

## MI53

## PREPARATION AND APPLICATION STUDY ON a2 ANTIGEN OF MYCOBACTERIUM LEPRAE

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The a antigen gene is one of the dominant mycobacterial proteins those are secreted from the mycobacteria. In the course of our study, we have constructed the genomic library of *M. leprae* Thai 53 strain, cloned a new a antigen gene with a plaque hybridization method using DNA fragment of *M. leprae* a1 antigen DNA as a probe and termed it as a2 antigen gene. The a2 antigen gene was characterized by sequencing. By comparing the deduced amino acid sequence of a antigen with 85 complex antigen of other mycobacteria, the homology of 74.3%-85% was found.

The over expression system of *M. leprae* a2 antigen gene in *Escherichia coli* was constructed. Recombinant a2 antigen was purified by amylose column chromatograph at the purity of more than 95%. More than 10mg of recombinant a2 antigen has been obtained from 200ml of liquid culture. Then we studied the serological activity of recombinant *M. leprae* a2 antigen using enzyme-linked immunosorbent assay (a2-ELISA) in sera from 100 leprosy cases and 50 normal persons, and determined the optimum conditions for a2-ELISA. The results indicated: the antibody titer to a2 antigen in leprosy patients was IgG>IgM>IgA and there was same serological activity between a2-ELISA and ND-ELISA. These results suggested that the a2-ELISA may be useful for the serodiagnosis in leprosy.

## MI54

## A METHOD OF STORING LEPROMAS

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Foot pad technic of *M. leprae* inoculation of mice (Shepard, 1960) permitted to study *M. leprae* survival in different environments. Through many years' experiments we succeeded in confirming a survival of *M. leprae* under the conditions when biopsies from untreated LL patients were put into 40% saline solution of glycerin (in refrigerator or at room temperature). In past this method was used for preserving viability of different organisms including *M. lepraemurium* (Marchoux, 1934; Chorine, 1934). At the moment of biopsy, then in three and subsequently in every six months *M. leprae* ( $10^7$ ) from lepromas were inoculated into 10 BALB/c mice by Shepard's technic. Inoculum and "harvests" were counted according to Shepard and McRae (1968). During the initial 12-24 months characteristics of *M. leprae* multiplication in mice foot pads (lag-phase, log-phase and plato phase) did not almost change in the most of cases. After 3-4 years of storing an amount of *M. leprae* increased more slowly. Preliminary results of these experiments were published in 1984. Maximal period during which it was succeeded to preserve *M. leprae* viability in 40% glycerin at room  $t^{\circ}$  was 12 years (longer experiments were not carried out). The results obtained could account for some unsolved questions of epidemiology and pathogenesis of leprosy. The method proposed is successfully used for transportation of infected tissues from leprosy patients without ice from any region of Russia to Leprosy Research Institute (Astrakhan) for studying. During a special study (Vishnevetsky & Juscenko, 1991) it was also proved that lepromas kept in 60-80% solution of glycerin at room temperature for 2-4 weeks remain suitable for enzyme and histochemical investigations.

## PATHOLOGY

## PA01

## HISTOPATHOLOGIC FINDINGS OF IRIDOCYCLITIS IN LEPROMATOUS LEPROSY

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Cataract is found to be a common complication in lepromatous patients belonging to the older age group. During cataract surgery an iridectomy is performed as a routine procedure. The iris specimens obtained from lepromatous patients undergoing cataract surgery are studied histopathologically using hemoloxylin eosin stain and acid fast stain. Iris atrophy with evidence of chronic inflammation was found in a majority of patients even in the absence of acid fast organisms. In one specimen active inflammation with macrophage granuloma infiltrating the iris tissue including constrictor muscles was noticed. Acid fast organisms were present in large numbers inside macrophages and in bundles of smooth muscle cells regulating the pupil. Nerve fibers were not detected. Details of these findings will be presented and their significance will be discussed.

## PA02

In severe ENL reactions we found acute necrotizing and exsudative vasculitis in deep dermis and subcutis. These vasculitis follow severe acute inflammatory reactions in the

neighboring tissues. We describe in 10 lepromatous leprosy patients, many years after discharge, episodes of one or few erythematous nodules in the limbs. Microscopical examination revealed a exsudative and necrotizing segmentary vasculitis like Polyarteritis nodosa.

There are discrete inflammatory reaction in dermis and sub-cutis and the clinical data, residual lepromatous infiltrate and Bacilli in vessel's wall suggests a late ENL reaction

## PA03

There's not involvement of Central nervous system, peripheral nervous systems, skin, muscles and lungs in secondary amyloidosis in leprosy. In these sites the blood capillaries shows tight junctions between the endothelial cells and the transport is made by pinocytosis. Otherwise in sites where blood capillaries are fenestrate (kidneys, bowel, endocrine glands) or sinusoids (liver, spleen, bone marrow) the Amyloid deposition is ever present and frequently massive. The amyloidogenic SAA protein is produced in the liver, their molecular weight is 250,000 and is found in the blood as a apolipoproteic complex. This suggests that there are a relationship between the size of the precursor protein molecule and capillary pattern in the distribution of amyloid deposition in leprosy

## PA04

Acute cutaneous and neural lesions are the know signs of type I reactions. There'n't reports about visceral lesions during these episodes. We detected visceral tuberculoid granulomatous lesions in six patients that died during type I reactions. In these cases we considered these reactions as reversal reactions because all the patients developed previously cutaneous lesions and stigmata characteristic of lepromatous patients. We didn't found uniformity in the anatomic and clinic data of these patients. So, one patient presented both , ENL and type I reaction; na elderly patient presented a tuberculous lymphadenitis that was follow by a generalized granulomatous lesions, with prominent granulomatous vasculitis in skin, nerves, synovial membranes and visceral sites ( liver, spleen, testis, larinx); other patient had a generalized tuberculoid granulomatous have followed a characteristic episode of sulphona syndrome. *M. leprae* was found in the tuberculoid granulomatous lesions In all the patients , including in two patients the tuberculoid granuloma developed in kidneys , heart and salivary glands

## PA05

## HISTOLOGICAL CHANGES IN THE NASAL MUCOSA OF PATIENTS WITH PRIMARY NEURITIC LEPROSY

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The nasal mucosa of 39 cases of primary neuritic leprosy registered at the Schieffelin Leprosy Research & Training Centre, Karigiri were studied histologically to determine nasal mucosal involvement in PNL and its relevance to the pathogenesis of the disease. Specific changes of leprosy were seen in 20(51.3%) biopsies ranging from macrophage granuloma with acid fast bacilli, epithelioid granulomas and nerve inflammation. The remaining biopsies revealed chronic inflammatory changes of the mucosa or mild non-specific changes in small mucosal nerves.

These findings show that there are widespread effects of the disease even in PNL patients where the disease is believed to be confined to the peripheral nerves. The findings also show that early leprosy involvement can be found in the nasal mucosa even before lesions become apparent in the skin, nerve or other parts of the body. The nasal mucosa could be the site for the primary lesion in leprosy. Clinical and histological examination of the nasal mucosa may be useful and important in the early diagnosis of leprosy and especially in contacts.

## PA06

## SIGNIFICANCE OF PLASMA CELLS IN HISTOLOGICAL CLASSIFICATION OF LEPROSY

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Leprosy with varied clinical manifestations, necessitates the establishment of a reliable classification for appropriate treatment and assessment of prognosis. The clinical presentation and the histology of skin lesions reflects the underlying immunological response against *M. leprae*. This study aims at evaluating the significance of plasma cells in classifying leprosy histologically.

Biopsies of skin lesions from 70 untreated leprosy patients consisting of: 15 patients with indeterminate leprosy, 15 with tuberculoid leprosy, 15 with borderline tuberculoid leprosy, 10 with borderline lepromatous leprosy and 15 with lepromatous leprosy were studied. The plasma cells in them were enumerated in 20 HPF in each biopsy. The results of the study showed that plasma cell density was significantly high in multibacillary groups and declined towards the tuberculoid and indeterminate end of the spectrum.

The high plasma cell count in histological sections of the skin of multibacillary patients may be a reflection of the underlying active humoral immune mechanism of the body against *M. leprae*. The increase numbers of plasma cells in association with other cellular infiltrates of lepromatous leprosy and high bacillary load may be an useful indicator in differentiating the various types of leprosy and arriving at a proper classification of the disease subtype.

## PA07

LOCALIZATION OF *M. leprae* TO EPINEURAL BLOOD VESSELS IN EXPERIMENTAL LEPROSY NEURITIS.

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**Background.** Infection of peripheral nerve by *M. leprae* is the histopathologic hallmark of leprosy and is a major factor in the deformity and social opprobrium of this disease, but the mechanisms by which the bacillus localizes to peripheral nerve are not known. We have shown that nerve involvement in experimentally infected armadillos is very similar to that in man. **Objective.** Since the early neural accumulation of *M. leprae* in the armadillo is to the epineurium, we have used high resolution light microscopy and electron microscopy to determine the cellular location of epineural bacilli.

**Methods.** From 8 infected armadillos, 44 nerves were divided into 1 cm. blocks and processed in Spurr resin. Thick (1.5  $\mu$ ) sections were screened for acid-fast bacilli, and thin sections of positive specimens were examined ultrastructurally.

**Results.** Over 600 blocks were screened; 36% contained acid-fast bacilli, and 86% of these contained epineural organisms. Most epineural *M. leprae* were found in the endothelium of blood vessels or in histiocytes in the adventitia. Some were found in epineural lymphatics. Within nerves, *M. leprae* were found in the vascular endothelium as well as in Schwann cells and histiocytes.

**Conclusions.** These results indicate that *M. leprae* localize to epineural blood vessels during the development of neuritis in leprosy. Specific interaction of neural vascular endothelium with *M. leprae* alone, or with infected monocytes, may therefore be a critical step in the pathogenesis of nerve injury in leprosy.

## PA08

INFECTION OF DISTAL PERIPHERAL NERVES BY *M. leprae* IN ARMADILLOS: AN EXPERIMENTAL MODEL OF NERVE INVOLVEMENT IN LEPROSY.

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**Background.** No model has been developed to study the mechanisms by which *M. leprae* localizes selectively to peripheral nerve.

**Objective:** To determine the pattern and distribution of nerve localization of *M. leprae* in the armadillo model.

**Design.** Dissection of major peripheral nerves, from the spinal root to ramifications in the feet, was done in 6 exper-mentally infected armadillos. Nerves were divided into 1 cm blocks, and in Fite-stained sections were evaluated.

**Results.** Peripheral nerves were involved by *M. leprae* in 3 animals with disseminated infection. Infection increased in intensity as the

nerve was followed distally. No *M. leprae* were found in 3 resistant animals. The extent of infection was greater epineurally than intraneurally, at all levels. *M. leprae* infection of nerves was associated with focal, interstitial, mononuclear cell infiltrates.

**Conclusions.** These results suggest that: 1) Armadillos offer a model for the study of neural involvement in leprosy, since the pattern of neural involvement is comparable in man and susceptible armadillos; 2) Early localization of *M. leprae* may be epineural; 3) Schwann cell involvement may be a late event; 4) Mechanisms involving the endothelium of epi- and peri-neural tissues may be important in the selective epineural localization of *M. leprae*.

## PA09

### ROLE OF PCR IN THE DIAGNOSIS OF EARLY LEPROSY

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Early detection of leprosy has become a major focus for improving control strategies for this disease. We evaluated a polymerase chain reaction (PCR) test for detecting *Mycobacterium leprae* in skin as an adjunct to standard clinical and histopathological evaluation of early lesions for diagnostic purposes. Skin biopsies of lesions from 39 patients suspected of early leprosy were taken and bisected. One piece was used for histologic examination and the other for PCR studies to detect *M. leprae*. The diagnosis of leprosy was made clinically in 14 patients and by histopathologic study in 26 patients. Acid-fast bacilli were seen in the histopathologic sections of only two patients and *M. leprae* were detected using PCR in 11 patients. In one patient the diagnosis of leprosy was made only because of the detection of *M. leprae* by PCR. Since even in endemic countries the profile of leprosy is changing, detection of leprosy in its early stages has become increasingly important. Since the finding of *M. leprae* is crucial in the confirmatory diagnosis of early leprosy, it is suggested that PCR studies to detect *M. leprae* be done wherever possible in conjunction with histopathologic examination. It is also recommended that the feasibility and the cost-effectiveness of both of these methods to find *M. leprae* be evaluated in other settings.

## PA10

### HISTOPATHOLOGIC CHANGES OF SKIN LESIONS IN RELAPSED BORDERLINE TUBERCULOID PATIENTS

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Ten patients belonging to the paucibacillary group who had relapsed after receiving 6 months of multidrug therapy are chosen for the study. Clinically patients with renewed activity, extension of the original lesions and appearance of new lesions are considered to have a relapse of the disease. Skin biopsies from these active lesions are studied histopathologically using hematoxylin eosin stain, acid fast stain and van Gieson stain. The appearance and the content of the granuloma and the appearance of skin adnexa especially the blood vessels and dermal nerves in relapsed skin lesions will be described. Distinguishing features of relapsed lesions will be pointed out. The role of histopathologic study of skin lesions in identifying relapse will be discussed.

## PA11

### HISTOLOGICAL EVOLUTION OF REACTIVATION OF HANSEN'S DISEASE DURING OR AFTER TREATMENT

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Reactivation in Hansen's disease has been reported since the dapsone era but after the introduction of MDT, with a prompt and effective cure, reactivation become an important research topic for control programs. Aiming to analyze the histological pattern of reactivation, the histological evolution of Hansen's Disease was studied in 179 biopsies of 66 individuals presenting reactivation during or after treatment. Such biopsies were examined in the Instituto Lauro de Souza Lima between 1987 and 1994. Relapse occurred in 9 individuals not treated with MDT and was solely detected by the bacillary index. The intensity of the reactivation episode seems to be related to the cell immune resistance of the individual and depends on the amount of accumulated antigen. The analysis of the biopsies in this study confirms the difficulty in to differentiate activity, reaction and relapse and the correct allocation of these cases in the spectrum of the disease. It was not possible to distinguish between relapse and acute reactivation (type I reaction) in histological and clinical terms. This fact lead to the conclusion that reactivations are bacillary proliferation due to drug resistance or multiplication of persisting *M. leprae*.

## PA12

### LABORATORY METHODS IN DIAGNOSIS OF LEPROSY RELAPSE

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The diagnosis of relapse in leprosy can be difficult, if relying solely upon clinical examinations. In order to detect relapse early and to differentiate relapse from late reversal reactions, laboratory methods such as PCR, Dot ELISA-ECL were applied to detect *M. leprae* and PGL-1 antigen in nasal secretions and slit-skin smears, as well as histopathological methods to detect PGL-1 antigen and S-100 protein in skin biopsies. The results on 33 relapses from patients cured with dapsone plus rifampin therapy were found as follows:

1. PCR is more sensitive than acid-fast staining ( PCR 27/29, 93.1%; AF 29/33, 87.9%), but PCR method basing upon DNA amplification, cannot differentiate live from dead bacilli.
2. PGL-1 antigen can be detected in nasal and skin smears with Dot-ELISA-ECL, and that PGL antigen appeared in 3 relapses from nasal secretion and slit-skin smear before overt signs of relapse developed.
3. Immuno-histochemical methods with PGL-1 monoclonal antibody (DZ-1) and S-100 protein antibody can not only reveal clearly cutaneous nerve but also demonstrate the location of PGL-1 antigen in relation to cutaneous nerve. In 89.5% of relapses (MB 16, PB 2, unclassified 1) , PGL-1 were demonstrated in skin smear by Dot-ELISA-ECL and/or immunochemical methods.

The combination of the above tests with routine clinical and AF examinations may be of advantage in the early diagnosis of relapse, as disagreement between slit-skin-smear and histopathology can occur in the early stage of relapse. Four suspected relapses supplemented with the above testes and negative findings were thus diagnosed as late reversal reactions. These preliminary results indicate that further testing on more samples are necessary.

## PA13

### RELATIONSHIP BETWEEN PATHOLOGICAL AND CLINICAL MANIFESTATIONS IN MB PATIENTS DURING MDT

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Pathological, bacteriological and clinical changes and their relationships were prospectively studied qualitatively and quantitatively in 104 MB leprosy patients after MDT. They were grouped according to homologous matched-pairs and different clinical results. Results showed that: a decrease of GF, BIG, LHI and BI negatively correlated with the duration of MDT treatment, area of pathological infiltration obviously shrunk and number of Virchow cell infiltration reduced, clinical effect rate of MDT was 100% after 24 months' treatment, of whom 12.5% reached the criteria of clinical cure. The authors recognized that pathological, bacteriological and clinical changes were closely identified each other after MDT, regularity of bacteriological changes and effect of MDT were better reflected by GF and BIG, GF and LHI could reflect the effect of MDT only in a short period, MDT had good anti-bacteria and anti-inflammation functions, and can kill the bacteria in the beginning of this treatment, different clinical results were related to the different levels of pathological damages and the number of bacteria, the lower all the indexes were, more effective the treatment could be, measurement of infiltration area was helpful in evaluating the clinical effects and the number of Virchow cell was likely not related with the evaluation mentioned, localized granuloma and the degenerated specific infiltration cells will existed continuously after MDT, but was not likely important for the evaluation of clinical effects.

## PA14

CLINICO-PATHOLOGICAL CORRELATIONS OF MACULAR LESIONS IN LEPROSY, BEFORE AND AFTER MULTI-DRUG THERAPY.

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The clinical features and histopathology were studied in detail in 27 patients (24 new and 3 old) of bacteriologically negative macular forms of leprosy (macular tuberculoid or maculo-anaesthetic) with a view to clinico-pathological correlation before starting treatment here. In addition, repeat biopsies (one or more) were performed from the same lesions in 16 new patients and 2 old patients, who were taking regular multi-drug therapy here, usually after a variable period of daily rifampicin. In general, there was no absolute correlation of the type/severity of dermal infiltrate (round cell or granuloma) and intensity of cutaneous nerve infiltration between patients with and without deformities. However, out of 11 patients with deformities (8 new and 3 old) at least 7 patients had significant granuloma formation and nerve infiltration in their biopsies, in contrast to the group without deformities, in whom only a smaller proportion had such changes. A pronounced linear perivascular infiltrate in the papillary dermis was observed in several patients. In many patients the hypopigmented macules improved after treatment and the repeat biopsies usually showed decreasing dermal infiltrates.

## PA15

EXPRESION DE LAS CELULAS DEL SISTEMA MONOCITO-MACROFAGO EN EL ESPECTRO INMUNOPATOLOGICO DE LA LEPRO: ESTUDIO INMUNOHISTOQUIMICO.

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Se trabaja con un material de 115 biopsias, de pacientes diagnosticados clínicamente de lepra. Todos ellos tienen valoración clínica, bacteriológica y alguno de ellos inmunológica (R. Mitsuda).

En la parte histológica se presenta valoración convencional de las lesiones desde el punto de vista histológico con las técnicas de HE Y Fite (búsqueda de bacilos) realizando el citado estudio sin conocer en un primer momento los datos clínicos. El trabajo evaluará todos los casos motivos del presente estudio con la consiguiente correlación clínico-patológica al contrastar los hallazgos histológicos y los datos clínicos. A posteriori se realizará una selección de los casos más significativos procurando recoger ejemplos de la totalidad del espectro de la lepra. El número pensado para tal selección oscila alrededor de 30 casos. De estos se realizará estudio inmunohistoquímico intentando valorar la expresión del macrófago en la lepra, con especial hincapié en la vertiente tuberculoides del espectro así como en los casos etiquetados como dimorfos, mediante anticuerpos mono y policlonales.

Relación de Anticuerpos primarios a emplear: Proteína S-100, CD1a, CD-68, HLA-DR (M53), Factor XIIIa.

## PA16

POLARIZED MICROSCOPIC OBSERVATION OF AMYLOIDOSIS

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In the 1975 issue of the International Journal of Leprosy (Volume 43, Number 2), we reported "Amyloidosis in Leprosy". Recently, in Oku-komyo-en National Sanatorium, we could not perform autopsys for all cases. So it is not clear as before how often amyloidosis occur. But it does not mean that amyloidosis has ever faded away. We had a prominent case of amyloidosis recently, and examined the tissue not only using HE stain and amyloid stain but also using the polarized microscope of the non-stain materials. And some eminent cases of the past are examined again in same manner. As a result, without using amyloid stain, we found the existence of the amyloid degeneration by non stain materials. Over more as the degenerated lesion of the connective fibers connected to the amyloid deposition also shows polarization, we got the impression that is quite differ from amyloid stain observation.

It has been said that the secondary amyloidosis is related to AA amyloid. We think that amyloidosis spreads by the pathologic change mainly of the small blood vessels. In other words, the existence of the wound infection of the leprosy and other cases of so called secondary amyloidosis has the important correlation with the emergence of amyloidosis.

## PA17

THE POLARIZED SUBSTANCES SEEN IN THE TISSUE OF LEPROSY RENDERING THE CHARACTER OF APOPTOSIS.

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We would like to report the result of the pathological findings of the leprosy tissue, which seem to imply the correlation to apoptosis.

We have been observing in the tissue of a leprosy patient the existence of microscopic fine particles that have the character of polarization. Having obtained fifteen skin biopsies of the leprosy patients for diagnostic purpose, whose treatment was just about to start, or just after the onset of the treatment. Our observation was done using a polarized microscope and stain such as TUNEL, Fas, Bax, and Bcl-2. We also observed above tissue by using electron microscope. These biopsies were all taken from the margin of the skin lesion conjugating with the healthy skin.

As we try to find what this microscopic fine particles are that has the polarizing character, we observed the substance which has the positive reaction to the TUNEL, Fas, and Bax. Also in the investigation using the electron microscope, we found the electron dense materials which looked like apoptotic body and also a concentrated nucleus.

These results were equally seen in all the biopsies regardless of patient's age, sex, classification, and the lesion, thus enhancing the suspect of apoptosis which affects as the common mechanism in the pathology of leprosy.

## PA18

HISTOPATHOLOGICAL AND TRANSMISSIONAL ELECTRON MICROSCOPICAL OBSERVATION ON THE LEPROTIC LESIONS IN SCROTUM WITH DEEP INFILTRATION

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In this article, a case of borderline lepromatous leprosy with histoid leproma was reported, who had also deeply infiltrated lesions in scrotum. After MDT therapy for one and half a year, most lesions disappeared, but that in scrotum with deep infiltration very slowly.

Histopathological observation revealed the scattered, degenerative foamy cells and the residual leprosy bacilli in smooth muscle cells in addition to the foamy cell infiltrates in subcutis of the lesions.

On transmission electron microscopy, vacuoles with various sizes, grouped or scattered leprosy bacilli of granular and solid type were seen. The latter had electronic density with peripheral transparent halo, indicating that they still had vital activity.

The authors emphasize that the treatment of this kind of leprosy patients had to be strengthened and it is important to pay further attention to the residual bacilli in leprosy control.

## PSYCHO-SOCIAL

### PS01

#### EPIDEMIOLOGICAL AND SOCIO-CULTURAL IMPACT OF THE SOCIAL MARKETING PROGRAMME FOR LEPROSY IN SRI LANKA

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In 1990 a social marketing programme for leprosy was launched in Sri Lanka to detect and treat hidden cases. Social marketing aims to influence the voluntary behaviour of target audiences (e.g. encourage persons affected by leprosy to seek treatment) in order to improve their personal welfare (e.g. cure of leprosy without deformities) and that of their society (e.g. reduce the pool of infection). This involved creating awareness of the signs of leprosy, dispelling prejudices, improving access to treatment and strengthening the ability of the health services to deal with the new case load.

A study was carried out among 1,800 non-affected persons including school teachers and midwives in 1997, three years after discontinuation of the social advertising campaign in order to assess its residual impact on knowledge, socio-cultural attitudes and practice. Using the Explanatory Model Interview Catalogue framework, respondents were shown photographs of representative signs of leprosy and given information about symptoms to provide a focus for questions about possible diagnosis, cause, prognosis with treatment, social attitudes and sources of information. Narrative data was collected for a third of the sample.

The findings reveal the long term impact of an intensive campaign and the sustainability of changes in societal attitudes which have been extremely positive, particularly among midwives and school teachers. Minority ethnic groups, such as Muslims, however appear to have been relatively untouched by the campaign. This paper will focus on areas with significant improvements in knowledge, attitude and behaviour (e.g. recognition and medical recourse, prognosis) as well as findings indicating effects that fell short of expectations.

Leprosy has been eliminated from Sri Lanka and this paper will also discuss the epidemiological impact of the campaign.

### PS02

#### LINGERING PROBLEMS OF POOR COMMUNITY PERCEPTION, DISCRIMINATION AND SOCIAL STIGMA AGAINST LEPROSY-A STUDY OF YOUTHS IN SOUTH-EASTERN NIGERIA.

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It has been suggested that increasing demonstration of the curability of leprosy would lead to a positive change in social attitude to leprosy patients and a gradual reduction in the age-long social stigma against the disease. To assess the level of community perception and social stigmatization of leprosy against the background of the successful implementation of the WHO MDT Programme in Nigeria, using a semi-structured, validated questionnaire, we studied 657 youth (10-25 yrs; mean = 17.1 ± 6.6) who were students of five secondary schools in South-Eastern Nigeria. There were 344 (52.4%) male and 313 (47.6%) female. Most ascribed the cause of leprosy to worms (15.0%), virus (28.6%), evil spirits (15.8%) and a curse (6.0%), while a few (26.3%) suggested a bacterial agent. Frequency of responses on the modes of transmission were 33.8%, 18.1%, 15.8%, 13.5% and 9.8% for sharing food, breathing, act of witches, sharing a seat, and hand-shake respectively. The hospital (37.6%) Church (36.8%) and

traditional healers (6.8%) were suggested as preferred treatment places; while 18.1% said there was no cure. Most would not share classroom seat (85.6%), bus seat (75.0%) or toilet seat (82.0%) with a person affected by leprosy; 82.0% would not even shake hands with them. The reasons for discrimination were fear of being affected by (67.6%), social stigma (40.0%), traditional belief (32.2%) and religious belief (18.3%). There is a great need for health education in this community to improve the epidemiologic knowledge of the disease, its curability and to reduce the level of social stigma against it.

### PS03

#### COMMUNITY ACTIONS TOWARDS PATIENTS WITH LEPROSY IN EASTERN NEPAL

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Many leprosy patients tell about the fear they have for actions taken by the community towards them. Different studies show that due to this patients try to hide their disease and subsequently stop taking their treatment. To see if this fear for community actions is based on real events, 300 community members were interviewed about actions taken by the community towards leprosy patient during the past 20 years. This resulted in 192 patient-stories in total. The majority (94.8%) of the patients described had visible signs like patches (10%) or wounds and/or deformities (84.8%). Of these patients 2.6% experienced only eating restrictions, 43.8% had to sit separately, were not allowed to enter people's homes or to touch other people, 29.2% was not allowed to enter a teashop, not allowed to use a public well, not allowed in social functions, problems to get medical care or had problems in their work and 12.5% of the patients were sent out of their village. These negative community actions have not changed during the past 20 years. Even last year 13% of the patients was exiled from the village. Also it was found that once the community started taking actions towards a patient, this action continues forever. What however has changed is that nowadays 34.3% of the patients receive positive support compared to only 16% of the patients 20 years ago. Main reason for community actions are: fear of infection by germs and transmission of the curse of God.

It can be concluded that the social stigma on leprosy is still present and that the statement "Once seen as a leper, always a leper" is still true. As actions by the community are taken towards patients with visible signs, it can be concluded that the prevention of wounds and deformities is of high priority in patient education. Patients should be counselled on how to deal with community actions.

A community programme should be developed in which cause and treatment of leprosy is explained. As knowledge alone is not enough to change the negative behavior towards leprosy patients, a more participatory approach should be developed.

### PS04

#### THE SOCIOECONOMIC ASPECTS OF THE POPULATION AFFECTED BY LEPROSY IN SOROCABA, BRAZIL

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The population studied comprised 1288 patients of one Health Unit, including cured ones. Their profile was: mostly males (50%) economically