*Lepr Rev* (2008) **79,** 4–9

# Highlights from the 17th International Leprosy Congress

STEPHEN L. WALKER
*Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, Keppel St, London WC1E 7HT, UK*

Accepted for publication 26 February 2008

*Summary* The 17th International Leprosy Congress (ILC), organised by the International Leprosy Association, took place in Hyderabad, India from 30th January to 4th February 2008. The venue for the congress was the Hyderabad International Convention Centre.

The presentations that were of particular interest are mentioned here.

## Introduction

The Hyderabad International Convention Centre (HICC) opened 2 years ago and provided excellent facilities for more than 1500 ILC delegates, representing more than 50 countries, who attended the 17th ILC.

Delegates received a substantial conference pack including a multilingual CD ROM of ILEP Technical Publications. A free copy of the December 2007 issue of Leprosy Review was also available from the LEPRA stand. Appropriately the cover photograph of this issue shows children at a LEPRA jeep in Hyderabad.

The catering at the congress was superb and the HICC has many comfortable breakout zones where acquaintances were made and renewed, discussions provoked by presentations were continued or where delegates were able simply to relax. The wonderful environment of the conference venue was more than matched by the enthusiasm of the delegates and more than one person commented on the vibrant nature of the congress. The delegates and congress organisers are to be congratulated for such a wonderful atmosphere. There was a very enjoyable Gala Dinner at the Rocks Park with entertainment provided by a dance troupe (and also by some of the delegates).

The interests and disciplines represented at the congress were remarkably broad. The common goal of reducing the burden of the disease is sought by a diverse constituency including leprosy-affected individuals involved in political activism, non-governmental organisations, the pharmaceutical multi-national Novartis, the World Health Organization and national governments. The support of the Indian government was a major factor in making the congress such a success.

Correspondence to: Stephen L. Walker, Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, Keppel St, London WC1E 7HT, UK (email: drstevewalker@hotmail.com)

0305-7518/08/064053+06 $1.00  

Research was presented from a wide range of disciplines – from molecular biology to social anthropology – reflecting the challenges leprosy still poses.

Papers were presented during more than 150 hours of pre-congress workshops, plenary and free paper sessions. Training sessions on topics as diverse as diagnostics and legal issues were also available to delegates.

The congress was eagerly awaited coming, as it did, in the wake of the Indian government announcing in January 2006 that India had reached the elimination target of less than one case per 10,000 population.

The integration of leprosy services into general health care systems is a challenge in maintaining expertise and interest in the disease. The congress inauguration was attended by the Governor of Andhra Pradesh, N.D. Tiwari, who stressed the need for all those involved in combating leprosy to remain vigilant and avoid complacency.

A team of Leprosy Review/London School of Hygiene & Tropical Medicine volunteers attended as many sessions as possible and sought the opinions of other delegates in order to report the presentations of particular interest. Many of the presentations from the plenary sessions are available to view or download from Associazione Italiana Amici di Raoul Follereau (AIFO) website: http://www.aifo.it/english/resources/online/books/leprosy/ila-india08/index.htm

## *M. LEPRAE* GENOME

Stewart Cole gave an invited lecture on the developments in the understanding of the *M. leprae* genome.[1] The abundance of pseudogenes compared to functional counterparts within the genome of *M. tuberculosis* helps explain the intracellular nature of *M. leprae* and its inability to grow in axenic media. The sequence of a Brazilian isolate of *M. leprae* is almost identical to that of the Indian strain originally sequenced. They differed by 118 single nucleotide polymorphisms. Other studies suggest that leprosy is due to single clone. The phylogeographical hypothesis is that the organism originated in eastern Africa and arrived in other regions following human migrations.

Diana Williams presented data showing that a large number of pseudogenes are transcribed but remain phenotypically silent.[2]

## GENETIC SUSCEPTIBILITY

The large study of the isolated and genetically homogeneous Prato community in the state of Parà, Brazil is underway and was described by Marcelo Mira. Combining the detailed pedigree information obtained, with data from genetic studies may yield further insights into host susceptibility to *M. leprae*.[3]

## IMMUNOLOGY, MOLECULAR BIOLOGY AND DIAGNOSTICS

Sergio Antunes presented work showing that *in vitro* stimulation of Schwann cells with *M. leprae* induces matrix metalloproteinase (MMP)-9. The protein staining of MMP-2 and 9 and the MMP inhibitor TIMP-1 varies depending on the presence of inflammation and fibrosis.[4]

The plasma levels of the chemokine IP-10 (CXCL10) were increased in Brazilian patients experiencing type 1 reactions compared to matched controls.[5] The use of this as a potential marker of type 1 reaction is being investigated.

Luna Azulay-Abulafia described seven cases of Lucio's phenomenon all of whom had anti-cardiolipin antibodies and responded to treatment with multi-drug therapy (MDT) alone.[6] She discussed the similarities between Lucio's phenomenon and the anti-phospholipid syndrome.

## ANIMAL MODELS

The renewed interest in the nine banded-armadillo (*Dasypus novicemtus*) as an animal model following the sequencing of the species' genome was discussed by Richard Truman.[7] The comparison of the human and armadillo genomes is also underway. The armadillo cytokines interferon (IFN)-γ and tumour necrosis factor-α have been cloned. The armadillo IFN-γ similar to its human counterpart did not induce the killing of intracellular mycobacteria.[8]

## LEPROSY AND HIV

A plenary session was devoted to *M. leprae* and HIV co-infection. Annemieke Geluk suggested that site specific differences in T cell responses (between lung and nerve) may help explain the different impacts of *M. tuberculosis* and *M. leprae* on HIV infected individuals.[9] The clinical experience of leprologists from Brazil, Ethiopia and India of managing leprosy in HIV infected individuals was presented. Case series of leprosy type 1 reactions presenting as immune reconstitution disease (IRD) after the initiation of anti-retroviral therapy were presented. The first report of erythema nodosum leprosum (ENL) presenting as IRD, in a woman with lepromatous leprosy from the Dominican Republic, was presented by Juan Periche Fernandez.[10]

## REACTIONS AND NERVE DAMAGE

The results of nerve function assessments of the INFIR cohort study were presented in several papers. Wim van Brakel and Peter Nicholls demonstrated that changes in sophisticated nerve assessment tools particularly sensory nerve conduction amplitudes occur well before changes in monofilament and voluntary motor testing occur.[11,12] The changes are also predictive of new events of nerve function impairment.[13]

Fatema Khambati presented a study of a cohort from Mumbai and found that changes in nerve conduction studies were useful in detecting nerve function impairment.[14]

The use of thalidomide in the management of ENL was reported in several large uncontrolled case series. The number of patients included in these presentations and the different ways in which thalidomide was used support the need for well designed randomised controlled clinical trials, which will provide better evidence for the role of thalidomide in the management of ENL.

Maria Balagon presented a controlled study of the incidence of ENL in two non-randomised groups (recruited at different times) of patients receiving 12 and 24 months of multibacillary (MB) MDT.[15] The group treated for 12 months were almost twice as likely to have ENL. This group was far more likely to have more severe ENL. They attribute this to the loss of the protective effect of clofazimine.

Policy makers will need to be cognisant of such data particularly with respect to uniform MDT in which all patients (both paucibacillary and MB) will be treated with just 6 months of rifampicin, dapsone and clofazimine.

## PAIN

Patrick Stump presented a study of 50 patients who complained of pain during leprosy reactions.[16] Pain was common and often chronic. There was a negative impact on quality of life measurements.

The use of carbamazepine to treat neuropathic pain was presented by Dr Pai. Twelve of the 14 patients reported improvement in their symptoms. The discussion provoked by the paper supported the view that neuropathic pain is under reported and that the evidence on which to base effective treatment is lacking.[17]

## MULTI-DRUG THERAPY AND DRUG RESISTANCE

The assessment of uniform MDT (6 months rifampicin, dapsone and clofazimine) is underway but as yet there is no data regarding relapse rates. Patients with MB disease treated with a 6 months MDT regime did not have as much improvement in clinical and histological parameters as those treated for 12 months.[18]

The use of molecular tools for monitoring drug resistance is feasible and simplification of techniques may allow such tools to be used in field laboratory settings.[19]

## EPIDEMIOLOGY

Paul Fine highlighted the difficulties in comparing data from different periods due to the frequent changes in case definitions and the different statistics used to record the burden of disease.[20] Dr Krishnamurthi discussed the thorny issue of case detection rates and how heavily influenced this statistic is by operational factors.[21]

Data from a collaborative study of the molecular epidemiology of *M. leprae* isolates from a hyperendemic county in China were presented by Varalakshmi Vissa.[22] Cases within families share similar patterns of variable number tandem repeats in the *M. leprae* DNA isolated from them. The method used multiple-locus variable-number tandem-repeat analysis which provides a means for tracking the transmission of *M. leprae*.

Preliminary results from Venezuela of increased rates of SNP-type-4 in skin biopsies from cases in hyperendemic regions compared with those taken from individuals from non-hyperendemic ($<1$ case/10 000 population) regions may have interesting implications for pathogenesis.[23]

## PREVENTION OF DISABILITY (POD)

Hugh Cross emphasised the need for early detection and treatment of leprosy to prevent neuropathy and the risk of disability.[24] There is a need to improve on the limited evidence supporting the use of self-care and footwear interventions in POD. The framework in which POD interventions are provided needs to shift to a model in which affected persons determine the impact of their condition and are supported by health workers.

Abhijit Joshi outlined a cascade model for the training of trainers in self-care and POD, who then go on to train others. This resulted in rapid dissemination of knowledge.[25]

### COMMUNITY-BASED REHABILITATION

Mary Amylike described how community-based rehabilitation projects such as soap making cooperatives in Nigeria have helped many leprosy-affected people. The Common Vocational training Project in Pune, India has links with major corporations.[26] Neela Shah reported that small business loans for income generating schemes continue to be a success.[27]

### HUMAN RIGHTS, SOCIAL ASPECTS AND EMPOWERMENT

Yōhei Sasakawa, the WHO Goodwill Ambassador for the Elimination of Leprosy, stated that society still marginalises leprosy-affected people in denial of their human rights.[28] Doug Soutar emphasised that human rights should not be seen as relating only to health and disability.[29] Natalie Marcal from IDEA Angola described how Women's groups had facilitated empowerment of marginalised leprosy-affected women.

### HEALTH AND HEALTH PROMOTION

Faustino Francisco described how the Telehansen project run by Morhan in Brazil provides an information and advice line with a toll free number. The aim of provision of free access to such information is to promote knowledge of leprosy, aid elimination and reduce stigma.

## Conclusions

The ILC provides a unique forum for the leprosy community to share ideas and develop common goals.

Reducing the burden of leprosy requires continued high quality research to understand: the organism, its interaction with the host, the disease, treatments and how best to institute them, the prevention of disability and how stigma can be eradicated and the human rights of individuals ensured. The adequate funding of such research is essential and this is something that will require sustained advocacy from all stakeholders throughout the next 5 years.

## Acknowledgements

I am grateful to Indira Kahawita, Saba Lambert, Diana Lockwood and C. Jason McKnight for their help in reporting the highlights of the congress.

## References

[1] Cole ST. Genomics and the origin of leprosy. *Int Lepr Congr*, 2008 (abstr.); 6.
[2] Williams DL, Pittman T, Slayden R *et al.* Implications of high level pseudogene transcription in *Mycobacterium leprae*. *Int Lepr Congr*, 2008 (abstr.); 95.
[3] Mira MT. Genetic epidemiology of an isolated leprosy population from northern Brazil. *Int Lepr Congr*, 2008 (abstr.); 9.
[4] Oliveira AL, Teles RM, Sampaio EP *et al.* Metalloproteinases and pure neural leprosy nerve fibrosis. *Int Lepr Congr*, 2008 (abstr.); 89.

[5] de Araujo Stefani MM, Guerra JG, Martelli CMT *et al.* Potential placma markers of leprosy reactions. *Int Lepr Congr*, 2008 (abstr.); 92.
[6] Azulay-Abulafia L, Leide MW, Levy RA *et al.* Lucio's leprosy, Lucio's phenomenon and antiphospholipid antibody syndrome. *Int Lepr Congr*, 2008 (abstr.); 90.
[7] Truman R. The armadillo: a model exhibiting the full-spectrum of leprosy. *Int Lepr Congr*, 2008 (abstr.); 51.
[8] Truman R. Identification and characterization of IFN-γ and TNF-α from nine-banded armadillos (*Dasypus novicemtus*). *Int Lepr Congr*, 2008 (abstr.); 91.
[9] Geluk A. T cell responses to mycobacterial antigens in HIV co-infection. *Int Lepr Congr*, 2008 (abstr.); 37.
[10] Periche Fernandez J, Isa Isa R, Canario Lopez S, Velis Periche P. Erythema nodosum leprosum as immune reconstitution inflammatory syndrome in a HIV infected person. *Int Lepr Congr*, 2008 (abstr.); 71.
[11] van Brakel WH, Nicholls PG, Wilder-Smith EP *et al.* Comparing diagnostic tests of neuropathy in leprosy in the INFIR cohort study. *Int Lepr Congr*, 2008 (abstr.); 84.
[12] Nicholls PG, van Brakel WH, Smith WCS. Case studies from the INFIR cohort study. *Int Lepr Congr*, 2008 (abstr.); 83.
[13] Smith WCS. Risk factors for neuropathy measured at diagnosis and before events: results from the INFIR cohort study. *Int Lepr Congr*, 2008 (abstr.); 84.
[14] Khambati FA, Shetty VP, Kapadia G, Ghate SD. 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. *Int Lepr Congr*, 2008 (abstr.); 88.
[15] Balagon MF, Cellona RV, Saunderson PR. Type 2 (ENL) reactions observed in MB patients treated with one year and with two year WHO-MDT. *Int Lepr Congr*, 2008 (abstr.); 72.
[16] Stump PRNAG, Baccarelli R, Marciano LHSC *et al.* Characteristics of pain during leprosy reactions. *Int Lepr Congr*, 2008 (abstr.); 76.
[17] Pai VV, Singh S, Ganapati R. Treatment of neuropathic pain in leprosy with carbamazepine. *Int Lepr Congr*, 2008 (abstr.); 73.
[18] Narasimha-Rao P, Suneetha S, Pratap DVS. Clinico-histopathological comparative study of U-MDT and WHO MDT in pauci and multibacillary leprosy patients over 24 months of observation. *Int Lepr Congr*, 2008 (abstr.); 68.
[19] Matsuoka M. Molecular biological techniques for detecting drug resistance. *Int Lepr Congr*, 2008 (abstr.); 24.
[20] Fine PEM. Leprosy trends, and factors which influence them. *Int Lepr Congr*, 2008 (abstr.); 18.
[21] Krishnamurthi P. Case detection. *Int Lepr Congr*, 2008 (abstr.); 13.
[22] Phetsuksiri B, Srisungngam, Rudeeanaksin J *et al.* Molecular epidemiology of leprosy and applications in endemic situations. *Int Lepr Congr*, 2008 (abstr.); 33.
[23] Paniz-Mondolfi A, Cole ST, Monot M *et al.* Hyper-endemic foci of leprosy in Venezuela: environmental influence or a more transmissible strain of *M. leprae*. *Int Lepr Congr*, 2008 (abstr.); 109.
[24] Cross H. Prevention of disability: who is preventing what? *Int Lepr Congr*, 2008 (abstr.); 13.
[25] Joshi A. Volunteer training of trainers in SC/POD. *Int Lepr Congr*, 2008 (abstr.); 143.
[26] Patil P. Self support programmes in India. *Int Lepr Congr*, 2008 (abstr.); 36.
[27] Shah N. Community based rehabilitation. *Int Lepr Congr*, 2008 (abstr.); 36.
[28] Sasakawa Y. WHO Goodwill Ambassador for leprosy elimination and Japanese Government Goodwill Ambassador for the human rights of people affected by leprosy. *Int Lepr Congr*, 2008 (abstr.); 1.
[29] Soutar D. Leprosy and human rights. *Int Lepr Congr*, 2008 (abstr.); 29.