polynesia, the detection rate of leprosy was 48.9 per 10.000 when it was 8.6 per 10.000 for French Polynesia as a whole. In 1988, a program of chemoprophylaxis of leprosy with a single dose of 25 mg/kg rifampin was implemented, and 2751 persons (98.7% of the population) were treated in the Southern Marquesas. In addition, 678 South Marquesans and 2466 members of their families, living in the Northern Marquesas and in the Society Archipelago, received the same chemoprophylaxis. Among 2676 persons studied in the Southern Marquesas (97.4% of the treated population), 130 had elevated IgM anti-phenolic glycolipid-I antibodies by ELISA without any evidence of leprosy. The onset of a skin lesion of borderline leprosy in a boy 3 months after chemoprophylaxis raises the question of the nature of such a skin

lesion and, indirectly, of the effectiveness of the chemoprophylaxis.

CHANTEAU, S. et al. PGL-I Antigen and Antibody Detection in Leprosy Patients: Evolution Under Chemotherapy. *Int. J. Leprosy*, 57(4):735-743, 1989.

SUMMARY - Multibacillary (MB) and paucibacillary (PB) leprosy patients were tested for circulating phenolic glycolipid-I (PGL-I) antigen and antibodies before treatment. In the 27 MB patients tested, 27 (100%) were antigen positive with levels ranging from 50 to 5000 ng/ml, and 26 (96%) were antibody positive with titers ranging from 1000 to 64,000. Although the antigen and antibody levels were much higher in MB than in PB patients, we could not demonstrate a correlation between the number of acid-fast bacilli/mg of skin biopsy and these two parameters in 14 MB patients. After starting daily multidrug therapy, 10 MB patients were monitored monthly. As much as 88.75% +10.8% of the PGL-I antigen was cleared from the bloodstream after 1 month while the anti-PGL-I antibody remained stable. This rapid decrease in the PGL-I antigen level strongly suggests the usefulness of this test for monitoring MB patients under chemotherapy.

SCIENTIFIC Working Group of the UNDP/World Bank/WHO. Characteristics of the multiplication of dapsone-resistant strains of *Mycobacterium leprae* in mice. *Leprosy Rev.*, 59:5-10, 1988.

SUMMARY - Twenty-seven per cent of the 49 strains of *Mycobacterium leprae* isolated in the course of the THELEP controlled clinical trials of combined chemotherapy of lepromatous leprosy in Bamako and Chingleput, and found to be resistant to dapsone multiplied in significantly fewer mice administered dapsone than in mice administered the dapsone-free diet.

CHATTOPADHYAY, S. P. et al. Evaluation of two multidrug regimens in hospitalized multibacillary cases. *Indian J. Leprosy*, 61(2):196-205, 1989.

ABSTRACT - Fifty three multibacillary leprosy cases were treated with two regimens of MDT L1 consisting of Rifampicin, Dapsone and Ethionamide and L2 consisting of Rifampicin Dapsone and clofazimine. The results were compared at regular intervals and at the end of the study (24 months). Clinical inactivity, bacteriologic negativity, ENL reactions, upgrading reactions were seen in L1 group in 65%, 4,54%, 50% and 41% of cases respectively while 65%, 25.8%, 30% and 45% respectively in L2 regimen group. Zero percent morphological Index was achieved in all cases in L1 regimen 90% in L2 regimen cases.

No viability was found on mouse foot pad inoculation after months in L1 while after 18 months in L2 cases.

CHERIAN, E. et al. Bacterial flora of ulcers treated by three types of dressings. **Indian J. Leprosy**, **60**(3):389-392, 1988.

ABSTRACT - Effect of three types of dressings on bacterial flora in ulcers is presented. Debrisan seemed to be more effective than Zinc tape and collagen sheet in reducing the number of bacterial pathogens.

CHOPRA, N. K.; AGARWAL, J. S. & PANDYA, P. G. impact of multidrug therapy on leprosy in Baroda District (Gujarat). **Indian J. Leprosy**, **61**(2):179-189, 1989.

ABSTRACT - Though much information is available on MDT organising, it poses a challenge to the field staff due to limited field trials conducted and varied field conditions.

The MDT project was begun on 11th June, 1984 in Baroda by the Govt, of India, with active assistance of State Government, the World Health Organisation and the Swedish international Development Agency. The Drug combinations for MB cases were Rifampicin 600 mg, Clofazimine 300 mg and dapsone 100 mg daily for 14 days intensive supervised therapy followed by once a month (Pulse) supervised dose of Rifampicin 100 mg, Clof. 300 mg and dapsone 100 mg for minimum period of 2 years or more if indicated and Clof 50 mg daily with dapsone 100 mg daily unsupervised for minimum period of 2 years or more if indicated, for PB cases, dapsone 100 mg daily for 6 months alongwith 600 mg supervised (Pulse) once a month

for minimum period of 6 months or more if indicated.

DEENABANDHU, A. & KOTHANDAPANI, V. G. Paucibacillary primary dapsone resistance - a case report. **Indian J. Leprosy**, **60**(1):100-105, 1988.

ABSTRACT - A Case of primary paucibacillary Dapsone resistance was presented. Its clinical suspicion and diagnosis are stressed. Emergence of dapsone resistance and its implications are shortly reviewed. A shorts note on its prevention is discussed. Literature is briefly reviewed.

DHANAPPAUL, S. DDS - Induced photosensitivity with reference to six case reports. **Leprosy Rev.**, **60**(2): 147-150, 1989.

SUMMARY - Photosensitivity as an adverse reaction to DDS was recognized in 6 patients of our hospital during the summer of 1988. The clinical manifestations and also the management of those patients are given in detail. All doctors and health workers involved with leprosy need to be aware of such a problem and to take correct decision after weighing the risk photosensitivity against the potential benefit of DDS.

DHANDAYUTHAPANI, S. & BHATIA, V. N. Lactate dehydrogenase isoenzymes in leprosy patients on multi drug therapy - a preliminary report. **Indian J. Leprosy**, **60**(2): 196-201, 1988.

ABSTRACT - Serum LDH (total) and LDH isoenzymes were studied in leprosy patients undergoing multidrug treatment. Serum LDH (total) did not show any significant difference between normal human subjects and patients but LDH isoenzymes have shown elevated levels in LDH4 and LDH5 in leprosy patients. The M/H ratios were high in leprosy patients and they exhibited a further rise in patients on treatment.

DIXIT, V. B.; CHAUDHARY, S. D. & JAIN, V. K. Clofazimine induced nail changes. **Indian J. Leprosy**, **61**(4): 476-478, 1989.

ABSTRACT - Two cases of lepromatous leprosy with erythema nodosum leprosum who were on high doses of clofazimine, showed discoloration of nail plate, subungual hyperkeratosis and onycholysis. These nail changes gradually disappeared when the dose of clofazimine was reduced.

DOUGLAS, J. T. et al. The effects of chemotherapy on antibody levels in lepromatous patients. **Leprosy Rev.**, **59**:127-135, 1988.

SUMMARY - We compare whole cell ELISA antigens (*Mycobacterium leprae*) and two specific antigens: PG-I, phenolic glycolipid I of *M. leprae* and M-BCG, a synthetic antigen representing the terminal sugar of PG-I for their effectiveness in detecting antibody during chemotherapy. By the end of the 1st year of treatment, antibody levels to M-BCG had declined by 42% of the initial EUSA values, by end of the 2nd year by 61% and at the end of 3 years by 68%. Declines of similar magnitude were seen with the other antigens. We examined these sera by RID for changes in levels of IgG, IgM and Ig antibodies. The levels of IgG remained abnormally high throughout the 3 years of antimicrobial therapy. The serum levels of IgM and Ig antibodies remained at the upper limits of normal range. The decline seen with antibody to *M. leprae* antigens was not reflected by a similar decline of serum immunoglobulin levels. Thus, application of ELISA monitoring during the course of treatment may be valuable in measuring the effectiveness of chemotherapy.

DOUGLAS, J. T. et al. Evaluation of *Mycobacterium leprae* antigen in the serological monitoring of a clofazimine-based chemotherapeutic study of dapsone resistant lepromatous leprosy patients in Cebu, Philippines. **Leprosy Rev.**, **60**(1): 8-19, 1989.

SUMMARY - Thirty-one dapsone resistant lepromatous lepromatous leprosy patients receiving clofazimine based therapy were serologically monitored throughout their 5-year period of treatment. Sequentially collected sera were used to examine 4 *Mycobacterium leprae* antigens to evaluate their usefulness in EUSA's for monitoring the progress of their therapy. The ELISA results were

compared with decline in bacterial load over the treatment period and with decline and with duration of treatment. In addition the ELISA's were compared with each other. The ELISA's based on the measurement of IgM antibodies to the two neoglycoproteins (NDO and NTO) representing the phenolic glycolipid antigen of *M. leprae* were found to be the most effective with regard to monitoring treatment. A whole *M. leprae* based ELISA was less efficient in monitoring treatment because it failed to measure antibodies in 5 out of 31 patients. The ELISA-inhibition test based on the detection of antibodies to a species-specific epitope on the 36Kd antigen of *M. leprae* was less suitable because of persistent reactivity during therapy.

EKAMBARAM, V. & RAO, M. K. Changing picture of leprosy in North Arcot District, Tamil Nadu after MDT. **Indian J. Leprosy.** **61**(1):31-32, 1989.

ABSTRACT - This paper discussed the effect in a 5 year period (1983-88) of MDT on the Leprosy situation in North Arcot District where MDT was started in 1983.

The cases at the start of MDT were 68351 and 29511 cases were detected in the year period and the total case load was 97862. Out of this total case load 84810 cases were deleted by RFC, deaths or PL. The causes for deletions are discussed in detail.

The remaining case load at the end of the 5 year period is 13052 or 13,35% of the cases at start. The M.D.T. has definitely played a part in the drastic reduction of the case load since the major number of cases have been deleted as RFC due to cure of the disease and so the future planning of leprosy work when the case load becomes very low is also discussed.

ELLARD, G. A. et al. Clofazimine and dapsone compliance in leprosy. **Leprosy Rev.**, **59**:205-213, 1988.

SUMMARY - The regularity with which multibacillary patients, who were being treated with the WHO Study Group regimen in a THELEP-sponsored field trial in South India, ingested their prescribed daily clofazimine and dapsone was studied. The ingestion of clofazimine was monitored using a specially prepared

formulation containing minute amounts of isoniazid as an innocuous marker. Overall drug acceptability and compliance was excellent. Approximately 75% of the prescribed daily clofazimine and dapsone doses were being ingested and it was concluded that only 5% of the patients would have benefited if their treatment had been supplemented by acedapsone injections.

There was however a marked correlation between the self-administration of the 2 drugs with the consequence that the patients at greatest risk of developing rifampicin resistance because of poor dapsone compliance were the very ones most unlikely to take their daily clofazimine treatment. The results obtained emphasize the importance of employing regimens containing high degrees of supervised drug administration, especially in areas where drug compliance is known to be poor.

ELLARD, G. A. et al. Long Term prothionamide compliance: a study carried out in India using a combined formulation containing prothionamide, dapsone and isoniazid. **Leprosy Rev.**, 59:153-175,1999.

SUMMARY - A comprehensive study of the self-administration of prothionamide is described in which over 2000 urine samples were collected from some 60 South Indian patients over a 2-year period. Prothionamide (350 mg) was prescribed for daily self-administration as the commercially available combined formulation 'Isoprodian' that also contains dapsone and isoniazid. Drug ingestion was monitored by testing the samples qualitatively and quantitatively for the presence of the isonicotinic acid, and for dapsone together with its diazotisable metabolites.

About a third of the patients suffered from moderate or severe gastrointestinal side-effects attributed to prothionamid but no hepatic toxicity was encountered, whether or not treatment was supplemented with monthly supervised doses of rifampicin. The results obtained using the different urine-test methods correlated well and it was concluded that overall just over half the prescribed doses had been ingested. Although enormous variations in individual patient compliance were demonstrated, there was a continuous spectrum of drug taking and patients could not be simply grouped into good or poor compliers.

Older patients took their prescribed treatment less regularly. The compliance of patients who

suffered from severe gastrointestinal side-effects was markedly impaired and improved when daily thioamid treatment was replaced by dapsone. The proportion of positive urine tests among samples collected at the patients' monthly clinic visits was similar to those collected by means of surprise home visits.

It was concluded that if prothionamide is used as an alternative to clofazimine in the multidrug treatment of lepromatous leprosy its compliance should be monitored using an isoniazid-marked formulation.

GEORGIEV, G. D. Blister Calendar Packs - Potential for Improvement in the Supply and Utilization of Multiple Drug Therapy in Leprosy Control Programs. /Editorials/ **Int. J. Leprosy**, 56(4):603-610,1988.

SUMMARY - The concept of multiple drug therapy (MDT) for leprosy has been widely accepted and the World Health Organization (WHO) recommended regimens for paucibacillary (PB) and multibacillary (MB) patients have been introduced in many leprosy control programs worldwide. In recent years increasing efforts have been made jointly by governments, international organizations, and voluntary agencies to expand and intensify MDT implementation in leprosy-endemic countries. However, alongside the availability of finance and infrastructure, there is a need for careful revision of the operational methodology and technology currently used in field control activities in order to make this expansion more effective. One important aspect of this improvement process, on which the effectiveness of combined chemotherapy crucially depends, is the constant availability of all the required antileprosy drugs at the periphery and their regular intake by patients for the prescribed period of time. It has been suggested that the use of "bubble" or "calendar" packs for the dispensing of drugs for the treatment of leprosy, and perhaps also for tuberculosis, has proved practical value.

GIRDHAR, A. et al. Drug compliance among self-motivated leprosy patients. **Indian J Leprosy**, 60(4):506-509, 1988.

ABSTRACT - Regularity of DDS intake among 366 leprosy patients attending our out patient department voluntarily was assessed by urine spot test. It was found that only 54.6% of them had taken

their last dose of drug within the previous three days. Those who kept their appointment showed better compliance than those who did not. Urinary DDS positivity was found to be unrelated to sex, occupation or the type of the disease. In the younger age group the compliance was low, as also among the patients coming from nearby places as compared to those who were residing in far off districts.

GROSSET, J. H. of al. Study of 39 Documented Relapses of Multibacillary Leprosy After Treatment with Rifampin. **Int. J. Leprosy**, **57**(3):607-614, 1989.

SUMMARY - Among 39 strains of Mycobacterium leprae isolated from patients with multibacillary leprosy who relapsed after treatment with rifampin (RPM), 22 strains were resistant to RMP and 17 were susceptible. All of the RMP-resistant strains were recovered from patients who had been treated with more than 50 doses of RMP, usually given as monotherapy. RMP-susceptible strains were recovered from only six patients who had received more than 50 doses of RMP, and from 11 patients who had received no more than seven doses. The median time to relapse after the beginning of RMP therapy was 9 years (range 1-12) among the patients harboring RMP-resistant strains of M. leprae, and the median time to relapse after discontinuation of RMP treatment was 7 years (range 1-11 years) among the patients harboring RMP-susceptible strains. These data suggest that monotherapy with more than a few doses of RMP can be responsible for the emergence of RMP-resistant strains of M. leprae, thus emphasizing the need to employ RMP only in combination with other effective drugs in the chemotherapy of multibacillary leprosy.

GRUGNI, A., NADKARNI, N. J. & KINI, M. S. Multidrug therapy in paucibacillary leprosy - five year experience. **Indian J. Leprosy**, **60**(4):589-592, 1988.

ABSTRACT - 736 paucibacillary (PB) patients were given multidrug therapy (MDT) for at least 6 months. Overall, 44% became inactive after 6 doses, and 69% after 12 doses. However, 27% remained active at the time of analysis, It is recommended that at least 12 doses of MDT be given to PB patients irrespective of the type.

HUAN-YING, L. at al. Short-term Multidrug Therapy in Multibacillary Leprosy - Review of 80 Cases in Two Provinces of China (1983-1988). **Int. J. Leprosy**, **57**(3):622-627, 1989.

SUMMARY - Thirty-three active multibacillary patients from nine counties of Weifang Prefecture, Shandong Province, and 47 active cases from Mania County, Yunnan Province, People's Republic of China, were treated with 24 and 27 months of multidrug therapy (MDT), respectively, in 1983. Clinical assessments, smears, and histopathologic examinations were carried out independently by study teams from the Institutes of Dermatology of these two provinces. Reexaminations at 12-14 months and at termination of therapy showed marked improvement, and there was continued improvement at 12-18 and 33 months on follow up. Conversion of the bacterial index to negativity was 0/33, 5/47 for the patients from Shandong and Yunnan provinces, respectively, at the ends of MDT and 2/33 at 12 months' and 17/47 at 18 months' follow up, which increased to 21/33 and 26/44 at 33 months' follow up. Regression of specific infiltration was about 21%-100% after 24-27 months of MDT; further regression to 95%-100% occurred at 33 months's follow up.

IRUDAYA RAJ, P. P. et al. Certain aspects of dapsone metabolism in leprosy patients as studied by high performance liquid chromatography (HPLC) and qualitative screening tests. **Indian J. Leprosy**, **60**(2):25-224, 1988.

ABSTRACT - Dapsone (DDS) in urine of 250 leprosy patients collected on surprise visits were screened by simple paper spot, tile tests and sensitive Enzyme linked immunosorbent assay (ELISA) and Haemagglutination inhibition (HI) tests. The urinary DDS concentration as well as DDS/C ratios were also studied. Simultaneously, 50ml of blood was collected from each of these patients and its dapsone content was estimated by HPLC. Urine samples with means of 25 to 30 mg/ml DDS and 55-64 mg/mg DDS/C ratios were found to give positive tests by any of the above screening procedures, while their mean blood DDS concentration was found to be 0,91 mg/ml. The corresponding values for those specimens giving negative tests were 3.8 to 5.7 mg DDS per ml and 9

to 13 mg/mg DDS/C ratio. The blood DDS concentration in this group was ranging from 0.16 to 0.18 mg/ml. The findings are discussed in relation to their metabolic significance and their application in a leprosy control programme.

IRUDAYA RAJ, P. P. et al. Influence of acetylator phenotype of the leprosy patient on the emergence of dapsone resistant leprosy. **Indian J. Leprosy**, **60**(3): 400-406, 1988.

ABSTRACT - The half time of disappearance of dapsone and monocetyl dapsone and the acetylator phenotype of the leprosy patients who harboured dapsone sensitive and dapsone resistant *M. leprae* was assessed in 27 subjects. Sixteen patients were rapid acetylators, five were slow and six were intermediate acetylators. The mean $T_{1/2}$ lives of dapsone (30.26 \pm 11.0) and monoacetyl dapsone (31.11 \pm 12.0) were also studied in the above patients. The percentage of different acetylators in both resistant and sensitive groups were similar showing no correlation between the emergence of drug resistance and the phenotype of the patient. The mean time of disappearance of DDS and MAD in the different acetylators did not show significant difference. The ratios of MAD/DDS in an individual at 3.6 or 24 hours after the dose were similar. The mean $T_{1/2}$ lives of DDS and MAD in resistant and sensitive patients also showed no difference. Neither $T_{1/2}$ lives of DDS or MAD nor the acetylator phenotype seem to influence the emergence of dapsone resistance.

JESUDAN, K. et al. Impact of MDT on leprosy as measured by selective indicators. **Leprosy Rev.**, **59**:215-223, 1988.

SUMMARY - The impact of multidrug therapy (MDT) on the leprosy situation in endemic districts where MDT has been introduced, is studied, using a hypothetical model.

This analysis indicates that there will be significant falls in prevalence rates during the first 5 years, mainly as a result of discharge of cases during screening and due to shortening of the duration of treatment. These changes have to be interpreted with caution. Already some districts like Wardha in India have shown dramatic falls in prevalence rates from 1111 in 1981, to 1.8 in 1987.

The Impact of MDT on disease transmission as measured by decline in incidence rates and case detection rates will, however, be gradual.

JESUDASAN, K.; PANNIKAR, V. & CHRISTIAN, M. Infectivity of Secondary DAPsone-resistant Cases. **Int. J. Leprosy**, 418-421, 1988.

SUMMARY - The incidence rate of leprosy among 517 household contacts of 113 cases of secondary dapsone resistance with 5074 person years at risk were studied. The incidence rate of leprosy was 4.3 per 1000 person years at risk, which is very similar to the incidence rate (4.8) among household contacts of lepromatous cases. Two, possibly three, cases of primary dapsone resistance were detected among the 27 contacts who developed multibacillary leprosy. There was no evidence of dapsone resistance among 48 paucibacillary leprosy cases assessed when treated with dapsone monotherapy. The possibility that secondary dapsone-resistant cases will infect and will result in an increase in the number of primary dapsone-resistant cases needs to be investigated further.

JIA-KUN, C. et al. Primary dapsone resistance in China. **Leprosy Rev.**, **60**(4):263-266, 1989.

SUMMARY - Ninety-seven strains of *Mycobacterium leprae* recovered from patients with previously untreated multibacillary leprosy were tested for dapsone susceptibility. The specimens originated from Shanghai Municipality, Jiang-su Province and Fujian Province. Approximately 28% of the strains either did not infect the mice or the results of susceptibility were inconclusive due to the low proportion of viable organisms in the bacterial populations. Among the 70 strains in which dapsone susceptibility could be tested in mice, 31 (44%) strains were found with primary dapsone resistance. Although the majority of the primary dapsone resistant strains were shown to be of a low- or intermediate-degree, one-sixth of them were of high-degree resistance.

KAR, H. K. & ROY, R. G. Comparison of colchicine and aspirin in the treatment of Type 2 lepra reaction. **Leprosy Rev.**, **59**:201-203, 1988.

SUMMARY - In a double blind controlled trial, 34 episodes of acute Type 2 reaction in patients with lepromatous leprosy were treated with colchicine (1.5 mg/dayx4) and the response was compared with a similar number of episodes treated with aspirin (1.8 g/dayx4). Both drugs were found equally effective in mild degree reaction, whereas conchicine gave marginally better result in moderate degree reaction. Neither of the drugs was found useful in severe degree reaction. However, a better efficacy of coichicine was observed in the management of joint and nerve pain associated with Type 2 reaction. Minor side-effects like diarrhoea, nausea and vomitign were noted in only 1 patient while under coichicine therapy.

KAR, H. K. et al. A clinico-patholgoical study of multidrug regimen in paucibacillary leprosy. **Indian J. Leprosy**, **60**(2): 235-241, 1988.

ABSTRACT - Preliminary results of a clinical trial in one hundred untreated paucibacillary leprosy cases with multidrug therapy (MDT) as per WHO recommendation are presented.

KATOCH, K. et al. Relapses in Paucibacillary Patients After Treatment with Three Short-term Regimens Containing Rifampin. **Int. J. Leprosy**, **57**(21):458-464, 1989.

SUMMARY - Three multidrug regimens all containing rifampin and dapsona have been tried for the treatment of 278 cases of paucibacillary leprosy. Regimen I was the one recommended by the WHO Study Group. Regimen II was the same as Regimen I with depsona alone continued for a further 6 months. Regimen III was the same as Regimen II but rifampin was given daily for the first 7 days. The patients were comparable with regard to disease classification, lepromi n status, bacteriological status, and number of lesions. As reported earlier, the disease inactivity rates by 1 year of treatment were much greater with Regimens II and III than with Regimen I (94% and 97% vs 76%).

Early reaction was seen in 6% of those in Regimen III and in none in Regimens I and II. Late reaction was observed in 9% of those in Regimen I and none in Regimens II and III. During 31/2 years of follow up, 13% of the cases in Regimen I, 1% in Regimen II, and 2% in Regimen III relapsed. Since

the three regimens were other-wise comparable, it is concluded that the high inactivity rate, low relapse rate (1%-2%), and no early or late reaction as observed in Regimen II patients were because of adequate treatment.

KATOCH, K. et al. Results of Modified WHO Regimen in Highly Bacilliferous BULL Patients. **Int. J. Leprosy**, **57**(2):451-457, 1989.

SUMMARY - Multidrug therapy (MDT) has been advocated in all cases of multibacillary leprosy for several reasons. Firstly, the problems of primary and secondary drug resistance could be prevented. Secondly, by using a combination of drugs with different modes of action, Mycobacterium leprae are attacked at different stages of their life cycle and thus could be more effectively killed. Thirdly, in cases who have already become dapsona resistant, only a combination of drugs would be advisable. A World Health Organization (WHO) Study Group has recommended a multidrug regimen for 2 years or longer for multibacillary patients. Different workers in leprosy have also tried different multidrug regimens and have advocated treatment for varying durations for achieving the most effective bacterial kill and for minimizing relapses. There have been only a few reports of long-term follow-up of the effects of multdrug treatment on highly bacilliferous leprosy patients or of detailed studies on the results of MDT regimens.

We have earlier reported the preliminary results of a 2-year follow-up of highly bacillated multibacillary patients on a modified WHO regimen. The present study now reports the results of those cases who have been followed up for 4 years. The regimen used was the same as the WHO regimen except that no monthly supervised loading doses, i.e., 300 mg of clofazimine, were given and clofazimine was administered 100 mg on alternate days.

KATOCH, V. M. et al. Effect of Chemotherapy on Viability of Mycobacterium leprae as Determined by ATP Content, Morphological Index and FDA-EB Fluorescent Staining. **Int. J. Leprosy**, **57**(3):615-621, 1989.

SUMMARY - Viable bacterial populations were estimated in bacilli purified from 105 biopsies from 40 untreated and 65 multibacillary leprosy patients

treated with multidrug therapy (MDT) for varying periods. The bacilli were purified and viability was determined by ATP content, morphological index (MI), and fluorescein diacetate-ethidilun- bromide (FDA-EB) staining. Viable populations were calculated, taking 3.58×10.15 g/solid bacillus as the mean ATP content of a viable unit of *Mycobacterium tepee*. The proportion of viable bacilli was also estimated in the same specimens using solid-staining (MI) and green-staining bacilli by the FDA-EB method. In the, untreated cases, the positive viability by ATP assay was 100%, 92% by MI, and 100% FDA-EB. ATP content per solid bacillus was relatively constant, which was not the case with ATP content per green-staining bacillus. While the MI was zero in all cases, viable bacilli could still be detected by ATP estimations in 5 of (16%) patients after 2 years of MDT and in 1 of the 20 (5%) patients after 3 years of MDT. No viable bacilli could be detected even by this method beyond 3 years of MDT. On the other hand, green-staining bacilli were demonstrable in 7/32 (22%) of cases after 2 years of MDT, 2/20 (10%) after 3 years of MDT, and 1/13 (8%) after more than 3 years of treatment, indicating that the FDA-EB staining and ATP assay did not detect the same populations. A determination of the ATP content of *M. eprae* could be used as a reliable and sensitive tool for determining viability of the bacilli.

KATOCH, K. et al. Pyrazinamide as a part of combination therapy for BL and LL patients-a preliminary report. **Indian J. Leprosy**. **56**(1):1-9, 1988.

SUMMARY - Pyrazinamide in a dose of 1500 mg was given 63 borderline lepromatous (BL) and lepromatous (LL) leprosy patients on different drug regimens for the initial 2 months of therapy. Fifty-one LL patients were put on the same drug regimens without pyrazinamide. There was a rapid and good clinical improvement in the patients in both of the groups. At the end of 2 years, the patients who received pyrazinamide had a morphological index (MI) of zero as compared to those patients who did not receive pyrazinamide, some of whom still had solidly staining bacilli. One out of 20 (5%) scrotal (smooth muscle) biopsies of the patients who received pyrazinamide had growth in the mouse foot pad as compared to 9 out of 38 (23.7%) smooth muscle biopsies of the patients who did not receive pyrazinamide. At the end of 5 years,

the patients who received pyrazinamide had slightly better results compared with the non-pyrazinamide group. Pyrazinamide appears to have some effect against persisters in multibacillary leprosy. A well-controlled, randomized trial with longer duration of pyrazinamide therapy in a larger group of patients needs to be carried out to unequivocally determine the exact role of pyrazinamide in leprosy.

KLENERMAN, P. Prostaglandins and leprosy. a role for aspirin? **Leprosy Rev.** **60**(1):51-58, 1989.

SUMMARY - Prostaglandins not only have a role in inflammation, but may also be involved as mediators in the immune response. Drugs which affect prostaglandin synthesis may therefore be potential tools with which to modulate disturbed immunity. These possibilities are discussed with reference to immunity in leprosy and particular reversal reactions.

KULKARNI, V.; GHARPURAY, M. B. & KULKARNI, D. S. Multiple cold abscesses in a borderline lepromatous patient on multidrug therapy. **Indian J. Leprosy**, **61**(4): 442-444, 1989.

ABSTRACT - A 25-year-old male patient was diagnosed as a case of borderline lepromatous (BL) type of leprosy in erythema nodosum leprosum type reaction. He was put on multidrug treatment. He took regular treatment Approximately a year after the beginning of the treatment he developed multiple cold abscesses and later tuberculosis of the left hip joint. He was given antitubercular treatment with 4 drugs and the abscesses were treated surgically. He showed good response. This unusual case and the role of intermittent rifampicin is discussed.

KURZ, X. M.; DECLERQ, E. E. & VELLUT, C. M. Rate and Time Distribution of Relapses in Multibacillary Leprosy. **Int. J. Leprosy**, **57**(3):599-606, 1989.

SUMMARY - Of the 47,068 patients registered in the Polambakkan Leprosy Center between 1955 and 1982, we selected 1886 cases having shown bacteriological positivity at any time during this

period, whatever their classifications at registration, and subsequently found bacteriologically negative. After an average follow-up period of 10 years, 243 relapses were observed, giving a crude relapse rate of 12.8 per person-years of observation and a cumulative probability of relapse of 18.9%. Relapse rates were found to be dependent on regularity during smear-positive and negative periods; a regularity greater than 75% in the smear-positive period proved to be particularly important. The results show no evidence that relapses occurring after 3 years of negativity could be reinfections, and that the relapse rate was still affected by regularity 7 years negativation. The median delay of relapses was found to be 4.4 years and was not affected by the regularity of treatment.

NAIK, S. S. et al. A bacteriological assessment of multibacillary cases in leprosy colonies after 41/2 years of multidrug therapy. **Indian J. Leprosy**, **60**(3):393-399, 1988.

ABSTRACT - In this presentation we have devised a novel way of calculating the total bacterial quantum in 100 (78 LL and 22 BL) multibacillary leprosy patients living in leprosy colonies. The calculation is based on Ridley's logarithmic scale. We have also attempted to assess the reduction in the bacterial quantum as a result of intervention through multidrug therapy (MDT). 53% of the patients rendered bacteriologically negative within two years of treatment of MDT and 94% at 54th pulse dose i.e at 54th month. The bacterial quantum in human source as leprosy patients was calculated thus - Average BI of the group x Number of patients in each group x Multiplication factor devised as per Ridley's Bacterial Index (BI). By applying this purely arithmetic formula, it was found that 99.8% of the bacterial load is harboured in leprosy patients having BI more than 3. The introduction of MDT initiated the reduction in total bacterial quantum "based on above arithmetic scale" was achieved very fast i.e., from 100% to 5% at 12 months and to 0.4% at 24 months. We believe that if one wants to achieve leprosy control a reduction in total bacterial quantum within a specific period, leprosy cases with BI more than 3 should be treated on priority basis.

NEVILLE, J. After multiridrug therapy (MDT): who is responsible for continuing care? /Editorial/ **Leprosy Rev.**, **59**:1-3, 1988.

SUMMARY - Before considering who is responsible for providing continuing care, it is necessary to look at the present situation regarding multidrug therapy (MDT).

Most leprosy endemic countries in the world have introduced, or are in the process of introducing the WHO recommended MDT regimens for leprosy. However, data available in 1968 showed that only 8.8% of the total number of registered cases in the world were receiving MDT. This was four years after the WHO Study Group recommended that, as a matter of urgency, combined chemotherapy regimens should be introduced in all leprosy control programmes.

This slow progress in the introduction of MDT is understandable to planners and field staff alike, and is a cause for concern. It is partly due to inadequate financial and personnel resources, and very often due to transport problems. It could well be argued that with limited resources, those that are available must first be used for implementing MDT, and that it is unrealistic to consider continuing care until all leprosy patients have been treated with MDT. However, the importance of patient care was underlined at a recent meeting of WHO and nongovernmental organizations. Some programme planners are already aware of this, and recognize that continuing patient care not only helps the individual but also reinforces the credibility of the MDT programme.

NIGAM, P. K. et al. Rifampicin induced uterine bleeding. **Indian J. Leprosy**, **60**(2): 303-305, 1988.

ABSTRACT - A case of uterine bleeding after intake of rifampicin is reported in a 35-year-old female. Provocation test was also positive. The underlying mechanism whether it has a hypersensitivity phenomenon like fixed drug eruption or due to induction of uterine acyl-hydrolase enzyme, is not clear. Uterine bleeding has not been observed as a side-effect of rifampicin in the past.

PARKING, A. A. & SHAH, B. H. Flu like syndrome with rifampicin pulse therapy **Indian J. Leprosy**. **61**(2): 209-210, 1989.

ABSTRACT - Flu like syndrome was found in a

patient of BT leprosy taking Rifampicin in pulse therapy. This side effect was absent when the dose Rifampicin was decreased. Details of this case is given with a review of literature.

TIWARI, V.D. et al. Multidrug therapy in hospitalised leprosy cases. **Indian J. Leprosy**, **60**(1): 71-76, 1988.

ABSTRACT - Fifty eight cases including 44 paucibacillary and 14 multibacillary leprosy diagnosed at Comnabd Hospital SC Pune were hospitalised for the entire period of multidrug therapy, 76% cases belonged to high endemic states of India. Reactions occurred in 13 cases during treatment, type I in 10 and type II in three, 7 multibacillary cases experienced reaction, 69% reaction patients developed reaction within two months of starting MDT and all of them were multibacillary. Usually it took 3-6 months for majority (61.5%) of reactions subside completely. In 65.5% paucibacillary patients activity subsided within twelve months, however 70,5% paucibacillary cases took more than six months to exhibit subsidence of activity. In 13 multibacillary cases activity subsided by 18 months though bacteriological negativity was obtained from four to twelve months.

PATKI, A. H.; JADHA, V. H. & MEHTA, J. M. syndrome on once monthly rifampicin. **Indian J. Leprosy**, **60**(1):84-86, 1988.

ABSTRACT - Two cases of 'flu' syndrome on once monthly rifampicin are reported. The symptoms were reproduced in one patient with the next supervised dose. In the second patient they did not recur probably because she was receiving systemic steroids for left ulnar neuritis.

PATRI, A. H. & MEHTA, J. M. Dapsone - Induced erythroderma with Beau's lines. **Leprosy Rev.**, **60**(4):274-277.1989.

SUMMARY - A 35-year-old female with borderline lepromatous (BL) leprosy who suffered from dapsone-induced erythroderma is reported. Sudden onset of erythroderma gave rise to a temporary arrest of the function of nail matrix with the resultant Beau's lines. She rapidly recovered with omission of dapsone and therapy with

systemic corticosteroids and a topical emollient. In view of the potentially fatal hypersensitivity reaction, we suggest that any patient on multidrug therapy for leprosy needs an urgent referral to a dermatologist if the patient develops a skin rash during the first two months of treatment.

PATTYN, S. R. et al. Combined regimens of one year duration in the treatment of multibacillary leprosy. I. Combined regimens with rifampicin, administered during one year. **Leprosy Rev.**, **61** (2):109-117, 1989.

SUMMARY - In 1981, 1982 and 1983, 216 multibacillary patients in Anjouan (Comores) and Burundi were treated for 8 weeks with daily rifampicin (600 mg) ethionamide (500 mg) and dapsone (100 mg) or clofazimine (100 mg) followed for 44 weeks by once weekly rifampicin (600 mg and daily ethionamide (500 mg) and dapsone (100 mg) or clofazimine (100 mg). There were 109 previously untreated patients and 107 patients who had had dapsone monotherapy, 16 of whom were infected with proven dapsone resistant *Mycobacterium leprae*. Clinical and bacteriological results were excellent but hepatotoxicity of this regimen remains a problem.

No relapses were observed during a 2 to 6 years (mean.29 years) follow-up period after the end of treatment (upper 95% confidence limit of 0.40 per 100 persons years). It is concluded that multibacillary leprosy can be successfully treated with a regimen of one year duration, but less toxic regimens, more easily applicable in the field, are necessary.

PATTYN, S. R. et al. Combined regimens of one year duration in the treatment of multibacillary leprosy. I. Combined regimens with rifampicin administered during 6 months. **Leprosy Rev.**, **60**(2):118-123, 1989.

SUMMARY - From 1981 to 1983 all multibacillary patients presenting at the collaborating centres in Zaire and Rwanda were treated with one of the following regimens: 6 months supervised daily RMP 600 mg, ETH 500 mg and DDS 100 mg or CLO 100 mg followed by 6 months unsupervised daily DDS 100 mg or CLO 100 mg ETH 500 mg added or not. These regimens gave rise to hepatotoxicity, reversal and erythema

nodosum leprosum reactions as described previously.

Bactericidal activity was excellent. Among the 289 patients in the trial, with a mean follow-up period of 3.88 years, no relapses were observed, with an upper 95% confidence limit of 0.35 per 100 person years.

Because of the hepatotoxicity, alternative short-course therapies need to be tested.

PAVITHRAN, K. Relapse of paucibacillary leprosy after short course multidrug therapy. **Indian J. Leprosy**, **60**(2):225-229, 1988.

ABSTRACT - Among 25 patients who had short-course multidrug therapy as recommended by the WHO for paucibacillary leprosy, 3 were observed to develop relapse of their disease 8 to 12 months after completion of treatment. These three cases of relapse are reported in detail. The duration of chemotherapy recommended by the WHO in paucibacillary cases appears to be too short.

PIETERS, F. A. J. M.; WOONIK, F. & ZUIDEMA, J. A field trial Among Leprosy Patients in Nigeria with Depot Injections of Dapsone and Monoacetyldapsone. **Int. J. Leprosy**, **56**(1):10-19, 1988.

SUMMARY - In two field trials in Nigeria, 74 male and female leprosy outpatients received intra-adipose depot injections of either dapsone (DDS) or monoacetyldapsone (MADDS) at 4-week intervals. Blood samples were taken regularly and sent to Amsterdam to determine the DDS and MADDS concentrations in serum using high-pressure liquid chromatography (HPLC).

The DDS injection yielded a good sustained drug release. After repeated administration accumulation occurred, demonstrated by a statistically significant increase in the area under the curve (AUC) in time: until 28 days after the first injection, the mean AUC (+S.D.) amounted to 19.3 +- 5.6 mg 0/1 in males and 15.1 +- 5.2 in females; after the fourth injection, 26.4 +- 7.5 and 24.6 +- 9.0 mg d/I, respectively ($p = 0.001$). One male patient developed an abscess at the injection site; otherwise no side effects were observed.

Even better sustained-release results were observed with the MADDS injection. Unfortunately, the injection caused a number of abscesses.

Consequently, the DDS injection was very well received by the patients of the DDS study, while half of the patients in the MADDS study would prefer tablets to the MADDS injection.

Further investigations are required to find the cause of the abscesses before one of the injections, or possibly a combination of both, could be implemented in the multidrug treatment regimen proposed by WHO to provide a valuable tool to combat non-compliance among leprosy patients.

RAMAKRISHNAN, K. R. et al. Paucibacillary leprosy: a comparative study of different schedules of multidrug therapy. **Indian J. Leprosy**, **60**(4):542-548, 1988.

ABSTRACT - The study was undertaken to evaluate the efficacy of various multidrug regimens (MDT). Three groups of 10 cases each of Paucibacillary cases were given different schedules of multidrug therapy. First group (T-0) was administered modified WHO regimen consisting of Rifampicin 600 mg once a month, Clofazimine 100 mg alternate days and Dapsone 100 mg daily for 6 months. In second group (T-1) Rifampicin 600 mg was given daily for 6 weeks and in third group (T-2) Rifampicin 600 mg was given daily for 6 months. In both the latter groups Clofazimine 100 mg on alternate days and Dapsone 100 mg daily was also administered for 6 months. Objective clinical scoring was done at the time of admission, three months and six months after treatment in all three groups. The best results were obtained by T-2 followed by T-1; and least effective was T-0 regimen. Pinkish colour of urine and skin was observed in 26 cases and ichthyosis in all the cases. All the patients remain under treatment. The work is in progress and subsequent results will be published later.

RAMU, G. & DESIKAN, K. V. A follow up study of borderline tuberculoid leprosy under sulphone monotherapy. **Indian J. Leprosy**, **60**(1): 26-33, 1988.

ABSTRACT - A retrospective study is presented herewith of 94 cases classified as BT and treated with sulphone monotherapy. A system of scoring based on the number and extent of lesions, and nerve involvement was followed. It was observed that cases with a clinical score of 2 or having more

than 15 lesions or patients with extensive lesions covering 3 or more of 7 sectors of the body had bad prognosis in respect of time taken for subsidence, occurrence of deformities and most importantly occurrence of relapses.

Hence it is suggested that such cases should be considered as Multibacillary and treated as such, despite bacteriological findings which may be either negative or a bacteriological positivity of less than 2 at any one site.

RAO, P. S. S. S. et al. Impact of MDT on Incidence Rates of Leprosy Among Household Contacts Part 1. Baseline Data. **Int. J. Leprosy**. **57**(3):647-651, 1989.

SUMMARY - This preliminary study from Gudiyatham Taluk, the leprosy control area of the Schiefflin Leprosy Research & Training Centre, investigated the incidence rates of leprosy among household contacts during the period 1970-1985. The incidence rates of leprosy among the household contacts prior to and during the initiation of multidrug therapy are presented here. The overall incidence rate among the household contacts was 4 per 1000 person-years at risk. Contacts of multibacillary and paucibacillary cases had a relative risk of 3-6 times and 2-4 times the risk of leprosy in the general population, respectively. The incidence rates among children were higher than adults; the peak age-specific incidence rate was between 5-9 years, and nearly one third of the primary cases were children. These findings are presented and the methodological issues discussed.

REDDY, P. K. & MOTINUDDIN, S. K. Pattern of relapses in pauci-bacillary leprosy patients treated with M.D.T. (W.H.O. 1982). **Indian J. Leprosy**, **60**(4): 581-588 1988.

ABSTRACT - Out of 92 Pauci-bacillary leprosy patients treated with MDT (WHO 1982), two patients developed Indisputable clinical signs of relapse during 10th and 26th month of observation period. Two more patients developed reversal reaction during 8th and 12th month of observation period, which we presume to be early manifestation of relapse. Addition of a more bactericidal drug, rifampicin, appear to have a bearing on the incidence of relapse, though not on its incubation

period. No change of classification was notice at the time of relapse. Incidence of relapse in female patients was much higher than in male patients.

REDDY, P. K. Occurrence of reversal reactions in BT patients during who paucibacillary leprosy MDT (1982). **Indian J. Leprosy**, **60** (3): 453-456 1988.

ABSTRACT - 55 B.T. patients were with WHO Paucibacillary MDT (1982). The patients suffered from reversal reaction neither at the time of initiation of MDT nor prior to that. During, the 6 months period of MDT, one patient developed reversal reaction of a skin patch, and another patient developed neuritis of a peripheral nerve trunk.

REVANKAR, C. R. et al. Clinical assessment of paucibacillary leprosy under multidrug therapy-three years follow up study. **Indian J. Leprosy**, **61**(3):355-359, 1989.

SUMMARY - 408 skin smear negative paucibacillary leprosy cases who had completed six months MDT were kept under surveillance for three years. The clinical assessment at the end of surveillance showed that 276 (82%) of all the cases attained inactivity. Two patients who were inactive showed signs of relapse. Five patients showed more activity though they were regressing under treatment. The inactivity rate was much higher amongst the patients with 1 to 3 skin lesions (88%) as compared to the patients with — 4 lesions (60%).

The difference was statistically significant ($P = 0.001$). The past treatment before MDT did not appear to influence the clinical course of the disease, 17% of the patients essentially borderline type continued to show signs of activity even after 3 years surveillance indicating the need for triple drug therapy (to be treated as multibacillary).

However larger scale data on relapse rate would be essential before the efficacy of WHO short-term therapy for paucibacillary leprosy is evaluated.

REVANKAR, C. R. et al. Delivery of MDT through blister calendar packs in leprosy eradication programmes - a multicentre field study (Phase I). **Leprosy Rev.**, **60**(2): 135-138, 1989.

SUMMARY - To overcome operational problems and improve patient compliance in leprosy programmes, DANIDA introduced blister calendar packs (BCP) to deliver MDT in four districts in India. A questionnaire study of 1470 patients from these districts showed that more than 90% accepted BCP and found them to be very convenient for domiciliary treatment. A similar study of 127 treatment providers indicated that delivery of MDT through BCP was found convenient to overcome logistic problems.

RICHARDUS, J. H. & SMITH, T. C. Increased incidence in leprosy of hypersensitivity reactions to dapsone after introduction of multidrug therapy. **Leprosy Rev.**, **60**(4): 267-273, 1989.

SUMMARY - In order to address the question whether hypersensitivity reactions to dapsone are becoming more frequent, the clinical data of 7300 leprosy patients treated between 1949 and September 1988 at the McKean Rehabilitation Centre in Thailand were reviewed.

Information from the period 1949 to 1969 was too incomplete to allow conclusions. The incidence of hypersensitivity reactions to dapsone between 1970 and 1982 was 0.3%. From 1982 (with the introduction of multidrug therapy) to September 1988, the incidence was 3.6%; a tenfold increase compared with the previous period. Of the 19 cases seen since 1982, 12 were diagnosed as Dapsone syndrome. Of a total of 13 patients seen since 1980 with Dapsone Syndrome, 3 ended fatally, indicating the severity of the complication.

The question is raised whether an unexplained drug interaction with rifampicin is responsible for the increase of hypersensitivity reactions to dapsone in patients treated for leprosy.

ROSE, P. Change in epidemiological indices following the introduction of WHO MDT into the Guyana leprosy control programme. **Leprosy Rev.**, **60**(2):151-156, 1989.

SUMMARY - In December 1981 the multidrug regimen recommended by the WHO Study Group of October 1981, was introduced into the Guyana Hansen's Disease Programme. This paper examines the changes that occurred in epidemiological

indices over the 6 years following the introduction of MDT and also evaluates changing work loads and staffing patterns.

ROY, B. & DAS, R. K. Cytogenetic Effect of Dapsone, an antileptotic Drug, in the Mouse in Vivo System. **Int. J. Leprosy**, **56**(4):574-579, 1988.

SUMMARY - Potential genotoxicity of dapsone was evaluated in mice following In vivo cytogenetic assays. Adult male mice treated with different doses (20mg, 40mg, or 80mg/kg/day for 4 weeks) and for different periods (40 mg/kg/day for 2,4, or 8 weeks) provided bone marrow and tests for mitotic and meiotic chromosome analysis, respectively. A dose-response (20 mg, 40 mg, or 80 mg/kg/day for 2 weeks) analysis was done with a separate set of mice using a micronucleus test (MNT). Untreated mice served as controls. Both the metaphase analysis and MNT in bone-marrow cells revealed significantly higher incidences of clastogenicity for all of the dose levels and treatment periods. Chromosome aberrations, with and without gaps, in bone-marrow metaphases showed a positive correlation with the doses, but not with the treatment periods. Correlation was also lacking in the MNT. In the meiotic cells, the incidences to chromosome aberrations increased significantly with the highest dose and with the longest period of treatment.

SINGHAL, S. K. Suicide with dapsone. **Indian J. Leprosy**, **60**(1): 87-89, 1988.

ABSTRACT - A case of suicide with dapsone is reported in a female medico chemical analysis report confirmed it to be death due to dapsone. Management in case of dapsone poisoning is also discussed.

SINHA, S. et al. Appraisal of Two Mycobacterium leprae-specific Serological Assays for Monitoring Chemotherapy in Lepromatous (LUBL) Leprosy Patients. **Int. J. Leprosy**. **57**(1): 24-32, 1989.

SUMMARY - Two of the Mycobacterium leprae-specific assays-a serum antibody competition (for an epitope on 35-k Da protein) test

(SACT) and an enzyme-linked immunosorbent assay (ELISA) for the disaccharide epitope of phenolic glycolipid-I (PGDS) - were comparatively evaluated as tools for monitoring chemotherapy in 125 lepromatous leprosy (LUBL) patients. An adaptation of the SACT from a radioimmunoassay (RIA) to an ELISA procedure is also described. A moderate but statistically significant correlation was observed between the assays, although SACT appeared to be the more sensitive of the two. Levels of antibodies correlated better with the bacterial index (BI) than with the duration of treatment. However, wide individual variations in antibody levels (for a specific duration of treatment of BI) were seen in treated well as untreated patients. Anti-PGDS antibody response of the IgG type was poorer than that of the IgM type and, apparently, it did not have a bearing on either treatment duration or the BI. Further studies will be needed to clarify whether the treated patients showing a negative (or low) BI and high antibody levels were harboring hidden foci of active infection, and whether treatment could safely be terminated in patients showing low values for both BI and antibody.

SIRUMBAN, P. KUMAR, A. & NEELAN, P. N. Healing Time in Untreated Paucibacillary Leprosy: A Cross-sectional Study. **Int. J. Leprosy**, **56**(21:223-227, 1988.

SUMMARY - The healing time of leprosy lesions in 117 paucibacillary (PB) cases who took no antileprosy treatment was estimated to be 2.03 +0.10 (mean + S.E.) years in a leprosy hyperendemic area. This healing time does not appear to be influenced by epidemiological characteristics of the patients such as age, sex, intrafamilial leprosy contact status, number and site of leprosy lesions, etc. It was also observed that the rate of healing and downgrading among the total untreated cases was 22.4% and 0.57%, respectively, per year. About 39% of the total untreated PB leprosy cases healed within a period of 2 years. The scientific implication of this observation is discussed.

SUITE, M. & EDINBOROUGH, N. B. A second report on multidrug therapy for leprosy in Trinidad and Tobago. **Leprosy Rev.**, **60**(4):288-299, 1989.

SUMMARY - Multidrug therapy consisting of rifampicin, clofazimine and dapsone, was introduced in Trinidad and Tobago in January 1982. This was with slight modification of the WHO regimens. Since then 717 patients have completed multidrug therapy up to the end of December 1987. Of these, 272 patients have completed surveillance and have been discharged from clinic attendance. Thirty-four patients died before completing surveillance and three are known to have migrated. Of the remaining 408 cases still under surveillance, the majority are multibacillary.

This paper reviews the outcome of multidrug therapy in Trinidad and Tobago between January 1982 and December 1987 - a period of 6 years, and presents some of the statistics related to the newly diagnosed patients within the same period.

THAKUR, M. et al. Primary dapsone resistance as assessed by uptake of labelled thymidine by the macrophage resident *Mycobacterium leprae*. **Indian J. Leprosy**, **61**(4): 437-441 1989.

ABSTRACT - 12 untreated lepromatous leprosy patients were screened for primary dapsone resistance by the uptake of labelled thymidine by macrophage resident *M. leprae*. Three were found to harbour primary dapsone resistant strains of *M. leprae* and another three partially resistant strains to the drug. This rapid, simple and reliable method should be used routinely to screen leprosy patients for drug resistance.

THOMAS, A. et al. A double-blind controlled clinical trial to assess the role of anti-histamines in the treatment of multi-bacillary leprosy. **Indian J. Leprosy**, **60**(4):499-505, 1988.

ABSTRACT - A double blind controlled clinical trial to assess the role of anti-histamines as a supplement in the treatment of leprosy was conducted in multibacillary cases of leprosy. In all, 130 patients with lepromatous or borderline leprosy were randomly allocated to a regimen of clofazimine and dapsone for 12 months with or without a supplement of pheniramine maleate for the first 3 months. During the 12-month period, 92% of the patients who received the supplement and 86% of the patients who had not received it had

moderate or marked clinical improvement. The BI value decreased from 4.1 to 3.4 and 4.2 to 3.3, respectively. The results over the 12-month period showed that the addition of the antihistamine had not enhanced the efficacy of the regimen as evidenced by clinical and bacteriological findings.

TIWARI, V. D. at al. Multidrug therapy in hospitalised leprosy cases. **Indian J. Leprosy**, **60**(1):71-76, 1988.

ABSTRACT - Fifty eight cases including 44 paucibacillary and 14 multibacillary leprosy diagnosed at Command Hospital SC Pune were hospitalised for the entire period of multidrug therapy, 76% cases belonged to high endemic states of India. Reactions occurred in 13 cases during treatment, type I in 10 and type II in three, 7 Multibacillary cases experienced reaction, 69% reaction patients developed reaction within two months of starting MDT and all of them were multibacillary. Usually it took 3-6 months for majority (61.5%) of reactions subside completely. In 65.5% paucibacillary patients activity subsided within twelve months, however 70.5% paucibacillary cases took more than six months to exhibit subsidence of activity. In 13 multibacillary cases activity subsided by 18 months though bacteriological negativity was obtained from fourth to twelve months.

VAISHNAVI, C. at al. Effect of multidrug therapy on the levels of antibodies to Mycobacterium leprae glycolipid-1 in leprosy spectrum. **Indian J. Leprosy**, **60**(4):530-534, 1988.

ABSTRACT - Sera from one hundred and forty five untreated leprosy patients, ten proven cases of active pulmonary tuberculosis and twenty five healthy volunteers not exposed to M. leprae infection were assayed for PGL-1 antibodies. All available follow up samples after multidrug therapy were also assayed. A decline in the level of PGL-1 antibodies were seen in many of the post-treatment samples, giving an indirect assessment of the bacterial load and the prognosis of the disease.

VAN BRAKEL, W. at al. Relapses after multidrug therapy for leprosy: a preliminary report of 22 cases in west Nepal. **Leprosy Rev.**, **60**(1): 45-50, 1989.

SUMMARY - The WHO recommended multidrug therapy regimens for leprosy patients were implemented in Nepal from 1982. Therefore a considerable number of both paucibacillary (PB) and multibacillary (MB) patients have been on observation after release from MDT, for as long as 4-5 years. A retrospective study was done considering the patients who relapsed during this period and who were registered at the Out-patients Department of Green Pastures Hospital in Pokhara, Nepal. A total of 22 patients relapsed out of 927 who were released from MDT.

VAZ, M. at al. "Flu" syndrome on once monthly rifampicin: a case report. **Leprosy Rev.**, **60**(4): 300-302, 1989.

SUMMARY - 'Flu' syndrome as a complication of intermittent weekly administration of rifampicin is well documented. The rare occurrence of 'flu' syndrome on once monthly rifampicin is reported in this paper.

ZEIS, B. M. at al. Inhibition of mononuclear leukocyte transformation in vitro by dihydrophenazines in comparison to clofazimine. **Leprosy Rev.**, **59**:31-35, 1988.

SUMMARY - To identify the molecular structures of the antileprosy drug clofazimine which mediate its immunosuppressive activity the effects of ten phenazine derivatives on phytohaemagglutinin-stimulated mononuclear leukocyte (MNL) transformations were investigated. It was found that modifications in the substituent at position 2 of the dihydrophenazine moiety decreased the antiproliferative activity. The nature of the chemical group in position 2 also influenced the immunomodulatory effect of halogenation in the paraposition of the phenyl-rings and anilino-rings.