sequent long-term DDS monotherapy. The former is the multidrug regimen (PCT; shown below) for 3 months under perfect observation, and is adapted to both of PB and MB. The latter is monotherapy with DDS for 5 (MB) or 2 (PB) years under self-administration. Two-step strategy,

i.e. intensive killing of pathogen in the early phase and following enough long not-robust but steady chemotherapy serves the requirement of super chronic infectious disease like leprosy. Further, the risk of relapse caused by the miscategorization of MB into PB can be very low.

PCT for 3 months : RFP 900 mg/week

DDS 100 mg, 6/week Clofazimine 100 mg/daily

We will present the prevalence of relapse, leprosy reaction, side effect of chemotherapy, and the transition of bacterial load. The results of laboratory examination will be shown focusing on the prevalence of side effects.

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Oc 06

INTRAOCULAR LENS IMPLANTATION IN LEPROSY PATIENTS

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Leprosy affected people, like everyone else, develop cataracts due to various factors - age, diabetes, oral steroid therapy, ocular trauma, chronic ocular inflammation and others. This study reviews our experience with intraocular lens (IOL) implantation in 409 eyes of 335 leprosy patients over 5 years. The purpose of this study is 1. To determine the etiology of cataracts in these patients. 2. To analyse the visual outcome of the surgery. 3. To determine whether the visual outcome of the surgery was affected by pre-existent ocular disease, if any, the type of leprosy, smear status, ongoing anti leprosy treatment. 4. To analyse the post-operative complications. The study concludes that IOL implantation offers the best form of visual rehabilitation for leprosy affected patients when they develop cataracts as it gives very good visual results. The surgery is associated with very few post-operative complications when cataracts are age related. Cases with past history of iridocyclitis however were associated with more intra and post-operative complications. Smear positivity, type of leprosy and anti-leprosy treatment have little effect on the visual outcome of the surgery.

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Oc 62

FACIAL PATCHES, TYPE 1 REACTION AND FACIAL NERVE DAMAGE : A RETROSPECTIVE STUDY AMONG 1178 MB LEPROSY PATIENTS

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We reviewed the charts of 1178 previously registered MB leprosy patients for the presence of facial patches, Type I reaction & facial nerve damage. 735 BB/BL patients (62%) and 443-LL patients (38%) were analyzed separately.

Facial patches were divided into Significant Patches : patches with an estimated diameter of 5cm in the malar area or around the eye and other patches: any patch in other locations or <5 cm. Type I reaction was defined as sudden appearance of red and raised skin lesions. Lagophthalmos was defined as a lid gap of 1 mm on mild closure; recent lagophthalmos as a history of lag of <1 year.

Significant facial patches were present in 9.6% of BB/BL patients and 0.7% of LL patients. Significant facial patches in Type I reaction were present in 44/71 patients (62%). In 1178 patients we identified 47 patients with lagophthalmos (4%): 39 in BB/BL (83%) and 8 in LL (17%). Recent lagophthalmos was present in 18 patients (2.7%): 16 in BB/BL patients (89%) and 2 in it patients (11%). Lagophthalmos of >1 year was present in 29 patients (4.9%): 23 in BB/BL patients (79%) and 6 in LL patients (21%). Majority of the patients (81%) with recent lagophthalmos had a significant patch in the face, with or without accompanying Type I reaction. Only 2 LL patients had a recent lagophthalmos, both had diffusely & infiltrated faces, without patches.

The conclusions of the study are that BB/BL patients are at risk of facial nerve damage when they have facial patches of certain size and location. These observations are similar to our published study in PB leprosy patients and highlights the fact that the operative risk factors for facial nerve damage is the same in PB and MB borderline leprosy. Lagophthalmos in LL is comparatively rare and the mechanism of nerve damage needs to be clarified.

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Oc 95

TEAR FUNCION TESTS IN LEPROSY

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150 eyes of 75 various types of leprosy patients and an equal number of age, sex matched non-leprosy patients (controls) were examined for tear function tests. There was no statistically significant difference in Schirmers test between leprosy and non-leprosy patients. The tear break up time (BUT) showed a lower value of less than 10 seconds in leprosy patients which was statistically significant [p <0.01]. Leprosy patients with lagophthalnos and decreased corneal sensation showed a lower break up time which was also statistically significant [p<0.01]. It is obvious from this study that proper and prolonged wetting of the cornea is deficient in many leprosy patients even through the quantity of tears produced may not be affected This can lead to damage of the cornea. There is therefore, an increased role for the application of artificial tear lubricants in the patients.

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Oc 96

INTRAOCULAR LENS IMPLANTATION IN LEPROSY

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A plethora of literature exists detailing the results of intraocular lens (IOL) implantation in patients who underwent extracapsular cataract extraction (ECCE) surgery but very little of it is on intraocular implantation in leprosy patients. We report the results on all leprosy patients who had undergone standard ECCE with IOL implantation from January 1997 to December 1998 in this hospital.

All surgeries were done by the same surgeon using the same technique. 47 eyes of 38 leprosy patients underwent standard extracapusular cataract extraction and intraocular lens (IOL) implantation with a 21 dioptre lens. 16 were males, 22 females. 14 were tuberculoid patients while 24 were lepromatous. Pre-operatively, 5 eyes had lagophthalmos, 4 significant corneal opacities, 4 pterygiums and in 15 eyes the comeal sensation was impaired. 28 patients had grade 2 deformity, 2 of them with saddle noses and 19 with claw hands. 4 patients were smear positive at the time of surgery and one had a type I reaction and was on steroid therapy. None of the smear positive patients exhibited significant differences in operative or postoperative complications when compared with smear negative patient. The patient in reaction had severe postoperative uveitis which needed prolonged treatment with oral and topical steroids. Postoperatively 21% of patients, 3 tuberculoid and 5 lepromatous, developed significant uveitis (>2+ flare and cells) that needed to be treated with steroids. 6 patients, 4 tuberculoid and 2 lepromatous, developed posterior capsular opacities after surgery. Visual restoration in the operated eyes were good.

IOLs are relatively safe and give good visual restoration in all types of leprosy patients operated for cataract. Operative and postoperative complications were not significantly different between lepromarous and tuberculoid patients. We advocate that more ophthalmologists report their experiences with IOLs in leprosy patients so that possible hazards of implanting lenses in vulnerable leprosy eyes are known and more importantly the benefits of IOL are made available to a larger number of patients who need cataract surgery.

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Oc 176

INCIDENCE OF OCULAR MORBIDITY DURING AND AFTER MDT

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Visual impairment and blindness occur in patients with leprosy. Such individuals form a severely disadvantaged group because of other disabilities from the disease. It is currently unclear what role MDT has in preventing or limiting development of ocular pathology. There have been few longitudinal studies undertaken in order to determine the incidence of ocular complications in patients during and after completion of MDT. In this paper the incidence of ocular pathology in 301 newly diagnosed MB leprosy patients was determined and the factors associated with these complications assessed. The study period included the duration of MDT and five years after completion of therapy. Even at the time of registration, one fifth of eyes already had cataract, or corneal and other morbidity. Incidence of ocular morbidity during MDT and RFT revealed that a significant number of patients had various eye complications including impairment of corneal sensation. Results are discussed along with possible associated risk factors.

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Oc 187

A TWENTY FIVE YEARS RETROGRADE AUDIT OF CATARACT SURGERY IN LEPROSY SUFFERERS IN EASTERN INDIA

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Background : Cataract is the major cause of blindness amongst the leprosy sufferers in Eastern India. But the visual outcome of the leprosy sufferers following cataract surgery in the pre MDT era was not satisfactory for various post operative complications . Nowadays the successful antieprotic regime and the different potential local antibacterial and anti inflammatory agents have changed the scenario.

Aim:The study had been undertaken to evaluate the visual outcome of the different modalities of cataract surgery practised amongst the leprosy sufferers in Eastern India for the last quarter of the past century and the different post operative complications in them.

Method: In a hospital based study, this work had been done at the eye clinic of the biggest leprosy hospital in Eastern India from March 2000 to June 2000. Outdoor and indoor aphakic leprosy sufferers were examined at random by refraction, external ocular examination, fumdoscopy and tonometry. The data were recorded.

Result: 134 aphakic RFT leprosy sufferers (MB 95% & PB 5%) with 11 years mean period of interval between cataract surgery and examination showed unilateral surgery in 86 (64%) and bilateral in 48 (36%). The pattern of cataract extraction was Intra Capsular Cataract Extraction (ICCE) -116 (86%), Intra Ocular Lens implantation (IOL) 16 (12%), Needling -1 (1%) and Couching (quackery) in 1 (1%).Amongst 116 ICCE, 92 had complete iridectomy (with inferior or multiple shincterotomy in 25 cases). The main post operative complications were Phthisis bulbi 6 (4.5%) (unilateral 5 and bilateral 1), Unilateral anterior staphyloma 2 (1%), Unilateral absolute glaucoma in 5 (4%), Blocked pupil 2 (1%), Bullous keratopathy 2 (1%). Associated lesions included aphakia with lagophthalmos in 10 (8%), aphakia with corneal opacity in 11 (9%), aphakia with recurrent uveitis in 8 (6%).The visual outcome in the aphakic eyes were as follows : NPL-13(10%), PL-upto3/60 -8(4%), 3/60->6/60 -3(2%). 6/60->6/18- 75(57%), 6/18 and more- 35(27%).

Conclusion : 110 (84%) of aphakic eyes in leprosy sufferers are having good vision. The ICCE with CI and multiple shicterectomy is the best surgical procedure. The major post operative complications were aphakic glaucoma with bullous keratopathy and phthisis bulbi which have been reduced in recent years following effective regular MDT and local treatment with better antibiotic and anti inflammatory agents. The Intra Ocular Lens Implantation bears a good visual outcome. But the latter needs further follow up for a reasonable period of time.

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Oc 188

A CURRENT PROFILE OF THE PATTERN OF OCULAR LEPROSY IN 'RFT' (RELEASED FROM TREATMENT) ERA IN EASTERN INDIA

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Purpose: The study was aimed to determine the present situation of the ocular lesions of leprosy in this Released From Treatment (RFT) era when almost 95% of the leprosy patients of Eastern India were released from active antileprotic treatment and enjoying a normal social life. Many of them were still carrying the aftermath of leprosy which in major areas gave rise to high risk eyes.

Method: In a hospital based study, this work had been done at the biggest leprosy hospital in Eastern India from January 1999 to June 2000. A random sample of RFT patients attending the eye clinic of the leprosy hospital had been selected and examined by Slit lamp, Ophthalmoscope, Tonometer and Retinoscope with Trial set.The data was recorded and analysed.

Result: A total number of 270 RFT leprosy sufferers (MB 90% & PB 10%) showed the following pattern of ocular lesions - Lid affection 48 (17.5%), Corneal lesions 42 (16%), Uveitis and its sequele 39 (15%), Senile cataract 173 (64%), Complicated cataract 15 (5%), Glaucoma 9 (2.5%) and Phthisis bulbi 12 (4.5%). Of the senile cataract - mature cataract 25 (10%), unilateral aphakia 56 (20%), bilateral aphakia in 19 (7%) and pseudophakia amongst 16 (5.5%) cases. 21 cases (8%) of the study group were blind (no perception of light) in one eye and 5 (2%) cases in both eyes. 99% of the study group had deformities of the extremeties and 85.5% of them had bad ocular hygiene due to mutilated hands.

Conclusion : Today cataract, lagophthalmos, corneal opacity are the main blinding problems in ocular leprosy. The cataract in leprosy is now carrying an excellent outcome following surgery even with Intra Ocular Lens Implantation. Lid surgery for lagophthalmos is found beneficial amongst two third of the cases. But corneal and uveal problems are still blinding in this zone due to negligence and lack of maintenance of proper ocular hygiene on the part of the patient and timely intervention by appropriate eye health care delivery system.

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Oc 237

EYE CARE AMONG LEPROSY PATIENTS IN THE COMMUNITY

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Eye complications leading to ocular morbidity and blindness are common in leprosy. As many of these complications can be prevented and a specialist is not always accessible, it is important that patients realize that blindness and injury can be prevented by their own actions. Few studies that have looked at knowledge of eye care among leprosy patients. We interviewed 130 leprosy patients using a questionnaire in the out-patients and admitted in the wards and present our findings here.

97 of the patients interviewed were males and 33 females. 70 patients belonged to the lepromatous group and 60 to the tuberculoid group, 89 patients had eye complications while 41 patients had no eye complications.

Although general knowledge on leprosy was good, eye care knowledge was poor. Mean scores for general leprosy knowledge was 58% while eye care knowledge was only 15%. When the level of eye care knowledge is found to be dismally poor even in a hospital based population of leprosy patients, the majority of whom had ocular complications, the great need for intensive health education in the area cannot be over emphasized.

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Oc 339

COMBINED SURGICAL TREATMENT OF LAGOPHTHALMOS AND ECTROPION IN LEPROSY

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Paralytic lagophthalmos and ectropion by leprosy are serious complications of facial paralysis, which may lead to exposure keratitis, corneal ulceration, and further lead to blindness. Gold implantation in the upper eyelid and cartilage graft in the lower eyelid, with optional horizontal shortening, successfully corrected the lagophthalmos and ectropion since 1992 over 150 cases.

The improvements made to lid loading with gold include four holes for better fixation, reducing the weight of gold to one gram, and redesigning the shape to be crescent curved and oval surfaced to conform to the shapes of both the eyeball and eyelid.

We have now found that raising the level of the lower lid margin to the sclera is important in concealing the scleral show due to drooping of the lower lid. We grafted conchal cartilage in a 5 x 35 mm sized band, which was fixed at the medial and lateral canthal area in 57 patients during the recent 3 years.

Combination treatment provided for near normal eye closure and aesthetically pleasing appearance without the drawbacks associated with other methods such as eye clinching in concert with mouth closure, donor site deformities resulting from temporalis muscle transfer, and over exposure of carbuncle due to stretching effects of lateral canthoplasty.

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Oc 392

THE PREVALENCE OF BLINDNESS IN LEPROSY

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Sight threatening complications of leprosy include corneal scarring to corneal anaesthesia associated with inadequate eyelid closure, chronic iridocyclitis, and progressive cataract. The insidious onset of these conditions can lead to progressive visual impairment being identified only when advanced. Recognition of these disorders at an early stage can lead to treatment which prevents blindness. Our aim in conducting the present study is to identify the prevalence and causes of blindness in leprosy affected people in W. Bengal and Bihar, India.

The results reveal an unexpectedly high prevalence of blindness in the Jhalda subjects, as compared to those in the other two centres. However, significantly more subjects with multibacillary disease were found in the Jhalda sample than in the Muzaffarpur or the Saldoha samples. Looking at those identified as blind in Jhalda, significant risk factors for blindness include multibacillary disease, and duration of disease >10 years. The known prevalence of blindness in the general population in that region is 0.6% (WHO-IND.2).

Our study suggests that emphasis must still be placed on instituting adequate measures for early detection of ocular complications of leprosy, particularly where there is, or has been, a high prevalence of multibacillary leprosy. Continuing care of treated patients is required to prevent blinding complications of established ocular impairments such as corneal anaesthesia and inadequate eyelid closure. Other epidemiological factors which may contribute to the high prevalence of blindness in the Jhalda study group will be discussed.

This study provides evidence that in leprosy, particularly of multibacillary type, blindness remains a significant risk which requires to be addressed in all leprosy control and treatment programmes.

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MECHANISM OF NERVE DAMAGE IN LEPROSY

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Nerve damage leading to impairment and permanent disability is still the major problem in the course of a leprosy infection. This nerve damage may occur before, during and after anti-mycobacterial treatment, especially during so called reactional episodes. Two types of nerve damaging immunological reactions are recognised, the reversal reaction (RR) or type-1 reaction and the erythema nodosum leprosum (ENL) or type-2 reaction. The immunological and pathophysiological mechanisms behind the reaction will be discussed. This will include recognition of M.leprae antigenic determinants on bacilli and self antigens, cytokines among which TNF-alfa and adlhesion molecules like N-Cam. Silent neuritis (nerve damage) will be included.

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Ne 167

IMMUNOLOGICAL STUDIES IN LEPROUS NEURITIS

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Immune complexes were found raised in a sequential study both in B.T and LL groups of patients with reduced complement mediated solubilization (Ramanathan et al, 1998)· Since painful neuritis is an important problem in leprosy, a histoimmunological study on 30 nerve biopsies of patients with neuritis was carried out (Ramanathan et al, 1989) Immunoglobulins and complement were detected in a proportion of cases and mycobacterial antigen even in the absence of intact bacilli. In an ongoing study, 103 leprosy patients and 14 healthy normal individuals were investigated for serum anticeramide IgM and IgG antibodies. The patients belonged to three groups, namely A. patients with painful neuritis, B. patients who had been treated for neuritis, C. patients without painful neuritis.

Antibodies to ceramides were significantly raised in all groups of patients. IgG antibodies were raised in large number of A and B groups. IgG antibodies are involved in autoimmune disorders. A number of investigators have suggested that auto-immunity may have a role in Leprous neuropathy which our studies also indicate.

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ALTERATIONS IN AXONAL NEUROFILAMENT PROTEIN AND SILENT NERVE DAMAGE IN LEPROSY

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Through morpholopjcal studies it was firmly established that a reduction in axonal caliber (atrophy) precede demyelination leading to conduction block and is the manner in which silent nerve damage occur in leprosy. We have sought to study the biochemical basis of atrophic changes in leprous nerves. The study was planned with following 4 objectives based on the assumption that the axonal caliber is governed by the carboxy terminal phosphoylation of high molecular weight neurofilament protein (NFH).

1. Study through immunocytochemistry the state of NF phorphorylation in the affected peripheral nerves in leprosy.

2. To correlate the morphological and immunocytochemical changes.

3. To demonstrate the presence of altered phosphorylated form of NFH.

4. Biochemical correlates of NF phosphorylation by quantifying the enzyme(s) which regulate the phosphorylation on carboxy terminal region.

The study was carried out in a total of 22 leprous and 4 normal human peripheral nerves and in the experimental mouse sciatic nerve model for leprosy. The results explicitly demonstrate both morphological and biochemical evidence of alteration in NFs. There was hypophosphorylation of NFs, priorer to atrophy, was demonstrated using SMI-31 antibody, that specifically binds to phosphorylated - COOH terminal of NFH and NFM. Antigens of

M.leprae seem to play a crucial and specific role in the sequence of events. However there was no CDK5 activity detected in both normal and leprous peripheral nerve supernates, indicating that, other kinases may be involved.

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Ne 264

RETROSPECTIVE STUDY ON DAMAGE OF THE LOWER EXTREMETES NERVES AND THEIR BRANCHES IN LEPROSY

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Objective : To study the incidence and clinical feature of n.tibialis, n.peroneus communis and their branches damage in leprosy.

Methods : Examine 275 cured patients carefully including 63 hospitalized cases and 212 cases living in communities.

Results : The damage incidence of the lower-limb nerves was 65.45%(180/275) in cases or

53.09% (292/550) in nerves. The tibial nerve damage incidence was 54.18% (149/275) or 43.64% (240/550). The damage incidence of tibial nerve branches were in muscularis popliteal fossa and leg of 1.82% (5/275) or 1.09% (6/550) , n.cutancous surae medialis of 22.18% (61/275) or 17.09% (94/550) , n.calcanealis of 38.91% (107/275) or 30.55% (168/550), n.plantaris medialis of 44% (121/275) or 35.27% (194/550) and n.plantaris lateralis of 45.82% (126/275) or 36.91% (203/550) respectively. The damage incidence of n.peroneus communis was 59.27% (1631275) or

46.18% (254/550) and its branches were n.cutaneous surae lateralis 41.45% (114/ 275) or 30.55% (168/550), n.peroneus superficialis of 52.36% (144/275) or 39.64% (218/550) and n.peroneus profuntus 44.36% (122/275) or 33.45% (184/550) respectively. The damage of lower limb nerves is related to leprosy type and diseased duration, which characterized with more sense impairment and motor impairment secondly.

Conclusion : The damage of lower limb nerves was most frequent and useful to diagnosis, classification and finding risk nerve through its clinical symptoms. Authors considered that the early case-finding, early diagnosis and early treatment be the most important measures to control disability.

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Ne 291

TRIPOD TRIAL - PROPHYLACTIC USE OF PREDNISOLONE, RESULTS AT 4 & 6 MONTHS

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The TRIPOD trial is a double blind, placebo controlled, multi-centre trial of the use of Prednisolone in three aspects of leprosy treatment - prophylactic use for the prevention of nerve function impairment, treatment of early sensory nerve function impairment and treatment of longstanding nerve function impairment. First results are available for the part of the trial looking at prophylactic use of Prednisolone.

DESIGN - Six centres in two countries (Bangladesh and Nepal) recruited over 600 newly diagnosed MB patients to the trial. Patients had either no detectable nerve function impairment or pre-existing nerve function impairment of duration greater than six months. Other entry restrictions also applied. Half received Prednisolone and half an identical placebo tablet. All centre staff- including prescribing paramedics, physiotechnicians monitoring patients and the supervising medical staff were blind to the type of tablet used for each patient. Informed consent was received for each patient entering the trial.

PROTOCOL - Prednisolone/placebo was given as a 20 mg daily dose for 3 months, with a tapering dose in the 4th month.

FOLLOW UP - Patients returned, or were traced, for follow up at 1,2,3,4,6,9,&12 months. A late follow up at 24 months will assess the incidence of TB in the two groups.

OUTCOME MEASURES - At each follow up, the patients were assessed for nerve function impairment by sensory testing with graded ono-filaments, voluntary muscle testing and assessment of nerve tenderness. Fixed criteria were applied for the diagnosis of nerve function impairment and removal of a patient from the trial. Potential side effects were checked according to a fixed protocol. Presence of severe side effects also resulted in exit from the trial.

RESULTS - Results are available for patients at 4 months (the time of cessation of prophylactic treatment) and at 6 months.

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SENSIBLE MANUAL MUSCLE STRENGTH TESTING TO EVALUATE MOTOR FUNCTION

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Manual muscle strength testing is an established assessment technique to evaluate and monitor motor nerve function impairment (NFI). There is little consensus about important aspects that relate to motor function assessment. Knowledge of these may lead to uniformity in assessment and recording. Uniformity in assessment and recording will facilitate comparison and analysis of data. These aspects will be discussed under 4 headings: Why nerve function assessment, when, by whom and what detail?

Furthermore. information about the reliability of motor function assessment will be given and areas for further research will be indicated.

It is now an established practice to assess nerve function of all suspected and new patients to evaluate if, and to what extent, nerve function may be impaired. Nerve function should be assessed at the time of diagnosis, monthly thereafter. and every time a patient complains about nerve discomfort (pain), and (new) weakness or numbness. Assessment frequency should be increased when there is acute nerve function loss. Each person involved in the diagnosis and treatment of nerve function loss should know how to assess nerve function.

Detail of assessment needed depends on the preliminary findings of motor assessment, the possibility to isolate muscles, biomechanics of the hand and espertise of the examiner.

Few studies have reported about the reliability of muscle testing in leprosy. (Inter) tester reliability is influenced by skill of examiners and availability of, and adherence to. muscle testing protocol. It is also influenced by the number of tests and detail of grading.

More research is needed into the (inter)reliabilitv of manual muscle testing. Additional research is needed to establish to what extent other manual muscle strength testing techniques can be of value in assessing and monitoring motor nerve function in leprosy patients.

A chart to assess and evaluate motor function that allows for simple and detailed assessment and recording will be presented.

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Ne 366

A SIMPLE RULE TO PREDICT NERVE FUNCTION IMPAIRMENT

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Background : Nerve-function impairment (NFI) commonly occurs during or after chemotherapy in leprosy. The data arising from the Bangladesh Acute Nerve Damage Study, a prospective study based on the DBLM project in Nilphamari, Bangladesh, have allowed us to describe the development of NFI and to develop a simple clinical prediction rule for estimating the risk of NFI occurrence.

Methods : New leprosy cases (MBs and PBs) were recruited and followed up for 2 years in a field setting. We used multivariable regression analysis by Cox s proportional hazards model to identify predictive variables for NFI. Discriminative ability was measured by a concordance statistic. Internal validity was assessed with bootstrap re-sampling techniques.

Findings : Amongst 2510 patients, 166 developed new or further NFI during the first 2 years of follow-up. A simple model was developed with leprosy group (either paucibacillary leprosy [PB] or multibaciliary leprosy [MB] and the presence of any nerve-function loss at registration as predictive variables. Patients with PB leprosy and no nerve-function loss had a

1.3% (95% CI 0.8-1.8%) risk of developing NFI within 2 years of registration; patients with PB leprosy and nerve-function loss, or patients with MB leprosy and no nerve-function loss had a 16.0% (12-20%) risk; and patients with MB leprosy with nerve-function loss had a 65% (56-73%) risk.

Interpretation : Our prediction rule can be used to plan surveillance of new leprosy patients. Patients at low risk of NFI may need no follow-up beyond their course of chemotherapy (6 months); patients with intermediate risk need a minimum of 1 year of surveillance; and patients with high risk should have at least 2 years of surveillance for new NFI. Current recommendations for surveillance of patients with leprosy (for the duration of chemotherapy only) exclude an important group of patients who are at risk of developing NFI after completion of treatment.

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Ne 367

PREVENTING NERVE DAMAGE - A STRATEGIC REVIEW Smith W.C.S.

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Introduction : Nerve damage, and the consequences of nerve damage, sets leprosy apart from other diseases. The irreversible motor and sensory impairments caused by leprosy lead to increasing secondary impairments long after the disease process has been arrested. Interventions that prevent, reverse or limit the impairments due to leprosy are therefore of the greatest priority. This review addresses the question of priorities for both research and service provision given limited resources.

Methods : The current research efforts are reviewed in terms of their likelihood of delivering significant health gain in the short and long term. Interventions to prevent nerve damage are reviewed in terms of the effectiveness, feasibility in primary care settings and cost.

Results : The majority of nerve damage occurs prior to diagnosis and efforts to improve early diagnosis and treatment have great potential for preventing nerve damage. Prophylaxis using steroids may be cost effective when targeted to groups at highest risk. Simple means of identifying those at high risk are important. Treatment of acute episodes of nerve damage and reactions is less than satisfactory since not all cases present for treatment and treatment is not always successful. Self-care has been demonstrated to be an effective means of preventing secondary tissue damage but now needs to be developed for implementation within basic health care. Although the benefit may be limited, it may, along with re-constructive surgery, be one of the few approaches open for those who have completed MDT.

Conclusions : Early case detection and MDT treatment is the most cost effective means of preventing nerve damage and the size of the potential benefit is large - this is a priority for research and interventions. Treatment of acute reactions remains a challenge while steroid prophylaxis, if effective, may offer considerable benefit when targeted to those most at risk. Self care has been shown to be effective and may, along with re-constructive surgery, be one of the few approaches available for those who have completed MDT.

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Ne 390

CAN RISK FACTORS IN LEPROSY BE IDENTIFIED BEFORE THEY BECOME OPERATIVE?

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Risk factors in leprosy are defined as factors responsible for reversible and irreversible nerve function impairment (NFI) leading to disability and deformity. 87 patients were inducted into a double blind clinical trial of prednisolone therapy in Type 1 reactions. It was observed that some patients developed recurrence of reactions and hence required an additional course of steroids. Inflation observed in skin lesions may indicate simultaneous sub-clinical inflammation in the nerves endangering their functional integrity. In addition, episodes of nerve inflammation can occur without skin manifestations. Identifying these phenomena through other parameters can help to selectively give higher dose or longer duration of steroids in this special group of patients. In this study, patients needing additional steroids were identified and compared with those not requiring additional steroids using a pre-determined clinical scoring method, scores being allotted to each known risk factor. Some of the known risk factors suggested for the development of Type 1 reaction and /or NFI include face patch, extent of disease, duration of disease, borderline type of disease, nerve involvement, history of reaction, duration of treatment and bacteriological positivity. Despite all the available information, there is as yet no simple test available to predict risk factor responsible for NFI. If risk factors are identified and recognised at the start of chemotherapy, adding a suitable dose of steroids along with MDT would prevent nerve damage/protect the nerve. We describe here a simple and reliable clinical scoring method to estimate the risk of development of NFI before starting chemotherapy. In this paper we recommend the use of a clinical scoring model to predict early NFI which can be used to assign patients into high risk group and plan active intervention and follow up.

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Im 104

MALARIA, LEPROSY AND MULTI-DRUG THERAPY CONTAINING DAILY 100 MG DAPSONE

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Sulphonamides and sulphones are known to have antimalarial activity. To test this, we carried out serological as well as parasitaemia assessments on 322 lepromatous leprosy patients receiving 100 mg. dapsone daily and 669 healthy subjects, living in three different districts of India, endemic for leprosy as well as malaria. Blood smears fiom 124 lepromatous patients with fever and 379 afebrile control subjects showed that the prevalence of malaria parasitaemia in both the groups was similar and varied from 25% to 30%.

However, the lepromatous patients had only P. vivax malaria; on the other hand normal controls had both P. vivax and P.falciparum infections. The ratio of the two plasmodia species in them was 9:1.

Of the 201 afebrile healthy controls, none showed parasitaemia, but 2 of the 40 afebrile lepromatous patients showed P. vivax in their blood smears. This perhaps indicated a balance between parasite survival and host immunity. Humoral antibody response was studied by IFA test in 158 afebrile lepromatous patients and 89 healthy subjects which showed humoral immune response in 19% leprosy patients and 3% control subjects. This difference might be explained by the overactive Th-2 lymphocytes in lepromatous leprosy patients with consequent anti-malaria antibody production following repeated infections.

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Im 122

SOLUBLE ICAM I AND sVCAM I IN SERA OF LEPROSY PATIENTS WITH REACTIONS

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Expression of costimulatory molecules on antigen presenting cells is one of the essential signals for activation of T lymphocytes and ultimately for an effective immune response. Soluble form of these costimulatory or adhesion molecules are released upon cytokine stimulation and can be detected in the circulation. Soluble ICAM I is reported during inflammatory conditions such as in bronchial asthma and elevated in rheumatoid arthritis(RA) compared to healthy controls. Though a few reports are there regarding sICAM I in leprosy, not much is known about soluble adhesion molecules in leprosy reactions. Reactions are clinical episodes associated with tissue damage (reversal reactions)and with systemic involvement (erythema nodosum leprosum). Since reactions further complicate the disease process and about 30 % of leprosy patients suffer from these complications we have attempted to understand the immunological phenomenon prevailing during reactions. Antibody response (total IgG and IgG subclasses) and proliferative response to different antigens of M Ieprae (MLSA, PGL, LAM, ML 65kDa, ML 28kDa and ML 18kDa) were analysed earlier.ln this study we have estimated the soluble form of ICAM I in sera of 25 leprosy patients with ENL reactions,14 patients with reversal reactions,14 patients without reactions (4 TT/BT,10 BL/LL) and 6 healthy individuals.Soluble VCAM I molecule was estimated in sera of 35 ENL, 7 RR, 9 patients without reactions (7 BL/LL,2 TT/BT) and 6 healthy individuals. The quantitative sandwich ELISA was employed for estimation of these molecules.Soluble ICAM I is found to be significantly elevated in reversal reactional patients compared to healthy individuals. Soluble VCAM I is significantly in higher level in ENL patients in comparison to reversal reactional patients.

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Im 137

DETECTION OF DISEASE RELATED IMMUNE COMPLEXES IN THE SERUM OF LEPROSY PATIENTS

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Mycobacterium leprae antigen and antibody complexes could be detected in the serum of leprosy patients using monoclonal antibody ML-34 and anti-BCG antibodies by enzyme linked immunosorbent assay. This simplified system detects disease related complexes without the need for isolating and purifying them from the serum. Immune complexes captured using monoclonal antibody ML34 revealed positivity in 7 out of 8 neuritic, 2 out of 9 tuberculoid (TT), 5 out of 10 borderline tuberculoid (BT), 4 out of 10 borderline lepromatous(BL), and 4 out of 10 lepromatous (LL) leprosy cases. One of the controls also showed immune complex of an IgM type. Anti-BCG based IgG immune complex assay revealed positivity in 6 out of 8 neuritic, 1 out of 9 TT, 4 out of 10 BT, 2 out of 10 BL, 4 out of 10 LL leprosy cases and 2 out of 24 healthy controls. IgM type of Mycobacterial immune complexes were almost negligible. Capture of complexes using monoclonal antibody ML34 which is against lipoarabinomannan of M.leprae seems to work better than polyclonal anti-BCG antibody. The above test would be useful in Immunodiagnosis of neuritic leprosy and also in cases where antibody response is not detectable because of the formation of immune complexes.

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Im 196

LOCAL IMMUNITY IN LEPROSY - A COMPLEX PROFILE

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Several specific tests were developed for the diagnosis of leprosy. Out of all these tests PGL-I antibody and 35-kD antibody based assays were found to be most