

**Scientific Highlights of
30th Biennial Conference of
IAL - 2017, Digha
(West Bengal)**

Summary of Scientific Proceedings of 30th IAL Biennial Conference, 2017, Digha (West Bengal)

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Chairperson, Scientific Committee

It is my pleasure to share with you the experiences and accomplishments of the scientific proceedings of the 30th IAL Biennial Conference held at Digha (West Bengal) from 2nd to 4th November, 2017. The Conference was inaugurated by the *Honorable Minister of Law, Judicial affairs and State Minister for Health of West Bengal, Smt Chandrima Bhattacharya*. She reiterated the political commitment and will of the State to eliminate and eradicate leprosy in the State as well as take effective measures to reduce the suffering and discrimination of the people affected with the disease.

The opening lecture of the CME and IAL Presidential Oration was delivered by Dr Anil Kumar, DDG Leprosy, Government of India who aptly set the ball rolling and emphasized the resolve of NLEP to further reduce the disease burden of leprosy as well as to achieve the goal of no disabilities in new cases due to leprosy much earlier than the target year of 2020. He explained various initiatives undertaken by the NLEP in this direction which included, extensive Leprosy new case detection campaigns (LCDC) in both the high endemic districts as well as the lesser endemic districts; contact surveys of identified new cases; identifying patients at greater risk of developing reactions and ensuing disabilities; and early treatment and surveillance mechanisms; undertaking molecular drug resistance drug surveillance; strengthening the DPMR activities and reducing self stigma in patients. He also announced the launching of web portal "Nikusth" for reporting of cases to the programme. He

also informed that culturally appropriate and population friendly IEC activities of leprosy, were being rolled out in different areas by the active involvement of elected representatives (PRI) of the areas, treated leprosy patients and re-trained and re-oriented health workers of the programme and states, for spreading knowledge and awareness of the disease and early voluntary reporting.

Nineteen lead lectures and Orations on different aspects of the disease were delivered by distinguished speakers. Prominent among them were: Dr CK Job Memorial IAL Oration lecture by Dr Sujai Suneetha, from NSSIL (CODEWEL), Nireekeshana, ACET, Hyderabad, on "Pathogenic models for nerve involvement in leprosy"; "Overview on Medical Ethics" was delivered by Dr NC Mandal, Chief Medical Officer of Health, Purva Medinappur (West Bengal); Dr Jal Mehta Memorial Oration Award was delivered by Dr Rupnarain Bhattacharya, Prof & Head, Department of Plastic Surgery, RG Kar Medical College, Kolkata on "Leprosy reconstructive surgery – a new approach"; Dr H K Srinivasan Memorial Oration lecture on "Reconstructive surgery in leprosy" was delivered by Dr Jerry Joshua, Superintendent, The Leprosy Mission Kolkata; Dr DK Porichha Memorial Oration was delivered by Dr Erwin Cooreman, Team leader, Global leprosy Programme SEARO, WHO on "Leprosy : a global review". Other Oration lectures and facilitations were awarded by the local Organizing Committee of IAL, Digha. These included "My journey with

leprosy 58 years and counting” by Emeritus Prof Dr Gurmohan Singh, BHU Varanasi; “Leprosy a remembrance – review work done with Dr H Srinivasan” by Dr Mohan Gupte, former Chair of Epidemiology, ICMR, Pune; Dr Srikant Trpathy, former Director NJIL & OMD (ICMR), Agra, and at present Director in charge NIRT, Chennai (ICMR) was facilitated and he spoke on “Current state of leprosy in India”; Dr Pushpendra Singh delivered the Dr DS Choudhary Memorial Special Oration lecture on “Why some hosts develop leprosy and others don't after post - *M. leprae* infection ? : RNA-sequence based comparative transcriptomics of experimentally infected armadillos”. He is presently working in the Department of Microbiology and Biotechnology Centre, The Maharaja Sayajirao University of Baroda, Vadodara. Dr (Mrs) Mondira Choudhary (wife of late Dr DS Chowdhary) presided over the function and gave away the award.

The other Lead lectures delivered in the Conference included “Leprosy plantar ulcers (LPU) - through the perspective of infected wound care” by - Dr. Aparna Srikantam, Head, Research, Blue Peter Health & Research Centre, LEPRO society, Hyderabad; “Neuritic leprosy” by Dr Bhushan Kumar, Former, Head, Dermatology, Venerology and Leprology, PGIMER, Chandigarh; “Histopathological findings in 108 referred nerve biopsies from patients suspected with pure neural leprosy “by Dr Vanaja Shetty, FMR Mumbai: “Leprosy and threat to sight” by Prof Manav Deep Singh, Glaucoma Service, PGIMER,

RML Hospital, New Delhi; “Bio-social aspects for leprosy control by Prof RK Mutatkar, School of Public Health and Health Sciences, SBP University, Pune, “Analysis of Grade-2 disability in new cases of leprosy to know the reasons for deformity in cases reported in Madhya Pradesh during 2016-17” by Dr Kamlakar Bhandarkar, State NLEP Consultant, Madhya Pradesh;. “Thalidomide in ENL type 2 reactions in leprosy: a decadal experience” by Dr VV Pai, Bombay Leprosy Project, Mumbai; “Molecular diagnosis of leprosy: current challenges in the post elimination era” by Dr DS Chauhan, Scientist E, NJIL & OMD (ICMR), Agra.; “Update on technologies for detecting drug resistance in leprosy by Dr VM Katoch, NASI-ICMR Chair on Public Health Research at Rajasthan University of Health Sciences, Jaipur (Rajasthan); “Immunomodulation agents in effective management of Leprosy: is there a need?” by Dr Kiran Katoch, Former Director NJIL & OMD, (ICMR), Agra.

Besides these there were 29 free oral paper presentations on various aspects of leprosy which included treatment, reactions, trophic ulcers, disability prevention, eye involvement, stigma prevention, knowledge of leprosy among patients and general population and ways of improving it etc. There were also 14 poster presentations in which medical officers and other health workers from different NGO's and Government Institutions all of whom actively participated and took part in the discussion.

Dr CK Job Memorial IAL Oration

Pathogenic Models for Nerve Involvement in Leprosy**Dr Sujai Suneetha**

*Dr CK Job Histopathology Laboratory, Institute for Specialised Services in Leprosy (INSSIL),
CODEWEL Nireekshana ACET, Hyderabad, Telangana, India*

Leprosy is primarily a disease of the skin and nerves. The cutaneous manifestations of leprosy would be innocuous if it were not for the accompanying nerve damage and disfigurement it produces. Management of the disease includes treating the *M leprae* infection as well as recognizing and treating/preventing neuritis and nerve damage. The key to success lies in early detection and treatment of both leprosy and neuritis. Pioneers like Drs. CK Job*, KV Desikan, D Porichha and others have paved the way for a better understanding of leprosy and of nerve involvement.

Reactions in leprosy are a major cause of morbidity and increase the likelihood of nerve damage in a significant proportion of patients. Reactions are of two types – Type 1 or Reversal

Reaction and Type 2 or ENL Reaction. Both types of reactions are immunologically mediated but the pathogenic pathways differ and so do the way they impact neuritis.

Neuritis occurs as a result of multiple phenomena that could affect the nerve. Recognizing this, investigators have used various approaches to study neuritis with the objective of understanding the pathophysiology as well as develop tools for early detection.

The different approaches include the classical clinical approach, neurophysiology, histopathology, immunology, molecular biology, autoimmunity and newer approaches of bioinformatics and neuro imaging. An over view of each aspect is presented as an evolving model for better diagnostics, prevention and management of leprosy and neuritis.

*This paper is in honour of Late Dr CK Job

Dr Jal Mehta Memorial Oration Award

Leprosy Reconstructive Surgery – A New Approach

Dr Rupnarayan Bhattacharya

Prof & Head Department of Plastic Surgery, RG Kar Medical College, Kolkata, India

Introduction

Though the incidence of leprosy in West Bengal is gradually decreasing due to various reasons, a large number of patients are left over with stigmas of leprosy. The various deformities involving eyes, nose, hand and feet need surgical correction both from functional as well as cosmetic point of view. Despite having good patient burden, there was no coordinated effort to perform Reconstructive Surgery for LAP in Government sector.

Though Government spends so much money, there is no definite program or center for Reconstructive surgery to LAP at Government sector in West Bengal.

To provide RCS service to the target population by the government run Institutions a new approach was adopted.

Objectives

1. To increase the number of reconstructive surgery to LAP
2. To sustain the service throughout the year.
3. To maintain and improve the quality of service.
4. Sensitize young plastic surgeons.
5. To make a Skill development centre in this field.

Methods

Following programs were taken

1. District Leprosy Reconstructive Surgical service

2. Reconstructive surgery Unit under Department of Plastic Surgery in a Medical College (RG Kar Medical College Hospital) dedicated for LAP (15 beds, one Operation Theatre).
3. Integration of other services like Physiotherapy, ocular services, orthopedic service etc to the LAP.
4. Training and teaching process to the upcoming plastic Surgeons.
5. Distributing the patients incentive after surgery at the time of discharge and follow up visits.
6. Distribution of splints/footwear from the OPD.
7. Sensitization of the undergraduate students.

Results

The result of these program is very encouraging. For last 15 years many patients have been benefitted by it.

1. 9 districts of West Bengal have been covered.
2. More than 2000 operations have been done.
3. 14 Reconstructive surgeons have been trained.
4. 8 thesis work, 4 publications in National level journals have come out of this project.

Conclusion

It is a team work and continuous quality control and surveillance is required for further improvement of this project.

Dr DK Porichha Memorial Award**Leprosy: A Global Review****Dr Erwin Cooreman***Team leader, Global Leprosy Programme SEARO, WHO*

Leprosy or Hansen's disease is the oldest disease known to mankind. Even today many fundamental questions are yet to be answered. Leprosy has been and often remains a cause of curse.

The current disease burden has come down significantly compared to a few generations ago and the number of countries with significant leprosy cases is dwindling. At the end of 2016, there were 173 358 patients on treatment worldwide, translating in a prevalence rate of 0.23 per 10 000 people. This is below the threshold of elimination as a public health problem, which is 1 per 10,000. The global prevalence has come down with more than 90% since 1985 largely due to the introduction of multidrug treatment. The number of new cases has come down too, but remains important: in 2016, 216 108 new cases were notified to WHO, corresponding to 2.93 per 100 000 people. Thirteen countries reported more than 1000 new cases in 2016. In the same year, there were also 12 896 new cases diagnosed with grade-2 disability (1.75 per million) and 18 315 children.

A stagnation in the control of Hansen's Disease appears, which may be due to loss of programme focus in countries after achieving elimination. Many new cases remain undetected or are detected late after irreversible deformities have occurred. This favours continuing transmission.

WHO has launched the Global Leprosy Strategy 2016 2020. It is centred among three pillars: (1) Strengthening government ownership, coordination and partnerships; (2) Stop leprosy and its complications; and (3) Stop discrimination and promote inclusion. It emphasizes the responsibilities of governments as well as partners, the need to sustain expertise in a rapidly changing context, the importance of involving persons and communities affected by leprosy and prioritize the most vulnerable populations. There is an obvious link with promoting basic human rights of leprosy patients.

Successful implementation is expected to further reduce the leprosy burden, in order to move towards a world free of leprosy.

Dr DS Choudhary Memorial Special oration

Why Some Hosts Develop Leprosy and Others don't Post - *M. leprae* Infection: RNA - Sequencing Based Comparative Transcriptomics of Experimentally Infected Armadillos

Pushendra Singh, Maria Pena, Rahul Sharma, John Caskey, Richard Truman

Maharaja Sayajirao Univ of Baroda, Vadodara, Gujarat, India

Background and Objectives

No laboratory tests are available for early detection of leprosy. The nine-banded armadillo is the only animal that recapitulates all aspects of human leprosy. Interestingly, while majority of the armadillos develop disseminated disease within 2 years of experimental infection, ~20% of the animals do not show any disease even after 3-5 years despite high-dose experimental inoculation. This analogy allowed us to investigate; "How some hosts resist infection with *M. leprae* while others progress to disease?" Our present study aimed at identifying biomarkers of leprosy progression by comparing transcriptional profiles of susceptible and resistant animals using RNA-Sequencing.

Methods

A dose of 10⁹ live *M. leprae* bacilli was inoculated in six armadillos and their PBMCs were collected and cryo-preserved at the 4th and 18th month post-infection. All animals were monitored for *M. leprae* specific antibody titers using ELISA and nerve conduction velocity. The cryo-preserved PBMCs from 4th month time point were stimu-

lated with various *M. leprae* antigens and RNA-Sequencing and bioinformatics analysis was performed for determining the differential gene expression.

Results and conclusions

Four animals progressed to disease within 2 years of infection, while the remaining 2 exhibited leprosy-resistant phenotype even after 4 years and showed noseropositivity against *M. leprae* antigens. Comparative transcriptomics of resistant and susceptible animals revealed 270 genes differentially expressed at a cut-off of 4 fold (161 genes up-regulated and 109 down-regulated in resistant animals). These involve host innate immunity and regulation related genes, especially those associated with cell migration (CEMIP) and receptor-function (IGFLR1, MRC1, TLRs, CCL17, IFNLR1, CCRL2, etc). Our results indicate that several receptors and regulatory genes show altered expression. These results reveal characteristic host transcriptional signatures associated with leprosy progression vs protection and can be translatable into a field friendly point-of-care test for early detection of leprosy.