Free Papers - Clinical

O-1

Ofloxacin Containing Drug Regimens in MB Leprosy

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This WHO-sponsored study examined the relapse rate after two ofloxacin-containing regimens, compared with standard WHO/MDT given for either 1 or 2 years. 230 smear positive patients were enrolled in a prospective, double-blind trial. Four different regimens were tested: A) 64 patients received WHO-MB-MDT for 1 year, B) 65 patients received regimen A plus ofloxacin daily for the first four weeks, C) 73 patients received rifampicin and ofloxacin daily for 4 weeks, followed by placebo, and D) 28 patients received regimen A for 2 years (the control group). Relapse was diagnosed when the appearance of new skin lesions was confirmed by histopathology or an increase in BI of 3+ at any site. One patient relapsed in group A, 2 in group B, 10 in group C and none in group D. Follow-up averaged 10 years, except in group D, in which it was 7 years. Conclusion: A short course of two bactericidal drugs, rifampicin and ofloxacin, taken daily for four weeks, cured 86% of MB cases. The cure rate in both 12 month regimens was between 95% and 99%.

O-2

Longterm Outcome of R.O.M. Therapy

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Rifampicin-Ofloxacin-Minocycline (ROM) combination therapy for single lesion Paucibacillary leprosy was introduced in 1998. Since then thousands of patients have received this treatment. There is very little published evidence on the long term effectiveness of ROM therapy. From the computerized records of the leprosy control project we identified 310 cases treated by ROM more than 5 years previously. These were followed up at home by trained volunteers and re-examined at the clinic by qualified staff if they had any residual or additional lesions. Ten cases of PB relapse were identified amongst the cohort. Of these, three were found only by the active follow up whereas seven had presented themselves at clinic earlier. No case of Multibacillary leprosy nor anyone with nerve function impairment was found amongst the cohort. Health workers should be aware of the small risk of relapse after ROM therapy, but the low risk of disability or transmission of disease for these patients may not be enough to justify active follow up.

O-3

MDT (3 Drugs) for 6 Months: A Revised Proposal for MB Leprosy

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Introduction: In India about 100% children and 60% adults remain infected with worms and from this population the leprosy patients come. We included Albenzazole with revised MDT which gave better results as compared with WHO/MDT(MB) for 12 months. Methods: 25 new MB pts. (Trial group) were given revised MDT(Rifampicin-600mg, Ofloxacin-400mg and Dapsone-100mg) daily for 6 months. First month all patients in trial gr. were given Albenzazole 400mg, OD for 21 days. Albenzazole repeated for each pt. on 3rd, and 6th month. Skin smear on 1st, 4th, 5th, and 6th months for all. 25 new pts were put under WHO/MDT(MB) as Control gr. Each gr. contained (BT-15, BL-6, LL-4), having all pts in each gr. smear -ve. Results: In trial gr. all BT (MB) pts and five- BL pts, and one-LL pt. became negative at the end of 6th month. Rest of the pts had mild hyperglycaemia which had to be given Metformin 500mg (SR) for the rest of the period and became negative at the end of 6th month. No pt had suffered from reactions. 25 pts of the control gr. with WHO/MDT (MB) none of them became smear negative by the end of 6th month. All of them developed reactions within six months. LL pts had mild to severe ENL. It was only >2 years treatment that pts in control gr. became smear negative. Conclusion: Associated infections mainly with helminthisis require to be considered for proper treatment of all forms of leprosy.

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**A Study of Outcome of 6M MB MDT Regimen in Bangladesh**

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Multi-drug therapy (MDT) has been effective in curing Multi-bacillary (MB) leprosy. Reduction from current recommended duration (one year) to 6 months is under consideration. This study will show the outcome of 6 months MDT for MB leprosy, as increase in disability or incidence of relapse over a 10 year follow up period, according to initial smear result. New leprosy cases enrolled over an 18m period, who receive 6m MDT, are compared with a historical cohort who received 12m MBMDT (patients registered in the previous year at the same clinics). Patients' clinical examinations and nerve function assessments are done monthly for 12 months then annually. Smears are done at registration, at Release From Treatment, then every 2 years. The two cohorts' enrollment characteristics and results of the first 2 years follow up will be presented, in 3 groups according to initial smear results. Before general recommendations are made to shorten the standard MDT regimen, information is needed on the outcome in different categories of patients. **Key words**: multibacillary, multidrug therapy, relapse rate, disability

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**Resistance to Anti-leprosy Drugs**

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This study was undertaken to determine the extent and nature of resistance of *M. leprae* to anti-leprosy drugs, especially to Rifampicin in a population where MDT has been extensively for 20 years. The study was carried out on patients registered in the Gudiyatham Taluk of Vellore District from 2004-2007. Primary resistance was studied among new untreated leprosy patients and secondary resistance among poor responders (patients who completed MB-MDT (12 doses) but did not show the expected 1 log decline in BI and patients diagnosed as a MB relapse. Mouse footpad study was done using the Rees technique. PCR-Direct sequencing will be done for detection of mutations in *rpoB*, the gene responsible for resistance towards Rifampicin and folP, gene responsible Dapsone resistance. A study on risk factors among that exhibiting drug resistance was also studied. The results of the mouse footpad studies and the molecular techniques will be reported.

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**Preliminary Report of Pilot Project U-MDT Regimen for Leprosy Treatment – Hospital of Clinics - Federal University of Minas Gerais – Brazil**

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In 1981, WHO recommended multidrug therapy regimens to treat leprosy. These regimens have limitations, as the prolonged duration. There is the possibility multibacillary regimens could be shorter, and a same regimen could be used for multibacillary and paucibacillary leprosy. In nowadays, WHO is trying to evaluate possibilities to introduce shorter and uniform treatment regimen to paucibacillary and multibacillary leprosy – U-MDT. This pilot project of Hospital of Clinics/UFMG evaluates the viability and manageability of U-MDT protocol research and involved 35 leprosy patients during the period of November 2004 to June 2006. These patients, after agree and sign the term of consent, received the U-MDT regimen during six months. From 32 patients that concluded the treatment, 31 have been followed, being 83% MB, 45% with positive skin smears, 58% have positive ML Flow tests, 29% had reactions leprosy during the treatment and 48% after this. These patients will be followed for a period of eight years. **Key-words**: leprosy, treatment, epidemiology and control.
Effect of Corticosteroid Usage on the Bacterial Killing, Clearance and Nerve Damage in Leprosy; A Prospective Cohort Study – Longitudinal Observations

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Objective & Methods: To investigate adverse effect(s) if any of the therapeutic usage of corticosteroids (Prednisolone 40 mg tapered to 5 mg over 12 weeks given to treat reaction/neuritis) on killing and clearance of bacteria, granuloma clearance and the resultant nerve damage. The rate of clinical regression, bacterial/antigen clearance, and nerve function assessment findings were compared at 18 months in 100 pair matched cases each with (Gr. A) and with out (Gr. B) steroid treatment, from the cohort of 400 cases to study the difference. Analysis was performed using SPSS version 10.0. The significance of association was tested using Chi square test. Results: Clinical findings: Rate of clinical regression was comparable in the 2 groups (A= 53% B= 55%). Proportion of cases showing improvement in deformity was higher in Gr. A (9%) as compared to Gr. B (3%) where as no showing deterioration were comparable (4% each) Bacteriological findings: Rate of bacterial clearance was higher in Gr. A (24/39=62%) as compared to Gr. B (18/39= 49%) but the difference was not significant. Significantly, proportion of cases showing viable M.leprae (among BI positive cases) were comparable in the 2 groups. However cases with repeat episodes of reaction and requiring multiple course of steroids showed a higher incidence of viable M.leprae (3/27=11%) as compared to those with single episode (3/72=4%) indicating a relationship between the quantum of steroid received for reaction episode and viable M.leprae. Neurological findings: Improvement in the deformity status was significantly higher in Gr. A as compared to Gr. B. NCV testing showed that the proportion of motor nerves showing improvement and deterioration were comparable in the 2 groups where as sensory nerve deterioration is marginally higher in Gr.A, implying that steroids have helped in keeping the nerve involvement under control. Conclusions: Usage of steroids plays a useful role in the control of motor nerve damage. Occurrence of viable bacteria was also comparable in 2 groups (14%&12%) proving that the usage of steroids has not altered the quantum of 'persisters'. However, occurrence of viable bacteria was higher among cases with multiple episodes of reaction (3/27=11%) as compared to single episode (3/72=4%). Additionally a significant proportion of cases (~14%) showed the presence of viable M.leprae, as shown in the normal mouse footpad, suggesting that usage of Steroids is not advisable at any point in time with out MDT coverage. Key words: leprosy, corticosteroids, persisters, nerve damage.

Study on Relapse Among Multibacillary Leprosy Cases

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A study was conducted on 65 multibacillary leprosy patients with bacteriological index greater than 2.0 at any given site, attending the OPD at CLT & RI. The study group consists of: 1. New cases, 2. Relapse cases and 3. Treatment defaulters with recurrence. The study is aimed to identify the viable bacterial load in terms of BI and MI and also by histopathological and animal inoculation in the above study subjects to understand the drug resistance pattern. Incision biopsy was performed with the consent of the patients and a portion of tissue was excised from heavily infiltrated bacilliiferous lesion was sent for mouse foot pad and histopathological examinations. This study revealed that the clinical diagnosis of leprosy is well correlated with histopathology and bacillary index. Few samples of mouse foot pad inoculation showed positivity. Of the 65 cases studied 37 were found to have relapse. One case found to have resistance to triple drug regimen (WHO MB MDT). 6 study subjects were resistant to dapsone. Results will be discussed. Key words: Leprosy relapse, drug resistance.
A Comparative Study Between an Ofloxacin Containing Regimen and WHO-MDT in PB Leprosy

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This study aimed to determine the therapeutic efficacy of an Ofloxacin containing regimen compared with WHO-MDT in PB leprosy. 124 untreated PB patients were enrolled in a randomized, double blind study. Of these patients, 58 received daily supervised doses of the rifampicin - ofloxacin combination for one month, while 66 received WHO-MDT for PB leprosy. Relapse was defined as the appearance of new lesions non-responsive to steroids or a BI of ≥2+ at any site. Histopathology confirmed relapse. In both groups, clinical response was comparable. The average follow-up was 11 yrs. The ofloxacin group had one early relapse 3 yrs after whereas the MDT group had two late relapses 8 & 12 yrs after treatment. Early relapse in the ofloxacin group suggests inadequate treatment whereas the late relapses after MDT suggest disease reactivation due to persistant organisms. Re-infection could explain any recurrence, and cannot be ruled out. Our findings further suggest the long-term therapeutic efficacy of WHO-MDT which remains the regimen of choice for PB leprosy.

Clinico-histopathological Comparative Study of U-MDT and WHO MDT in Pauci and Multi Bacillary Leprosy Patients Over 24 Months of Observation

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Aim: To compare efficacy of uniform multi-drug therapy (U-MDT) of 6 months duration, in patients of leprosy against the existing MDT-PB and MDT-MB regimen based on clinical and histological parameters over a period of 24 months. Patients and Methods: 127 newly diagnosed, untreated leprosy patients were classified into PB (<5 skin lesions) and MB patients (>5 skin lesions). They were divided into Study (on U-MDT for 6 months) and Control groups (WHO MDT) alternately at entry. Out of the total 127 patients included in the study, 64 patients (M-44, F-20) could be followed, of these, PB patients were 32 and MB patients were 32. All these 64 patients were clinically and histopathologically assessed and graded (Poor, Moderate and Good response) at entry, 6, 12 and 18 months of the study and 44 of these patients were also assessed at 24 months of the study.

Results of the PB groups: In the PB group, study and control groups comprised of 18 and 14 patients respectively. When the clinical grades in various study intervals in PB groups were compared among study and control groups, at 6 months the number of Moderate and Good responses were 78% in PB Control group compared to the PB Study group 61%. By 18 months the Moderate and Good response were higher (94%) in the PB-Study group compared to the PB-Control group (86%). However, by 24 months, all the patients (100%) assessed in study group were showing either moderate or good response. While in control group 18% of patient still showed poor response. These results indicate the progressive improvement in PB-Study group compared to PB-Control group. However, the differences in the clinical responses at various time intervals were statistically not significant. (At six months p=0.2195, at 12 months p=0.4656, at 18 months: p=0.7305. At 24 months p=0.3503) On histopathology, the improvement was similar between PB-Study and PB-Control groups at the end of 6 months. However, at 12 months of study, PB-Study group showed higher percentage of Good responses (89%) compared to PB-Control group (42%). Results of MB group: In the MB group, the study group comprised of 10 patients and Control group, which had 22 patients. The results of the clinical comparisons between MB Control and Study group reveal that the percentage of Good responses were consistently high in MB Control group at 12, 18 and 24 months of study whereas the MB Study group did not have single good response at 12 and 18 months. More importantly, the percentage of Poor responses in MB Study group was 50%, 67% and 75% at 12, 18 and 24 months respectively. This differences in the clinical responses between MB-Control and MB-Study groups were statistically highly significant at all periods of assessment. (At 12 months p=0.0465, at 18 months p=0.0014, at 24 months p=0.0064). Similarly, in results of histopathology, the percentage of Good responses of MB-Control group was higher (77%, 91%, and 100%) at 12, 18 and 24 months compared to MB-Study group (75%, and 50%) at 12 and 18 months. Conclusions: In the PB-Study group of patients who were on U-MDT, the drug regimen was well tolerated and patients showed good response over 24 months of observation, which was marginally higher compared to the control group on WHO MDT-PB, with the difference in the improvement grades being statistically not significant. However, the U-MDT regimen was found to be insufficient to improve the clinical parameters and morbidity in majority of patients over 24 months of observation in the MB-Study group compared to MB-control group of patients on WHO-MDT-MB regimen, the difference in response being statistically highly significant.
The Usage of Biologically Active Addition (BAA) "Kanteparin" in Therapy of Leprosy Patients with Liver Damage

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The aim: to study the effectiveness of BAA "Kanteparin" in leprosy patients with liver damage. BAA "Kanteparin" (producer "Institute of Molecular diagnostics", Moscow, Russia) containing soluted polysaccharides having the property of many-sided regulatory action including hepatoprotective which gave the possibility to use it as hepatoprotective means in leprosy patients. 20 patients at the age of 46 to 72 with chronic liver disease were under observation. The treatment was provided by clinico-laboratory control. On the base of "Kanteparin" usage it was defined the decrease of complaints, pain syndrome, improvement of general condition. There were found the increase of level of structural organization of blood serum, witnessing about harmonization of adaptive reaction of the organism. The received data of hepatoprotective action of BAA "Kanteparin" are preliminary. Key words: hepatoprotector, BAA, Kanteparin.

Powerful Bactericidal Activity Observed in the First Clinical Trial of Moxifloxacin in Leprosy

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Fluoroquinolones are effective against M. tuberculosis, atypical mycobacteria and M. leprae in vitro, mice, and clinical trials. Moxifloxacin against M. leprae-infected mice has been found superior to ofloxacin and as potent as rifampin. In the current study, ten male previously untreated BL and LL patients were administered a single initial dose of 400mg moxifloxacin, no therapy for seven days, and then daily observed 400mg until Day 56. Subjects were monitored for clinical response and killing of M. leprae in mice by the Spearman-Karber method wherein mice were infected with 50, 500, and 5,000 M. leprae obtained at Day 0, 7, 14, 28 and 56 of therapy. Improvement in skin lesions in all patients occurred by Day 14%more consistently rapid than all other agents. No serious side-effects/toxicities or lepra reactions were observed. In all trial patients a single dose of moxifloxacin resulted in significant killing (Pt<0.006) of M. leprae ranging from 82%-99% (mean 91%). No viable bacilli were detected with an additional one or three weeks of daily therapy all this bactericide only equaled by rifampin. Thus, moxifloxacin presents great promise for the therapy of leprosy. Key words: Moxifloxacin, Clinical Trial, MB leprosy.

Effect of Corticosteroids on Nerve Damage in Leprosy Reaction Electrophysiological Findings in Sensory and Motor Nerves

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Objective & methods: Bilateral motor and sensory nerve conduction parameters were studied in a cohort of 365 MB cases, at onset and after 18 months. They were divided into Gr. A - reaction neuritis, treated with corticosteroids (Cs) & MDT and Gr. B - no reaction treated with only MDT. Sensory Conduction velocity (SCV) and peak to peak amplitude of the sensory potential, distal latency, muscle compound action potential (MCAP) and amplitude of the motor potentials were compared in 2 groups. Findings: Baseline - Overall sensory nerves were more frequently involved (52%) than motor (37%). Sural was more frequently (72%) and severely affected. Motor component of the ulnar (at sub) and median nerves showed more involvement compared to the sensory. In the sensory nerves, reduced amplitude was more common (12%) than reduced SCV (3%). In the motor nerves, reduction of MCAP was more common in the ulnar (40%) and median nerves (10%) while reduced amplitude was seen more in the common peroneal (15%) and posterior tibial nerves (20%). Gr. A had significantly higher percentage of nerve involvement (53%) as compared to Gr. B (40%) At 18 months - Of the 164 cases, 93 in Gr. A and 71 in Gr. B, 21% of the recordable parameters showed worsening while only 8% showed improvement. Worsening of sensory amplitude was maximum in radial cutaneous nerve (20%) and least in median nerves (7%). Ulnar motor nerve showed maximum worsening (36%), followed by the median and posterior tibial nerve (19% each). Worsening of both sensory and motor nerves was slightly higher in Gr. A (25%) as compared to Gr. B (17%); |p < 0.1), while the trend was same in the two groups. Conclusion: Despite the added susceptibility to nerve damage due to reaction, the extent of worsening and improvement were comparable in the 2 groups indicates that Gr. A has actually benefited from the Cs. Key words: Leprosy, nerve damage, NCV, corticosteroids.
Clinical Assessment of Type II Lepra Reaction: Therapeutic Co-Administration of Thalidomide with Prednisolone

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Thalidomide is used as a drug for therapeutic management of type II lepra reactions. In the present study we have attempted to assess the maintenance dose, duration of thalidomide treatment in patients with type II lepra reactions in co-administration with prednisolone. The study subjects are (47 patients) reporting to OPD of CLT&RI for treatment of recurrent type II reaction treated in our institute and elsewhere. These study subjects were admitted in investigation for clinical follow up and management of lepra reactions. Details regarding the onset, duration of the disease, treatment with anti-leprosy chemotherapy (MDT), steroids were obtained. Women of child-bearing age were excluded from this study. Thalidomide dosage of 300 mg/day in three divided doses for one month, followed by 200 mg/day in two divided doses for one month and 100 mg/day for ten months was administered. In the present study we noticed that thalidomide was very effective in controlling the type II reaction in time dependent manner at the above said dosage rendering the patient asymptomatic in three weeks. Drug defaulters reported very early with clinical symptoms of reactions. Thus it is inferred that thalidomide is effective in controlling symptoms of type II reactions promptly. However, prolonged (one year) administration of drug needed as it only suppresses the symptoms of reactions but does not alter the duration of reaction. **Key words**: Leprosy, Lepra II reaction, Thalidomide, dosage.

Factors Influencing the Outcome of Steroid Therapy Among Leprosy Patients Having Loss of Motor Nerve Function

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ALERT INDIA conducts Leprosy Referral Centres (LRCs) under its ‘Leprosy Elimination Action Programme’ (LEAP) to provide quality care to all leprosy patients referred by GHC in N, S & T wards of Mumbai. LRC’s manage leprosy patients with complications such as reactions and neuritis besides treating patients with various types of deformities. 350 leprosy patients were given steroid therapy during January 2003 to September 2007 for various indications at LRCs. The factors related to type and time of occurrence of reaction, duration of motor function loss, age, sex, compliance for steroid therapy, etc. were studied. The outcome for steroid therapy administered for different indications, especially in patients having motor function loss were analyzed. There was significant improvement in motor functions following treatment as assessed by clinical methods. However there were patients who showed no improvement in the motor function even with steroid therapy. The factors influencing the negative outcome are discussed. The importance of early diagnosis and the regularity of treatment are emphasized. The role of steroid therapy in preventing deformity is still unpredictable and the need for an in depth study on the factors responsible for poor response is stressed.

Type 2 Reaction of Leprosy Hospitalized Patients at A University Hospital: Study of Immunological Mechanisms and Their Clinical Expressions

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**Introduction**: Review of 133 files of Leprosy patients presenting type 2 reaction, admitted to our University Hospital, from 1979 to 1990, to assess clinical, epidemiological, immunological and laboratory data. **Results**: Fifty percent of the patients were between 21 and 40 year-old, and the majority was female (57.9%). Lepromatous form was seen in 72.9% and borderline in 25.5%. Erythema nodosum late reactions were more frequently seen in the lepromatous form (71%) than in borderline form (44%). There was lower incidence of polymorphic erythema (13% and 32%, respectively). Lucio's phenomena were observed in 15.4% of lepromatous patients and in 23.6% of borderline patients. Immunoglobulin profile was similar in both groups. Articular commitment was seen in 55.6% of the cases. **Conclusion**: The combination of exams and effective clinical and immunological evaluation can help to monitor and to prevent the disabilities and neural injury. **Key words**: Type 2 Reaction: Leprosy; Immunology.
Thalidomide in ENL-Study on 36 Patients at - Gouripur Leprosy Hospital, Bankura, WB, India

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Introduction: ENL is still a challenge to leprologists as a large no of patients developed ENL gets nerve damage and leads toward deformity & ultimately disability. Intolerable pain, morbidity due to systemic damage is also frequent & mortality is also not uncommon. A number of drugs including PREDNISOLONE has been used but has some limitations/ complications. Thalidomide has a good immunomodulatory & anti-inflammatory property effective in many conditions including ENL. Methodology: 36 pts with severe And/or recurrent ENL were treated with thalidomide in 2006-07 at GOURIPUR LEPROSY HOSPITAL, BANKURA, WB, INDIA, who were selected on the basis of some criteria mainly age/sex/ steroid failure & dependency. Result: Study showed significant improvement in clinical 1 status of the pts. Details of the result will be shown by chat & graph. Conclusion- Reintroduction of Thalidomide has enlightened the hope to treat complicated ENL. Key-words : ENL, Thalidomide.

Occurrence of Leprosy Reactions During Pregnancy and Postpartum

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Hormonal influences on immunological phenomena are well documented. Previous studies have suggested that the behavior of leprosy reactions is different during pregnancy. A prospective, international, multi-center study of leprosy patients was conducted in Brazil, the Republic of the Philippines, Nepal, and the USA. From this study population, data were included from all women who were pregnant at diagnosis or during treatment. From Brazil and the Philippines, a total of 20 women were followed during all or part of 22 pregnancies. Reactions were observed in 9 of the 20 women; 3 women had 2 episodes of reaction, so that a total of 12 reactions were observed. Two women developed neuritis without other signs of reaction, long after delivery. Type 1 reactions occurred predominantly during the first two trimesters; Type 2 reactions occurred predominantly during the last trimester and post-partum period. Although the sample is small, the difference in distribution was statistically significant (p<0.05) when analyzed by the Cochran-Armitage Trend Test. The occurrence of Type 1 and Type 2 leprosy reactions differs during pregnancy and the postpartum period. This may be due to the effects on immunological function of the changing hormonal milieu during pregnancy and lactation.

Erythema Nodosum Leprosum as Immune Reconstitution Inflammatory Syndrome in a HIV Infected Person

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Early in the AIDS epidemic it was feared that HIV would undermine leprosy control. Patients with both infections would have increased risk of lepromatous disease, faster clinical evolution and difficulties in diagnosis and treatment. Published data shows none of these concerns. HIV did not seem to change the natural evolution of leprosy. The reason may be its prolonged incubation period or the diminished cell-mediated immunity. After starting highly active antiretroviral treatment (HAART) an individual with HIV infection was reported in 2003 for developing borderline tuberculoid leprosy as CD4+ lymphocyte count improved and plasma HIV load decreased which strongly suggests the immune reconstitution inflammatory syndrome (IRIS). This inflammatory reaction to an opportunistic infection occurs in HIV patients with profound immunosuppression during the reconstitution of the immune system in the initial months of HAART. There are only 9 cases of leprosy and IRIS reported. We describe an HIV infected patient who started HAART and developed erythema nodosum leprosum fulfilling the criteria for IRIS. Keywords: leprosy, HIV, HAART, AIDS.

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Use of Thalidomide in Anandaban Hospital, Nepal

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To assess the use of thalidomide in patients admitted for ENL reaction at Anandaban Hospital. Severe ENL is recurrent and chronic and may vary in its presentation. The management of severe ENL is best undertaken by a physician at a specialist referral centre. Thalidomide has been used for the management of ENL in Anandaban Hospital. The hospital records and patient files of 47 ENL patients who had received thalidomide were studied. The average duration of thalidomide used was 19 weeks. 12% of the patients received repeated courses of thalidomide. The mean age of the patients was 33 years. Almost all of them had already received prednisolone and lamprrene before they were given thalidomide. 75% of the cases were classified as LL.

A Study on Effectiveness of Prescribed Course of Steroids for Acute Neuritis in Leprosy

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Introduction: Reaction and Neuritis is an inflammatory complication in leprosy leading to nerve damage. Prednisolone is the drug of choice, and is considered to be most effective in the early stage of neuritis. The recommended therapy is a starting dose of 40 mg/day tapered over a 6 month period. Response to steroid therapy has been found to be good in cases with motor palsy, particularly when the nerve trunk was paralyzed only incompletely. The outcomes have not always been satisfactory. A study was done at our hospital on all cases of neuritis presenting with history of less than 6 months duration using the prescribed therapy. Results: Only 20% of patients showed significant recovery of nerve function, while another 40% showed only marginal improvement, about 20% in fact, remained the same and another 20% degraded. No specific associations were seen in terms of clinical or demographic parameters. Further research will be required to determine for the optimal dosage and duration for management of acute neuritis. Key words: neuritis, steroids, response.

Type 2 (ENL) Reactions Observed in MB Patients Treated with One Year and with Two Year WHO-MDT

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This study aimed to compare the incidence, severity and the possible risk factors for ENL between patients treated with one year and with two year WHO-MDT. A cohort of 300 MB patients from each group were compared and analyzed. The total observation period was up to 48mos from the start of treatment. The 12month group had 59 cases of ENL, while the 24month group had 36 cases. The Odds Ratio for the 12month group is 1.9 (95% CI:1.2-3.1); showing that the 12month group had almost twice the risk of developing ENL than the other group. For those with ENL, the Odds Ratio for developing the more severe form is 8.7 (95%CI:3.0- 25.7); showing that the 12month group is almost 9 times more likely to get more severe ENL than the other group. Although the average BI was slightly higher in the 12month group, it is unlikely to account for the magnitude of the difference in ENL. In both treatment groups, a high bacterial index was recognized as a risk factor for developing ENL. Our findings seem to show the greater risk of ENL in the one year MDT group, possibly because of the earlier stoppage of treatment long before bacterial clearance, particularly of clofazimine which has a significant anti-inflammatory effect in suppressing ENL.

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Nerve Function Impairment Mostly Occurs During MDT

PV Pramod

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Introduction: BOLEP is a LEPRO Society project covering the entire Subarnapur district. It is in operation since 1991 and has undertaken POD/POWD activities since 1997. Treatment of Nerve function impairment (NFI) is an important aspect in leprosy failing which it will lead to permanent disability. This study aims to present the retrospective study of 42 such cases treated during 2005-06. Methodology: All these cases were referred by Paramedics of the project and PHCs to the project head quarter where an indoor care facility is available. Medical Officers with the support of Physiotherapist assessed the cases and prescribed necessary treatment. All the cases were treated with WHO scheduled course of steroids and physiotherapy. Results: It has been observed that the recovery rate is better in NFI cases, those who are treated within 6 month of onset of the new impairment. On an average, full recovery is seen in 53% of cases while partial in 26. No recovery is seen in 21% of cases. The nerve specific recovery is also calculated and the high recovery (64%) is noticed in ulnar, low recovery (33.3%) in Median, whereas medium recovery in lateral popliteal & facial (50%) and posterior tibial (42.8%). Of the treated 42 cases, 35 (83.3%) were MB and 7 (16.7%) were PB. 34 (81%) were male and 8 (19%) were female. Impairments were seen in 57 nerves. Amongst 42 cases, 37 (88.1%) were under MDT and the reaction is associated with NFI in 27 cases (64.3%) Conclusion: Ulnar nerve is the commonest nerve involved High association of reaction and NFI MB cases are more prone for NFI. Key words: POD/POWD, NFI, Physiotherapy, Reaction.

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Treatment of Neuropathic Pain in Leprosy with Carbamazepine

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Introduction: Reports published in the literature describe the use of several medications such as vitamin B1, calcium, magnesium and others in the treatment of neuropathic pain in Leprosy. We present our observations in a pilot investigation with Carbamazepine in the treatment of neuropathic pain in leprosy. Materials and Methods: Fourteen patients of BT and BL type of leprosy with neuropathic pain (tingling numbness, burning sensation, paraesthesia, heaviness of extremities) attending the Referral Centre of Bombay Leprosy Project were recruited. These patients were being treated with prednisolone, thalidomide and other supportive drugs for management of reactions, neuritis. Despite being on treatment, neuropathic symptoms persisted, were painful and troublesome to the patients though reaction had subsided in some cases. Following initial assessment and consent, carbamazepine was started at 100 mg / day and gradually increased to 200 mg / day and later increased to 300 mg / day in divided doses and continued over a period of 3 to 6 months. Results: Twelve out of fourteen patients reported good improvement and subsidence of neuropathic symptoms. None had any intolerance or adverse effects so far. Follow up is in progress. Conclusion: It is worthwhile exploring the role of carbamazepine in a larger sample of patients in the management of neuropathic pain in leprosy to alleviate the misery and improve the quality of life of patients.

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The Validation of a Severity Scale for Leprosy Type 1 Reactions

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Type 1 reactions are an important complication of borderline leprosy and are a significant cause of disability. A validated tool providing a standard measure of disease severity would aid the development of treatment guidelines and clinical trials. Methodology: Leprosy patients in Bangladesh and Brazil diagnosed with type 1 reaction were assessed using a modified version of the INFIR reaction severity scale which incorporates signs of cutaneous involvement, neuritis and nerve function impairment. The scale was administered independently of an examination performed by an experienced leprologist who categorized the reaction as mild, moderate or severe prior to treatment. Results: 81 patients (64 male) were recruited. 70 had complete data. 18 were diagnosed as having a mild type 1 reaction, 40 moderate and 12 severe. The median scores for reactions categorized as mild were 6.0 (Range 2-30), moderate 10.5 (3-57) and severe 18.0 (4-61). Comparing the scores (Mann-Whitney test) of the categories of severity: mild and moderate and moderate and severe showed significant differences between the mild and moderate groups (p=0.03) and the moderate and severe groups (p=0.015) Discussion: This type 1 reaction severity scale is a valid measure of disease severity. Further work is underway to measure inter-observer reliability and to determine the weighting of individual items in the scale. The ability of the scale to reflect changes in disease severity over time and with treatment is also being assessed. Key words: Leprosy, type 1 reactions, severity scale.
M. leprae Causing Specific Bone Lesions

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Introduction: We present two cases of specific bone lesions in patients with leprosy. Both patients developed type 2 reaction and radiological investigation disclosed multiple bone abnormalities. X-ray, scintigraphy and bone biopsy were performed. Results: Two male 36 and 42-year-old patients, under WHO/PQTBMB leprosy treatment were diagnosed type 2 reaction. General examinations were done, as well as X-ray studies showing extensive bone lesions. Bone biopsy and bacteriological study of surgical fragment proved the presence of acid-fast bacilli. Follow-up: thalidomide and prednisone were tapered off until the end of treatment. Conclusion: In our study, X-ray, scintigraphy and bone biopsy revealed severe osteitis with the presence of bacilli. The detection of bacilli in the bones was possible only because of the reaction episode, which is characterized by immune complexes formation and complement fixation, increase of TNF-alpha, chemotaxis and tissue destruction. It is known that high TNF-alpha plasma concentration stimulates bone reabsorption and osteoclasia. Key Words: Leprosy; Bone lesions.

An Investigation into Steroid-Induced Diabetes in Leprosy at Kolkata, India

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Introduction: Leprosy induces chronic reactions in some patients. Steroids are the drug of choice, but can lead to many side effects including diabetes, glaucoma, etc. Steroid induced diabetes is a serious complication. In this paper, the problem of steroid induced diabetes is explored. Methods: Male and female leprosy patients with reactions and neuritis, with no previous history of diabetes and blood sugars in the normal range were included. Fasting, Post-prandial and Random blood sugars were estimated at the beginning of treatment with steroids, and monthly during steroid therapy. Results: A total of 75 patients were studied, of whom 16(21%) clearly manifested diabetes through a significant rise in blood sugar levels. The analysis describes correlates and the implications are discussed. Conclusion: It is concluded that steroid induced diabetes is not an uncommon phenomena in patients who had long term steroids for recurrent reactions, and must be carefully monitored and appropriately managed. Key words: steroids, diabetes.

Changes in Oxidative Stress Across the Spectrum of Leprosy

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Introduction: In a chronic disease like leprosy, free radical mediated injury plays a role in the pathogenesis of cellular damage. An attempt was made to correlate the spectrum and extent of disease with the degree of oxidative stress in the body. Methods: After thorough clinical examination, slit skin smears and biopsy, 2 groups were created- MB & PB & 30 patients were recruited in each. The serum of these patients was subjected to 3 tests: FRAP (ferric reducing antioxidant patients) a measure of total plasma antioxidant potential, glutathione levels (a normal plasma antioxidant) and Malondialdehyde – a marker of cell damage due to oxidative stress. Results: The levels of these markers were significantly higher in MB as compared to PB. On correlation with disease spectrum, the levels of FRAP & glutathione were found to decrease with increasing number of skin lesions, new lesions, increasing BI & the presence of deformities. The reverse was found to be true for malondialdehyde - the levels increasing from TT to LL Hansen’s. Conclusions: The oxidative status of the body deteriorates across the spectrum from TT to LL; or oxidative stress increases with increasing level of involvement Key words: oxidative stress in leprosy, oxidative stress.
Study of Reversal Reactions in a Major Hospital

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Reversal reactions (RR) are the leading cause of disabilities & deformities in leprosy & hence need to be recognized and managed promptly. This study was undertaken to delineate the key features of RR by observing 300 newly diagnosed cases of leprosy during their course of treatment so that these could be used for recognizing & managing RR at an early stage. Reversal reactions (RR) were recorded in 12% (36/300) of patients, of these 6.33% (19/300) presented in RR at the time of diagnosis while another 5.66% (17/300) developed it during the course of multi drug therapy (MDT). Majority of RR were seen in patients of multibacillary (MB) cases, where the incidence was 15.94% (33/210) in comparison to patients of paucibacillary (PB) where it was only 3.22% (3/93). 8.21% (17/207) of MB cases presented in RR at the time of diagnosis while another 7.72% (16/207) developed reaction during the course of MDT. Sudden appearance of redness, swelling, warmth & tenderness in the existing skin patches, neural pain, tenderness &/or thickening of nerves are the key features of RR & should be explained to the patients before starting treatment so that they could recognize them & report to the physician without delay. Key Words : Reversal reactions (RR), Leprosy, Multibacillary (MB), Paucibacillary (PB)

Role of Thalidomide in Maintenance Therapy in Leprosy

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Introduction : The usefulness of thalidomide in Type II Reaction of leprosy is well known. Thalidomide has proved to be a boon for several leprosy patients suffering from miserable Type II reactions. Maintenance therapy with steroids is avoided as this may lead to steroid dependency. We present our experience in the treatment of 144 patients referred to Bombay Leprosy Project over a period of 2 years (2005-07). Material and Methods : 144 patients of BL and LL type mostly with recurrent type II reactions were included with the objective of studying the duration of maintenance therapy and recurrences after thalidomide therapy. Initial assessment by clinical, bacteriological and nerve examination was done in all patients. Consent and under taking were taken as per guidelines. Clinical photographs taken in selected cases. Patients were treated with 300mg/day initially tapered to 100mg twice weekly spread over six to eight months. In severe reactions, patients were hospitalized for necessary investigation and management. Results : Table shows the outcome after an average of eight months of therapy with thalidomide.

<table>
<thead>
<tr>
<th>No of patients</th>
<th>Recurrence</th>
<th>Improved</th>
<th>Skin Smear status of patients with recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28(19%)</td>
<td>07*(75%)</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td>144</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 9 patients could not complete the course though they showed improvement

Conclusion : After long term administration with thalidomide with maintenance therapy, recurrence of 19% was observed. Among the recurrence, 10 patients were smear negative, which means there could be other factors responsible for recurrence apart from bacterial positivity.
Thalidomide Therapy in Erythema Nodosum Leprosum Reaction

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Introduction: The present study was aimed at seeing the effect of thalidomide treatment in steroid dependent Erythema Nodosum Leprosum (ENL) patients. Methodology: 33 patients (30 males and 3 females) with history of multiple episodes of ENL and steroid dependence were given 100mg thalidomide twice or thrice daily depending on severity of the reaction. Results: Thalidomide was found to be beneficial in controlling ENL reaction in 30 out of 33 cases enrolled. 3 were defaults. All the treated patients returned to their normal avocation. Three female patients showed good tolerance and minimal side effects. Main side effects noticed were constipation, swelling of hands and feet, hypotension and drowsiness. One patient showed activation of dormant microfilial infection. Total duration to obtain effective cure ranged from 3 months to 1 year. 5 patients required maintenance weekly dosage for 4 to 6 months. Conclusion: Thalidomide is effective in treating steroid dependent ENL patients and weaning the affected persons from steroids. Key words: Leprosy, ENL, thalidomide, steroid dependency.

Characteristics of Pain During Leprosy Reactions

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Aim of investigation: To identify the clinical characteristics of pain during leprosy reactions Type I (RT1) and Type II (RT2). Methods: Fifty leprosy patients underwent dermatological and neurological examinations in regards characteristics of pain as well as assessment of quality of life (SF-36) during leprosy reactions. 54.0% had concluded WHO-MDT. Results: Pain (N=50) RT1 (n=16) RT2 (n=34) neural 37.5% 29.4% musculoskeletal 37.5% 38.2% cutaneous 25.0% 29.4% Duration > one month > six months > one year 56.2% 18.8% 6.3% 55.9% 26.5% 20.6% strong/moderate 87.5% 82.4% insidious 81.3% 52.9% regressive 12.5% 23.5% > 2 reactional outbreaks after MDT 12.5% 52.9% The lowest means scores of quality of life reported were role limitations due to physical health (20.0) and emotional (20.7) problems. Conclusion: Taking into consideration the intensity of pain, the low percentage of pain remission and the impact on quality of life, pain treatment should be included in the standardized leprosy reactions treatments. Key words: Pain, leprosy, leprosy reactions, quality of life.

Incidence of Reactions and Neuritis in BICHP, Bargarh

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Introduction: LEPRA Society, Bargarh started community based leprosy project in October-2001. Important activity of the project is to deliver services on POD involving the GHC staff in diagnosis and management of reactions/neuritis/NFI with chemoto and physiotherapy. This paper analyzes the type of reaction, trends in improvement. Methodology: The project so far has registered 3629 new leprosy cases (MB-1457 and PB – 2172). Of them, 165 reaction & 240 neuritis cases were identified and treated. All the cases were regularly followed up by different stake holders. The findings of this retrospective analysis are presented below. Results: 1. Neuritis and reaction cases constituted 81 and 95.7% respectively in MB cases. 2. Ulnar neuritis accounted for 142 (59.1%) of those followed by lateral popliteal 70 (29.2%) and facial 23 (9.6%). Involvement of median and radial nerves 1.2% and 0.8% respectively. 3. With scheduled treatment, 193 cases (80.4%) improved fully and the rest 47 (19.6%) remained static or partial improved. 4. Of the 165 reactions, 130 (78.8%) were Type-I and 35 (21.2%) were Type-II. Conclusions: 1. Of the 3629 cases, 405 (11.2%) developed reaction & neuritis. 2. About 80% of cases among neuritis/NFI improved. Key words: Reaction, Neuritis, POD.
Validation of a Severity Scoring System of Erythema Nodosum Lepra (ENL)

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Erythema nodosum leprosy (ENL) is an important complication of borderline lepromatous and lepromatous leprosy. The absence of a validated measure of disease severity hampers clinical research on this condition. We have developed a severity scale for ENL, including skin changes, neuritis and systemic involvement, and here report field testing. Methodology: Nineteen Nepali leprosy patients with ENL were assessed using the ENL severity scale which was independently administered by two physicians. The severity of ENL was categorized into mild, moderate and severe disease by assessors blinded to the scale results. Results: The items most strongly associated with severity were number of skin lesions, degree of inflammation of lesions, peripheral oedema, malaise, fever, bone pain and arthralgia. There was good inter-observer agreement with a Pearson correlation coefficient of 0. 95. The components of the scale had good internal consistency (Cronbach's Alpha 0.73). The difference in scores between the severe and moderate groups was statistically significant. Discussion: This ENL severity score is a valid and reliable measure of disease severity. These findings will be compared with the results of an Indian study on 22 patients using the same scale. Further work is required to determine the weighting of individual items in the scale and the ability of the scale to reflect changes in disease severity over time and with treatment. Key words: ENL, leprosy, severity score.

Necrotizing Erythema Nodosum - Report of 4 Cases

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Yet the immunopathogenesis of erythema nodosum of leprosy is not completely understood, both deposition of immunocomplexes and the immune imbalance provoked by activation of the alternative and classical pathways of the complement system are crucial features. Clinically it may be characterized by fever, malaise, leukocytosis, anemia, neutrophilia, jaundice, increase in transaminases, neuritis, arthritis, adenomegaly, hepatosplenomegaly, uveitis, thrombosis, etc. Lucio’s phenomenon and necrotizing erythema nodosum (NEN) represent the more intense aspect of this inflammatory response. NEN is characterized by ulcerated, painful skin nodes associated with activation of the alternative pathway of the complement system, and intense migration of neutrophils and release of enzymes that destroy the host tissue and the vessel walls, resulting in vasculitis. In order to draw the attention to this severe but rare described entity, we report 4 cases of NEN from our service in the last 5 years. Lesions predominated in the legs. NEN occurred in 2 patients before treatment for hanseniasis and associated with delivery of normal newborns; in two it occurred after 9-12 months of PQT-MB. One presented a splenic ischemia during a second episode of NEN related to an infectious cellulite. The episodes of NEN were generally well controlled with prednisone and thalidomide. Key words: erythema nodosum Necrosis, diagnosis.

Neurophysiologic Patterns of Type 1 and Type 2 Leprosy Reactions in Ulnar Neuropathy

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Background: Leprosy neuropathy despite being primary demyelinating frequently leads to axonal loss. The neurophysiologic approach of nerves during type 1 (T1R) and type 2 reactions (T2R) implies in knowledge of these physiopathologic mechanisms.

Methods: Neurophysiologic examinations were carried out during a clinical trial to assess the effectiveness of steroid treatment. 28 ulnar nerves, 19 T1R and nine T2R, were followed-up during six months, covering eight assessments for each nerve, in three segments, 224 at all. The parameters evaluated were the compound motor action potential (CMAP) elicited on those three sites, the distal latency, the conduction velocity along the forearm and across elbow, the temporal CMAP dispersion at and above the elbow and the F wave. Statistics were done to verify the significance of the differences noted for each variable. Conclusion: The axonal and demyelinating neurophysiologic changes were more conspicuous across the elbow, in T1R and T2R nerves. But demyelination, primary events, showed differences: in T2R, Conduction Block was observed more often, an acute phenomenon, and in T1R, Temporal Dispersion, a subacute phenomenon. Key words: Leprosy, reactions, ulnar neuropathy, neurophysiology.
Nerve Function Assessment: Which Nerves, When and Why?

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Nerve function assessment (NFA) has an important role in the diagnosis of leprosy and the assessment and monitoring of nerve function (impairment) in leprosy reactions. Manual muscle testing and sensory testing, with either ballpoint pen or monofilaments, are the tools that are most commonly used. This presentation reviews important aspects of NFA and will discuss some recent insights in NFA as it relates to the nerves commonly involved in leprosy neuropathy. Areas for further research will be indicated.

Keywords: Nerve Function Assessment.

Hepatitis C Virus and Mycobacterium leprae Coinfection – Report of Two Cases

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The few reports existing on leprosy-hepatitis viruses co-infection suggest that such coinfections do not modify leprosy's natural course. We describe two leprosy-hepatitis C virus cases. The first remained positive for hepatitis C virus (HCV) PCR after 6-months IFN-γ treatment, when she presented peripheral sensitive neuropathy and 2 new lesions. Histopathology showed thickened nerves and negative bacilloscopy. Mitsuda reaction was 2 mm. Borderline leprosy was diagnosed. She was treated with MDT-MB for 12 months with regression of the lesions. She was then put on IFN-γribavirin for 1 year with virus clearance. As the foot's anesthetic area increased, a biopsy of the sural nerve was taken, showing positive bacilloscopy. Meantime, HCV reactivated. Antiviral treatment will be reintroduced only after other PQT. The other patient has been treated for borderline leprosy with MDT-MB for 2 years but remained with type 1 reactions for more 2 years, partially controlled with low-dose corticosteroid. HCV was diagnosed during investigation of the reaction. In the first case the antiviral treatment may have triggered the clinical manifestations, similarly to the recently described leprosy–HIV coinfection IRIS associated with HAART. The second case suggests that flare-ups of the patient’s immunity underlie the prolonged reactive state, irrespective of HCV infection.

Reactical States in HIV and Leprosy Co-Infected Patients

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Leprosy reactions in patients co-infected with HIV have been reported in previous studies, showing that reactions are more frequent and worse than in non-HIV patients. At the FIOCRUZ Leprosy Clinic, a total of 55 co-infected patients (78% PB) that completed up to 10 years of follow-up were evaluated. Immune reconstitution inflammatory syndrome (IRIS) was defined as the presence of reversal reaction (RR) during the first 6 months of highly active antiretroviral treatment (HAART) together with improvement of CD4 lymphocyte levels and viral load reduction. Reaction was present in 32 (58%) patients, more frequently in PB patients (72%). RR was the most frequently observed (81%) type. Sixty percent of the patients had their first episode before WHO-MDT. Four patients had RR soon after starting HAART and fulfilled IRIS criteria. Most patients (56%) had only one leprosy reaction but it was prolonged in 93% of them. Severe episodes were also a common event observed in 71% of the patients, 7 of which required hospitalization. RR can be an expression of IRIS in co-infected patients. Co-infection increased severity and duration of reactions in this group of patients. Keywords: HIV-leprosy co-infection, reaction, HAART, IRIS.
Co-Infection HIV and Leprosy-Follow-Up of Seven Cases Treated at Hospital of Clinics of Federal University Minas Gerais - Brazil

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Since the beginning of human immunodeficiency virus (HIV) epidemic possible interacions between this infection and leprosy are discussed. At this moment, there is no evidence to suggest that an association exists between these infections, otherwise it has been demonstrated with tuberculosis and Mycobacterium avium complex infection. Co-infection HIV and leprosy cases have been reported and the management of these cases isn’t different of that done to immunocompetent persons. The treatment recommended is the standard MDT regimens. Eight cases of co-infection are reported. Two of them are seropositive for HIV and have BL and BT leprosy, and six cases with AIDS and leprosy, five BT and one TT. In the last group, four cases have been made the diagnosis of leprosy during the immune reconstitution inflammatory syndrome-IRIS, which was observed some weeks after beginning anti-retroviral therapy. Seven of these cases have been followed, since six to nine years, and until this moment no signs and symptoms of leprosy relapse exist. Key-words: leprosy, HIV, leprosy/epidemiology, leprosy/treatment.

Manifestation of Leprosy as Type-1 Reaction Among AIDS Patients on HAART

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Objective: A retrospective analysis of clinical profile, laboratory investigations, treatment and overall outcome of case series of 6 patients, presenting with leprosy as Type-1 reaction in acquired Immunodeficiency syndrome (AIDS) patients initiated on highly active anti-retroviral therapy (HAART). Observations: Immune reconstitution or restoration on 6 severely immunosuppressed HIV patients following Highly Active Anti-Retroviral Therapy (HAART) represented with leprosy as type-1 reaction. All of 6 cases were never diagnosed and treated earlier for leprosy. The cases were documented with clinical photographs. All the patients were subjected to 6 monthly CD4 testing, other laboratory parameters and initiated on Anti-retroviral therapy as recommend by NACO. Discussion: The M. leprae could have coexisted with M. tuberculosis in a sub-clinical form even before exposure to single drug (R), later presenting as an active form in the form of IRIS because of inadequately treated leprosy. The lessons learnt and message conveyed here is proper screening for leprosy is essential before initiation of anti-tuberculosis therapy. Concomitant occurrence of multiple diseases like TB, Leprosy and HIV is possible. The treating physician should be clinical astute, have a broad outlook and thorough knowledge with the treatment guidelines as per the national programmes of respective diseases. Key words: leprosy and HIV, leprosy and AIDS.

Leprosy and HIV Two Case Presentations

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Case 1: A 64 years old male HIV case; one month after starting HAART developed weakness and numbness of the extremities and rheumatic pain. Had edematous face, hands, and feet, with enlarged and tender (3+) ulnar, median, common peroneal and posterior tibial nerves. No skin patches the SSS was negative. VMT: weakness (grade 2) of ulnar, median, and lateral peroneal nerves. CD4 count was 270 at the start of treatment, which rose latter to 503. Diagnosis; MB leprosy with sever RR, started on predinisolone and MDT/MB. The edema resolved and the nerves recovered from weak (2) to strong (4-5), with partial recovery of sensation hands and feet. Case 2: A 39 years old, female HIV case; developed swelling of the face and multiple erythematous painful lesions five months after HAART. Had swollen face, hands, and feet with multiple erythematous plaque lesions. The ulnar and median lesions were enlarged and tender (2+) bilaterally. VMT; normal with loss of sensation R sole, SSS was negative. CD4 count was 175 at the start of treatment, which rose to 503 latter. Diagnosis; MB leprosy with sever RR started on predinisolone and MBT/MB. The reactional lesions subsided and had full recovery of nerves by the end of treatment. The two cases demonstrate that HIV causes sub clinical leprosy to become overt by inducing reactions due to the immunological changes that follow the treatment (HAART).
Differential Diagnosis of Leprosy Neuropathy: The Role Electromyography (EMG)

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Introduction: Leprosy diagnosis is generally done by clinical examination, but for some differential diagnosis of its neural form it is necessary a more specific neurologic evaluation performed by EMG. Methods: Medical records were recovered from AECAR patients diagnosed with non leprosy neuropathy from 2005 to 2007. Results: The following 6 differential diagnosis were observed after clinical and neurological examination, biochemical tests, bacilloscopy and EMG: Amyotrophic lateral sclerosis (1), Syringomyelia (1), Dejerine Disease (1), hypothyroidism neuropathy (1), and latent tetanias neuropathy (1), Syndrom canal Guyon (1). Conclusion: Even considering that leprosy still has high prevalence in Brazil, it is important to consider all other possible differential diagnosis. EMG is fundamental to initiate the investigational process of other neuropathies.

Keywords: Leprosy - other neuropathies - electromyography.

Evaluation of Simplified Tests for the Diagnosis of Nerve Function Impairment in Leprosy: The Sensory Motor Screening (SMS) Study

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Introduction: Simple tests for diagnosing nerve function impairment in leprosy are required in integrated settings. We examined whether simplified tests performed by inexperienced general health workers (GHWs) have reasonable diagnostic accuracy compared to the reference test conducted by physiotherapists. Methods: We compared three simplified tests. ILEP Learning Guide (M2), Indian dance (M3), and a questionnaire (M4) with the full assessment (M1) as the reference. We included 388 newly detected people with leprosy from seven different centres in India. All 388 people were tested with M1. 271 people underwent M1 and M2, 222 people were tested with M1 and M3, and 278 people were examined with M1 and M4. Sensitivity (Se) and specificity (Sp) were calculated. Results: Preliminary results suggest that M3 is the best method for sensory testing of the feet (Se 72%, Sp 92%), M2 is the best method for sensory testing of the hands (Se 72%, Sp 96%), M4 is the best method for finger-out testing (Se 72%, Sp 86%), M2 is the best method for thumb-up testing (Se 75%, Sp 93%), and M4 is the best method for foot-up testing (Se 75%, Sp 97%). We will present more detailed results at the congress. Conclusions: There is a future for the use of simplified methods to detect nerve function impairments by GHWs in India. Keywords: leprosy, diagnostic tests, nerve function impairment

Dilemma of Diagnosis in Leprosy

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Introduction: Diagnosis of leprosy though not difficult in most cases, do require some expertise before confirming the same. We present here two such cases seen by us, during last year at the Foundation for Medical Research, Worli, Mumbai who were misdiagnosed elsewhere where and received anti leprosy treatment, only to be realized that they never had leprosy. Case reports: 1st case: A 25 year old female with multiple hypo pigmented, non-anesthetic patches over the body developed since one year, initially received topical steroids. Later histopathology done at a private clinic gave a diagnosis of indeterminate type of leprosy. She was put on Ref + OLF daily for 1 month but showed no improvement. Biopsy repeated at FMR, proved it to be a case of hypo pigmented mycosis fungoides (confirmed by a dermatologist, pathologist). 2nd case: A 15 year old girl who had constant blisters and ulceration of left ulnar two fingers since the age of two, 10 years down the line developed claw deformity of these two fingers. She was put on MDT in the year 2006 for 6 months. Recently, she was seen at the FMR clinic where a detailed history, NCV and nerve biopsy were done. The findings did not confirm leprosy. She was eventually diagnosed to be a case of brachial plexus injury sustained at birth (confirmed by a neurologist). Conclusion: These cases highlight the need for a proper elicitation of history, careful clinical, bacteriological and neurological examination and when in doubt a biopsy of the affected tissue which are contributory to an accurate diagnosis. Key words: Leprosy, diagnosis.
O-46

Vasomotor Reflex Alteration and PGL-1 Antibodies Aid The Early Diagnosis of Leprosy

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Early detection of leprosy remains one of the major challenges in the control of the disease. Dysautonomy occurs in leprosy neuropathy and indicates early nerve lesion. On the other hand, the presence of anti-PGL-1 antibodies has been considered as a measurement of disease in contacts. At the Leprosy Clinic, FIOCRUZ, Rio de Janeiro, active leprosy detection is performed by contact vigilance. A group of 25 co-prevalent cases (ie. contacts with leprosy on their first evaluation following their index case diagnosis) was evaluated. A high prevalence (20%) of both altered skin vasomotor reflex (44%) and presence of anti-PGL-1 antibodies (46%) was observed on diagnosis. All of the patients were PB (diagnosed as indeterminate or borderline-tuberculoid), and such a pattern is not expected in this group of patients. Studying autonomic alterations in leprosy patients and their contacts has provided with new information to explain the evolution of leprosy neuropathy. Contact examination is fundamental for early detection of leprosy.

O-47

Magnetic Resonance Imaging Used for Diagnosing Osteomyelitis in Leprosy Patients with Neuropathic Feet with Clinical Signs of Mild Inflammation

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Introduction: The aim of our study is to find out if osteomyelitis is present in of leprosy patients with neuropathic feet with longstanding ulcers and/or localized cellulitis. Methodology: All patients underwent a valid MRI protocol as described for diabetic and leprosy patients. Results: Fifteen neuropathic feet from 9 patients were included. The foot was predominantly affected clinically and on MRI. Clawtoes, bone absorption in the forefoot and soft-tissue abnormalities diagnosed clinically were confirmed by MRI in 100%. Cellulitis diagnosed clinically was confirmed on MRI in 33% of the cases. Although these neuropathic feet were clinically not suspected for osteomyelitis, MRI signs for osteomyelitis were found in 27% of the feet. In 75% of the feet with osteomyelitis there was a superficial ulcer and in 75% of the feet with osteomyelitis there were clinical signs of localised cellulitis. Conclusion: A striking discrepancy between clinical and MRI findings was found. This study shows that, compared to clinical evaluation, MRI is a more sensitive method to detect osteomyelitis in neuropathic feet longstanding ulcers and/or cellulitis. MRI findings in these patients may influence decision making during the follow-up since osteomyelitis requires a more aggressive medical approach in order to prevent further complications. Key words: leprosy, neuropathy, imaging, osteomyelitis.

O-48

A Comparative Clinical Trial in Multibacillary Leprosy with Long-Term Relapse Rates of Four Different Multidrug Regimens

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As a participant in a WHO multi-center trial, we evaluated the relapse rate in 189 multibacillary (MB) leprosy patients (a smear B1e"2") treated in Cebu, Philippines, double-blind with four different regimens and followed-up annually for as much as twelve years after the initiation of therapy. Treatment regimens included one-year WHO-MDT, two-year WHO-MDT, one month of daily rifampin and ofloxacin, and one-year WHO-MDT plus initially the one month regimen. Either the appearance of new skin lesions or an increase of BI at any smear site suggested relapse which was confirmed by an outside leprosy expert, histopathology, and M. leprae mouse viability. In the three groups who received WHO-MDT relapses occurred in only 2/132(2%) at nine years and 2/81(3%) at twelve years, while the one month regimen resulted in significantly greater (pd"0.006) relapse rates, respectively 7/64(11%) and 10/40(25%). Relapses occurred late, beginning at five years and were confined to BL or LL patients with an average B1e"2.6. M. leprae in relapsed patients consistently grew in mice, one each being resistant to only low-level dapson, clofazimine and rifampin. Alternative short-course regimens will be discussed. Key Words: Multidrug Therapy (MDT), Multibacillary (MB) Leprosy, Relapse, Double-blind Trial
Evaluation of the Effect of Addition of Immunotherapy with Mw Vaccine to Standard Chemotherapy in Borderline Leprosy

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This trial has been initiated to assess the additive effect of immunotherapy with Mycobacterium w (Mw) with standard MDT in borderline leprosy. In case of borderline leprosy there is presence of reactive episodes and persistence of lesions. A total of 150 cases (BT-61, BB-54, BL-35) in the trial limbs plus 100 as control (BT-44, BB-36, BL-20) have been included in the study. Detailed clinical examination, charting, smear examination of all untreated borderline cases and controls was done, biopsies were taken from the active lesions of all cases and controls at start of therapy of every six month thereafter till the completion of therapy. Standard MDT was given to all the cases and controls according to type of disease, Mw 0.1ml (0.5x10^9 bacilli) was injected intradermally at the start of therapy and every six month in addition to chemotherapy to all the cases. Follow-up is being done with respect to the local reaction, incidence of reaction, clinical parameters like size of lesion, erythema, infiltration, sensory improvement, and histopathologically to see the granuloma clearance. The BT cases were followed up after 6 doses of MDT and 2 doses of Mw vaccine. In them more than 85% improved clinically, no incidence of reaction occurred as compared to controls where clinical improvement was slower in all parameters and five controls show the occurrence of reaction. The BB, BL cases were followed up after 3 doses of Mw vaccine plus 24 doses of MDT in them also more patients clinically improved as compared to controls (24 doses of MDT only) where clinical improvement in all parameters was slower. Histopathology assay comparison of regression induced by chemotherapy alone with that induced by combining immunotherapy, also showed a greater reduction in granuloma fraction with the latter, in BT cases as well as in BB/BL cases. The reduction was more marked when the initial granuloma fraction was high. While rapid decrease in granuloma fraction was observed in BT cases following 2 doses of Mw vaccine plus MDT as compared to controls (MDT only) initially, the response was comparatively slower afterwards. Progress appears to be similar in pediatric as well as adults together showing the potential usefulness of the approach in treatment of borderline leprosy cases.

Management of ENL: Patient Characteristics and Treatment Outcome of 94 Patients Treated with Prednisolone and/or Thalidomide

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This retrospective study explores demographic and disease specific parameters of patients treated for ENL with prednisolone only or prednisolone in combination with thalidomide (n=47) and compares treatment outcomes. Severity of ENL was assessed with the Reaction Severity Scale (RSS). Results: Thirty Percent presented with ENL at the time of diagnosis; 47% developed ENL reaction in the first year of MDT. High RSS scores correlated with a longer duration of treatment. The frequency of symptoms in the different age groups was compared. Older patients were more likely to develop oedema and the incidence of fever was higher in ENL patients between 20-39 years of age. Severity of ENL symptoms in the prednisolone only group was less than in the prednisolone and thalidomide group (p=0.003). Duration of symptoms in the latter group was longer (p=0.001). Discussion: Characterisation of (sub) groups of patients with ENL is essential in prospective studies to better evaluate the efficacy of drug treatment.

Thermal Sensation and Vibrometry Perception Assessment for Neuropathy in Patients with Leprosy

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Introduction: The use of more sensitive assessment tools of nerve function may improve early detection of nerve damage. This study was done to establish normative data and evaluate vibration perception testing and thermal sensation testing for neuropathy in leprosy patients. Methodology: During the INFIR Cohort study in North India, 303 multibacillary patients were followed prospectively for two years during treatment. Regular assessment of nerve function were taken by testing monofilament threshold, voluntary muscle test score, vibration and thermal sensation, and also motor and sensory nerve conduction studies. Normal ranges of nerve function were collected from healthy, non-neuropathic subjects. These values were then compared with those from the leprosy patients at entry in the study. Results: Reference data was calculated separately by age and sex of the patient, which were found to be significant determinants of test results. Vibration perception thresholds, as well as thermal sensation testing, were sensitive in identifying individuals with nerve impairment at initial examination. Conclusions: Functional tests appear to be effective indicators of early onset of nerve damage. Further data will be reported on key testing sites and baseline status as a predictor of neuropathy. Key words: peripheral neuropathy, nerve assessment, reference values.
Staging Nerve Function Impairment in Leprosy – Analysis of Data from the INFIR Cohort Study

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Dyck\(^1\) demonstrated that the relative frequencies of nerve impairments could be used to describe the progress or stage of diabetes. Using data from the INFIR Cohort Study we explored the staging of impairments in leprosy. Nerve status among 303 newly-diagnosed MB patients was assessed clinically and using measures of sensory and motor nerve conduction, thermal sensation and vibration perception. We then compared the frequency of impairments within nerves and the frequency of impairments across nerves. Findings are illustrated using data on 279 right posterior tibial nerves.

### Right posterior tibial nerve

<table>
<thead>
<tr>
<th>Number of impaired functions</th>
<th>( \times )</th>
<th>Enlarged</th>
<th>Impaired warm sensation</th>
<th>Impaired cold sensation</th>
<th>Loss by monofilament</th>
<th>Impaired vibration perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>43</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>1</td>
<td>73</td>
<td>80.8</td>
<td>9.6</td>
<td>4.1</td>
<td>0.0</td>
<td>5.5</td>
</tr>
<tr>
<td>2</td>
<td>61</td>
<td>75.4</td>
<td>57.4</td>
<td>24.8</td>
<td>18.0</td>
<td>24.6</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>78.4</td>
<td>86.5</td>
<td>64.9</td>
<td>21.6</td>
<td>48.7</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>78.6</td>
<td>92.9</td>
<td>85.7</td>
<td>82.1</td>
<td>60.7</td>
</tr>
<tr>
<td>5</td>
<td>37</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

We found enlargement to be the most common form of impairment, followed in turn by loss of warm sensation, loss of cold sensation, monofilament loss and loss of vibration perception. The suggestion is that nerve enlargement is easiest to develop, followed by loss of warm sensation. Loss detected by monofilament is relatively late in the process. Similar analyses have been completed for ulnar, median, radial cutaneous, lateral popliteal and sural nerves, some of which were assessed using nerve conduction. The analysis comparing onset across nerves indicates early involvement of lower limb nerves. Overall, our findings identify a need for nerve function tests that are more sensitive to early changes in nerve function.

Case Studies from the INFIR Cohort Study

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Describing the relationships between clinical, neurological and serological measures was fundamental to the INFIR cohort study. The objective of the study was to evaluate such measures as indicators of early change in nerve function among newly diagnosed cases of MB leprosy. During the course of a two-year prospective follow-up, some 7000 data items were recorded for each patient. Additional studies provided normal reference values for nerve conduction, thermal sensation and vibration perception thresholds. The challenge was to summarize the data in a way that illustrated its complexities and supported comparisons between individuals and groups. The chosen approach was to chart changes over time in each of the neurological and serological measures and contrast these with clinical data on changes in nerve function and reaction status. An automated system was used to produce a series of charts for each of the 303 patients in the study. The presentation will use these charts to describe the follow-up experience of selected cases from the INFIR study and illustrate and contrast the follow-up experience of key patient groups. The charts have potential as an educational tool and may be used to monitor changes in nerve function.
Risk Factors for Neuropathy Measured at Diagnosis and Before Events: Results from the INFIR Study

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Understanding the risk factors for neuropathy in leprosy contributes to appreciation to the mechanisms of nerve damage and promotes awareness in high risk patients. This study assessed risk factors at diagnosis and before events in a cohort of 303 previously untreated multi-bacillary leprosy patients. 115 have recent events at diagnosis and 188 were followed up monthly for 24 months during which time 39% development new events, 54% of included nerve injury. Age, nerve enlargement and number of lesions were important clinical factors predicting future never damage. Changes in sensory nerve conduction at diagnosis were strongly predictive for new events but less so for motor nerve conduction changes. Changes in both motor and sensory nerve conduction and in TNF-α were demonstrated to precede new events. These findings contribute to our understanding of nerve function impairment in leprosy.

Comparing Diagnostic Tests of Neuropathy in Leprosy in the INFIR Cohort Study

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Introduction: Every year, thousands of patients develop permanent peripheral nerve damage as a result of leprosy. We conducted a cohort study to determine which test detects this neuropathy earliest. Methods: 188 MB leprosy patients were selected from a cohort of 303 in two TLM India hospitals in Uttar Pradesh, followed for two years after diagnosis. Nerve function was evaluated at each visit using nerve conduction (NC), thermal sensory testing, vibrometry, dymamometry, monofilaments and voluntary muscle testing (VMT). Study outcomes were sensory and motor impairment detected by monofilaments or VMT. Results: 74/188 patients (39%) had a reaction, neuritis or new nerve function impairment (NFI) event during follow-up. Subclinical neuropathy was extensive (20-50%), even in subjects who did not develop an outcome event. Sensory NC amplitudes, motor NC velocities and warm detection thresholds were most frequently affected, with SNC impairment frequencies ranging from 30% (median) to 69% (sural). Velocity was impaired in up to 43% of motor nerves. WDTs were more frequently affected than cold detection thresholds (29% vs. 13%, ulnar nerve). Impairment of SNC and warm perception often preceded deterioration in MF or VMT scores by 12 weeks or more. Conclusions: A large proportion of leprosy patients have sub clinical neuropathy which was not evident when only monofilaments and VMT were used. SNC was the most frequently and earliest affected test, closely followed by WDT. They are promising tests for improving early detection of neuropathy. Keywords: leprosy, nerve conduction testing, peripheral neuropathy, reactions, thermal sensation.

Nerve Recovery in Leprosy - Results from the INFIR Study

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Introduction: The INFIR cohort studied nerve function recovery prospectively over two years. Methodology: Multibacillary leprosy patients newly treated with standard multidrug therapy. Reversal reaction or neuritis was treated with Prednisone, 40 mg/day, tapered over 3 months. Nerve function was assessed with monofilaments, voluntary muscle testing, sensory and motor nerve conduction, vibration perception thresholds, and warm and cold detection thresholds. Follow-up was monthly in the first year and two monthly in the second year. Results: 303 subjects enrolled, 188 were followed for two years and of these 74 had either a reaction or neuritis at registration or developed either of these during follow-up. Subclinical neuropathy was common. Statistically significant improvement for clinical parameters over 12 months follow-up became clinically relevant only in those presenting with acute new onset ulnar neuritis. Best nerve function improvement was seen for sensory amplitudes followed by motor amplitudes and by vibration perception. Latency and thermal perception thresholds showed least improvement with warm detection showing little to none. Those treated with Prednisone showed greater improvement of all nerve parameters which peaked at around 10 months. In contrast the response to MDT was more linear and continuous up to 12 months. Conclusion: This study suggests that measures of large nerve fibre function improve better than those of small nerve fibres. Overall best nerve function improvement was in the posterior tibial, the least in the sural nerve. Keywords: leprosy, nerve conduction testing, neuritis, thermal threshold testing, vibration threshold testing, small nerve fibre, large nerve fibre, Prednisone.
Leprosy Skin Tests: Field Testing of Two New Agents in a Country Endemic for Both Leprosy and Tuberculosis

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Introduction: As the load of leprosy decreases, the need for new tools to augment clinical diagnosis becomes more pressing. Differentiation between infection with/ exposure to *M. leprae* and *M. tuberculosis* remains problematic. Methods: We have identified two new antigens: MLCwA (M. leprae cell wall antigen) and MLSA-LAM (*M. leprae* soluble antigen depleted of LAM) which have shown promise to differentiate between leprosy and TB exposure in the guinea pig model. Following a successful Phase I trial, we are undertaking field testing in suitable human volunteers in Nepal in a double blinded Phase II randomised control trial. Subjects were recruited in 4 groups: leprosy patients, household/ professional contacts of leprosy patients, healthy non-contacts (endemic controls) and TB patients. All subjects received intradermal injection test antigens plus appropriate control antigens. Induration and erythema were measured at 3, 7 and 28 days post injection. Results: Comparison between test antigens and PPD (positive control) indicate that these antigens differentiate between leprosy and TB exposure in an endemic setting. Key words: field testing of MLSA-LAM.

A Case of Relapse of Leprosy Presenting as Generalized Lymphadenopathy, 20 Years After RFT

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Introduction: In India number of MB patients were treated with MDT-MB and released from treatment (RFT). It is expected that a very small but significant fraction of these patient might relapse. We are presenting a case of Bacteriological relapse of LL which was made RFT 20 years back, presented with ENL along with Generalized lymphadenopathy which was mistaken for a case of Tubercular lymphadenopathy and treated without response. Case summary: A female of 40 years presented with ENL lesions on the extremities and bilateral cervical lymphadenopathy to our clinic. She gave a past history of having completed MDT-MB at a leprosy hospital, Hyderabad and made RFT in the year 1985. Patient also gave a history of recurrent ENL reactions on and off over last several years and was on oral corticosteroids for the treatment of ENL. In the year 2006, she developed Generalized Lymphadenopathy, with most prominent being cervical lymph nodes. A diagnosis of Tubercular lymphadenitis was made based on the cervical lymph nodes FNAC. Patient was on 6 months of anti TB treatment, however, did not respond to the therapy. With this background we investigated this patient and performed skin biopsy, skin smear for AFB and FNAC from lymphnodes, which was sent for cytology and culture for M. tuberculosis. Skin biopsy revealed Lepromatous leprosy and skin smear was 3+ for AFB. The cytology of FNAC from the lymph node showed loaded AFB on modified ZN stain. A diagnosis of Lepromatous leprosy with bacteriological relapse was made based on the above findings. Discussion: The persistent occurrence of ENL even after 20 years of RFT done at smear negativity, made us suspect relapse. This made us to investigate thoroughly with regard to relapse and rule out tuberculosis. Although in the modified ZN staining of FNAC, it is difficult to differentiate between Lepra and Tubercular bacilli, the skin smear positivity of 3+ in this patient painted towards the relapse of leprosy. Conclusions: We are presenting this case for the atypical presentation of relapse of leprosy mimicking tubercular lymphadenopathy, in a patient treated till smear negativity with MDT-MB about 20 years back. Acknowledgements: We acknowledge the help of Director and staff of Lepra India- Blue Peter research center, Charlapally, Hyderabad, India.
The Importance of the Correlation Between the Patients' Complaints and Their Detailed Physical Examination in the Evaluation of Patients with Leprosy

Who Simulate Complications in Order to Achieve Secondary Benefits - An A Report of Three Cases

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This paper is a case report of three patients from the Eduardo de Menezes Hospital – State of Minas Gerais' Hospital Foundation – Leprosy Ambulatory. The cases have in common the discordance between the patients’ complaints – pain, loss of sensation, weakness – and the evidences from their detailed physical examination, and they show the latent relation between leprosy and the search for secondary benefits through the National Institute for Social Security. In the three cases, the medical staff believed in simulation in order to achieve or perpetuate an insurance benefit. The work focuses on the fact that the intimate relation between the patient’s complaints and the physical examination is due to the disease pathogenesis and is crucial to guide the staff’s decisions. Not only by helping to identify those people attempting to get the secondary benefits, but also allowing the opportune treatment of the leprosy complications and avoiding unnecessary treatments, it's adverse reactions and public costs. It will always be difficult to doubt a patient’s complaint. But, on the other hand, being loyal to the detailed physical examination findings is the best way to offer the patients a chance to overcome the stigma that they have created about their own condition.

Keywords: leprosy, secondary benefits, physical examination

Averting Childhood Leprosy Deformities-weaknesses in Present Integrated System-Presentation of a Child Case from Maharashtra, India

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Ahmednagar one of the largest district of Maharashtra shows a PR of just 0.2/10,000, there are no deformity cases reported among N.C.D for last two years. ShanthiKumar (name changed) a 9-year old male was detected as MB leprosy with no deformities on 04/07/2006 & RFT on 04/06/2007, as per PHC register, which also shows record of three more MB adult cases. As per NLEP Records 2006-07. Only one MB adult case from Chichodi Patil PHC during 2006-07. (What about the other three cases?). There are no child cases in the Chichodi Patil PHC, for 2005-06, 2006-07. The Deformities Cases for the Ahmednagar block for 2006-07 is 0. The PHC shows a PR of just 0.77/10000. The child’s name figures nowhere in the NLEP records. The child has received just two months MDT in July & August 06 & has developed a grade 2 deformity right hand! Weakness in the present integrated system: 1. As individual attention cannot be given because one PMW looks after a large area hence some patients may be left out & not be monitored regarding treatment. 2. Leprosy is not the first priority & takes a back seat. 3. Medical officers are transferred frequently.

Clinical Profile of Leprosy in Urban and Semi-Rural Field Areas

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Introduction: A retrospective analysis was undertaken to study the trends and the risk factors for ENL (Erythema Nodosum Leprosum) in smear positive MB (multi bacillary) cases for the period of 1991 to 2000 from LEPRO field projects of Andhra Pradesh and Orissa. Methodology: A total number of 14,338 MB cases were analyzed. Of these 3,923 were smear positive. Results: Percentage of smear positivity was similar in all the field areas except in one urban area. Maximum numbers of smear positive patients were in the age group of 20 to 49 yrs (44.8%). Males predominated over females across all the age groups. Types of leprosy remained the same in each age group. An increase in LL type was observed with advancing age. Delay in presentation at clinic influences leprosy type, bacteriological index and involvement of truncal nerves. 8.7% of the patients had ENL. Conclusion: Gender, age, LL, infiltration, bacteriological index, and delay in presentation were observed to be significant risk factors for ENL. Key words: Multibacillary (MB), ENL, Smear positive, truncal nerves.
**Presence of Mycobacterium leprae in the Central Nervous System of Leprosy - A Probable Cause of Silent Neuropathy**

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Peripheral neuropathy has been extensively studied in leprosy, but the central nervous system (CNS) was regarded to be free from *Mycobacterium leprae*. Involvement of the CNS was evaluated in autopsy cases of clinically cured lepromatous leprosy (n=67) and in non-leprosy control cases (n=10). Paraffin sections of the medulla oblongata and spinal cord were stained by H&E, Fite's acid-fast staining, and *M. leprae*-specific anti-phenolic glycolipid-1 (PGL-1) immunohistochemistry. PGL-1-positive areas were micro-dissected from selected cases and nested PCR targeting the *M. leprae*-specific repetitive sequence (Rlep) was performed. Of the 67 cases of leprosy, 44 (67%) had vacuolar changes of motor neurons either in medulla oblongata (nucleus ambiguus, hypoglossal nucleus) or spinal cord anterior horn. Fite staining was negative, but PGL-1 was positive in vacuolated areas. Nested PCR revealed *M. leprae*-specific genomic DNA in 18/19 of cases (95%) with vacuolated changes and 5/8 (63%) without vacuolated changes. All above findings were negative in control cases. Damage due to *M. leprae* in the CNS of leprosy could elicit motor paralysis and may participate in the pathogenesis of silent neuropathy. (This study was conducted in collaboration with Thida Aung, Shinichi Kitajima, Mitsuhiro Nomoto, Suguru Yonezawa, and Isao Arikawa.)

**Serology Can Be Used in Leprosy Control to Aid Classification and Predict Nerve Function Impairment**

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Anti-PGL-1 IgM seropositivity reflects the systemic bacterial load of leprosy patients. It aids the diagnosis and classification of leprosy patients and can be used to predict nerve function impairment (NFI). Despite this, serology is still not used in routine practice, possibly due to perceived lack of applicability and costs. Here we provide strong evidence that serology is valuable for and can be used in routine leprosy control. 1037 new leprosy patients were included in a prospective cohort. The relation between clinical and demographical variables and seropositivity was calculated and the test potential to predict NFI was determined using survival analysis. The number and extent of clinical signs as well as sex, age, disability grade, bacterial index and classification all correlated with seropositivity. The size of skin lesions was positively correlated with seropositivity. We did not find different levels of seropositivity among patients with one or two skin lesions, nor did we find different levels among patients with or without satellite lesions. We propose a NFI prediction rule, using classification and serology results, which could predict 80% of all NFI events in our cohort.

**Correlation of Skin and Nerve Histopathology in Leprosy**

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Leprosy is a chronic disease caused by *Mycobacterium leprae* affecting the peripheral nervous system, skin and certain other tissues. Studies have been done in which concurrent skin and nerve biopsies were obtained. Disparities were noted in the histopathological features of nerves compared to skin biopsies of the same patient. The objective of this study was to correlate and compare the nerve and skin histopathology in different types of leprosy. 27 untreated patients who were clinically diagnosed of having leprosy were included in this study. The skin and nerve tissue sections were stained with H&E and Fite-Farraco stains. Correlation between skin and nerve histopathology was seen in 12 out of 27 cases while discordance was seen in 12 out of 27 cases. In 9 cases, nerve showed lower histological grade than skin. It is because nerves are immunologically protected sites. So there is delayed recognition of *M. leprae* in nerves. In 3 cases, nerve showed higher histological grade and was less bacillated than skin. It may be due to micro reactions occurring in the nerves. Keywords: Skin, Nerve, Histopathology, Leprosy.
Assessment of Nerve Function Impairment in 400 Untreated MB Cases Using Clinical Tests i.e. MNP, MF, VMT and Electrophysiological Test Findings
A Correlative Study

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Objective and Study design: To examine the field reliability of clinical testing in comparison to electrophysiological measures of nerve involvement in untreated leprosy cases. Four hundred untreated MB cases recruited for a larger prospective cohort study were subjected to neurological assessments which comprised of: manual nerve palpation (MNP), sensory testing using monofilaments (MF), voluntary muscle testing (VMT) sensory and motor nerve conduction velocity parameters (SNCV and MNCV). Nerves assessed were bilateral ulnar (sensory and motor), median (sensory and motor), radial, cutaneous, sural, common peroneal and posterior tibial. Analysis was performed using SPSS version 10.0. The significance of association was tested using Chi square test. Results: On comparison of MF and SNCV, good to very good correlation (i.e. 1:1=N -N & Ab -Ab) was seen in 65% of nerves. For all the nerves, specificity of MF with SNCV was higher (>80%) as compared to sensitivity. The sensitivity was high for ulnar nerve (44%) followed by radial (39%), sural (36%) and median (35%). On comparison of VMT with MNCV, a 1:1 correlation was seen in 67% nerves. For all nerves, specificity of VMT with MNCV was >90% while sensitivity was maximum for ulnar nerve (25%), but low (4-5%) for all other nerves. On comparison of MNP with (SNCV & MNCV), a 1:1 correlation was seen in 67% and 77% nerves respectively. For ulnar and c. peroneal nerves, the specificity was low (30-40%) as compared to other sensory and motor nerves (60-80%). The sensitivity was higher than specificity for all the nerves and maximum for ulnar nerve (>90%). Percentage of cases showing nerve involvement by 3 combined clinical tests was 91% that was closely comparable to NCV test findings (93%). Conclusion: Both MF and VMT are very specific for detecting nerve function impairment, but less sensitive as compared to SNCV and MNCV. MNP is less specific but more sensitive as compared to MF and VMT. Under field conditions, combination of the above clinical tests could serve as the most useful tool for detecting nerve function impairment.

Key words: Nerve assessment, Leprosy, Clinical tests, Electrophysiological tests, Correlation.

Leprosy - The Great Masquerader

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Introduction: Leprosy continues to be one of the great mimickers. This retrospective case series is a compilation of various misdiagnosed cases of leprosy to demonstrate its many faces. Methodology: Unsuspected cases which initially baffled dermatologists and other specialty clinicians with their clinical presentation and investigated extensively and ultimately proven to be Hansen's disease within a 1 year time period were compiled. Results: There were a total of 7 cases, the clinical presentation of which greatly mimicked other cutaneous disorders. The initial diagnoses included Systemic Lupus Erythematosus, Epidermolysis Bullosa Aquisita, vasculitis, connective tissue disease, Pyrexia of Unknown Origin, atrophic rhinitis and congestive cardiac failure. Lepromatous leprosy in type II reaction was the commonest type of leprosy to mimic other cutaneous or systemic disorders and therefore the most misdiagnosed. Conclusions: India being an endemic country, there exists a high index of suspicion of leprosy. However, the myriad clinical features still continue to cause diagnostic difficulty and confusion. Hence, it would be prudent to always consider leprosy in the differential diagnoses, particularly in cases that are a diagnostic dilemma.

Key Words: leprosy, mimicker, leprosy presentation, leprosy misdiagnoses.