AWARD PAPERS (AW)

AW-1

Reconstructive surgeries of leprosy at the Leprosy Relief Rural Centre: challenges and recommendations

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Background

The Leprosy Relief Rural Centre (LRRC), Chettipatty started in 1956. It is a Government of India recognized institution to perform Reconstructive surgeries since 2007 and is working as a tertiary care center for Leprosy since 2007. The catchment population is more than 16,784,150 (2011 census) which includes 7 districts viz., Namakkal, Tirupur, Coimbatore, Salem, Dharmapuri, Krishnagiri, Erode.

The past five year(2010-14) performance data of LRRC indicates that out of 171 cases motivated and screened by Districts, 122 were selected and admitted for surgery and 81 (nearly half of the patients screened) out of them underwent RCS. The reasons for non-conduct of RCS include

1) Patients with limited motivation
2) Poor general health conditions of admitted cases (hyper-tension, diabetes etc.,)
3) Contracture/stiff joints
4) Long flexors finger tightness
5) Transferring tendon muscle power, not normal
6) Cases referred do not fit into the age category
7) Cases are still on MDT and not released from treatment.

Conclusion

The recommendations to facilitate increased conduct of RCS among those eligible include

1) Refresher training for health care providers on screening for suitable cases of RCS as per NLEP guidelines.
2) Patients to be well informed about the duration of hospital stay by field workers.
3) Motivate suitable patients for RCS and need of stay and exercises explained.
4) Referral centres to coordinate better on the requirements to districts.

AW-2

Analysis of drug-resistant strains of Mycobacterium leprae from relapsed cases from The Leprosy Mission Hospital, Shahdara

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Background

In-spite of nearing 3 decades of multiug therapy (MDT) leprosy still remains a major public health issue in several endemic countries including India. Emergence of ug resistance by the evidence of genetic mutation in *M.leprae* is a cause of concern and a threat for an infectious disease like leprosy and will immensely dampen the elimination programme. Presence of SNPs within genes that encode for ug targets like gyrA (ofloxacin), rpoB (rifampicin) and folP (dapsone) were considered as the exclusive basis for detection of ug resistance in leprosy.

Methodology

In the present study, slit-skin smears were

collected from 72 leprosy cases who had relapsed during the period 2009-2014 from The Leprosy Mission Community Hospital Shahdara. DNAs extracted from these samples were analysed for the genes associated with ug resistance in *M. leprae.*

Results

In our study, 7/72 (9.7%) of the DNA samples analyzed showed mutations associated with rifampicin resistance. We also observed that mutations associated with resistance to dapsone and ofloxacin were observed in 3/72 (4.2%) each of the DNA samples.

Conclusion

Further surveillance and appropriate interventions are needed to ensure the continued success of chemotherapy for leprosy.

AW-3

Molecular mimicry between *M. leprae* and host proteins

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Background

Auto-antibodies (Abs) against various components of host molecules are known to occur in TB and leprosy. Nerve damage is the primary cause of disability associated with it.

Methodology

The aim of this study was to detect the level of autoAbs and lympho-proliferative response against myosin, keratin and myelin basic protein (MBP) in leprosy patients (LPs) and their correlation with clinical phenotypes of LPs. Further, the probable role of molecular mimicry in nerve and skin damage of LPs was investigated.

Results

We report here that myelin A1 protein and 50S ribosomal protein L2, Lysyl tRNA synthetase of *M. leprae* and cytokeratin 10 and HSP 65 of *M. leprae* are cross reactive proteins, further 2 B cell epitopes of MBP and *M. leprae* while 7 B cell epitopes of cytokeratin 10 and HSP 65 are mimicking epitopes. We hyperimmunized inbred strains of female BALB/c mice and rabbit with *M. leprae* sonicated antigen which induced higher level of auto-Abs, and this autoimmune response in mice can be adoptively transferred to native mice.

Conclusion

We observed significantly higher level of auto Abs against these proteins in LPs. Spearman's correlation test showed positive correlation between level of anti-MBP and anti-keratin Abs with number of nerves and number of patches respectively in all LPs. Interestingly, we noted that binding of anti-MBP and anti-keratin Abs was inhibited by LPs' sera in a dose dependent manner. We observed significantly higher lymphoproliferation ($p<0.05$) with all the proteins in all groups of LPs.

AW-4

Peripheral nerve function assessment with monofilaments in a busy urban clinical set up: A field experience

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Background

In Hansen's disease peripheral nerve are affected and voluntary muscle function and sensory assessment with monofilaments is one of the

methods for detecting the early nerve function involvement and to assess the prognosis of the treatment.

Purpose

To determine the practical barriers which hinders the use of monofilaments for sensory testing in busy clinical set up?

Methods

In this study therapists and clinician involved in national leprosy eradication were interviewed and then results were grouped accordingly. In total five therapists and four doctors were interviewed. The results were then grouped according to the responses obtained. Data was gained through the open ended questionnaire.

Results

During the interview open ended questionnaire were asked regarding the practical barriers in doing sensory testing with monofilaments. 70% of the participants felt that lack of time is one of the important barriers. 40% of the participants were of the opinion that monofilaments are difficult to carry. 60% of the participants answered that monofilaments testing requires some privacy which is not available sometimes and therefore is also a barrier in testing. Further 25% of the participants told that patients some times are reluctant to undergo testing with filaments due to various reasons. 45% of the participants responded that as sometimes language problem is a barrier in monofilaments testing as patients are not able to understand the verbal commands from the clinicians.

Conclusion

As monofilament testing requires time therefore therapist and clinician are not using monofilament for nerve function assessment.

AW-5

Atypical presentations of type 2 reaction

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Background

The prevalence of leprosy in India is 1 case per 10,000, thus it is no longer considered to be a public health problem. But, atypical presentation of multi-bacillary forms of leprosy and reactions have become a common scenario in clinical practice, emphasizing this we are reporting 3 cases of atypical presentation of Erythema Nodosum Leprosum (ENL).

Case-1: Bullous ENL - A 38 year old female presented with multiple, painful vesicles and bullae on an erythematous base over trunk and both upper and lower limbs along with painful erythematous nodules since 1½ years. Histopathology showed ill-defined granuloma, dense, diffuse neutrophilic infiltrate, foamy histiocytes, eosinophils, lymphocytes. Numerous acid fast bacilli were seen.

Case-2: Erythema multiforme-like ENL - A 21 year old male patient showed multiple, erythematous, tender nodules and urticarial plaques of 6 months duration. Histopathology showed epithelioid cell granulomas, lymphocytes and histiocytes. Many beaded acid fast lepra bacilli were seen.

Case-3: Ulcerative and necrotic ENL - A 30 year old male presented with multiple, tender necrotic ulcers and few vesicles over the trunk and upper limb.

Conclusion

Except case-1, in other two cases there was no previous history of lepromatous leprosy or anti-leprotic treatment.

AW-6

Atypical presentations of Hansen's disease

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Background

Leprosy is a chronic infectious disease with a wide spectrum of clinical manifestations and acute inflammatory episodes called reactions. Whereby it was reported that were three cases of atypical presentations of leprosy.

Case Reports:

Case 1: A 35yr old male, known case of BT downgrading to BL Hansen's, presented with fever, skin lesions of 3 days duration. O/E Targetoid lesions on back, arms & annular lesions with peripheral coalescing pustules over both arms were present. Bilateral ulnar, radial cutaneous, lateral, popliteal and posterior tibial nerves were thickened. Biopsy was suggestive of ENL and was treated accordingly.

Case 2: A 63yr old female, known hypertensive, diabetic and epileptic on multiple medications presented with asymptomatic skin lesions over both legs since 6 months. O/E multiple erythematous annular scaly plaques with central clearing present over both legs. No loss of sensations or paresthesias over patches and no hypopigmented patches elsewhere. Bilateral posterior tibial nerves were thickened. A differential diagnosis of tineacorporis, erythema annulare and Hansen's was made. Biopsy was suggestive of BT Hansen's and she is improving with MBMDT.

Case 3: A 45yr old HIV negative female, known case of rheumatoid arthritis on methotrexate, chloroquine and steroids for 3 months developed pulmonary TB and was started on ATT. She presented with red raised skin lesions of 2 months duration. No history of hypopigmented patches was present. O/E she had multiple erythematous scaly plaques with paresthesias on face & trunk, bilateral ulnar and left lateral popliteal nerves were tender & thickened. She was diagnosed as BT downgrading to BL in type 1 reaction and treated accordingly.

Conclusion

Leprosy, though usually presents with cardinal features, can also have atypical presentations like annular coalescing pustules, EMF like lesions. Hence the diagnosis of Hansen's should not be missed out in the present scenario.

AW-7

Panoramic view of lepromatous leprosy at a tertiary care centre in post elimination era

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Introduction

In India Leprosy has been declared eliminated on January30, 2006 which led to decentralization and integration of services into the general health

system. Various epidemiological studies in the post-elimination era are showing a steady increase in the new cases detected.

Aim of the study

To show the clinico-epidemiological trends of lepromatous leprosy from May 2011 to February 2015 in a tertiary care centre.

Methods and Materials

Consecutive cases of lepromatous leprosy attending our DVL OPD over last 3 years and 10months i.e from May 2011 to February 2015 were studied. Demographic data and detailed history including previous treatment taken and any family history of leprosy was noted. Complete clinical examination was done and morphological patterns of cutaneous manifestations were noted. Routine and specific investigations including biopsies were carried out. Especially complications like type 2 reaction and grade 2 disability were looked for at the time of presentation.

Results

Total number of LL cases during study was 75, with 12 during 2011-12, 18 during 2012-13, 22 during 2013-14, 23 during 2014-15 with treatment being 8, 11, 14, 16 in respective years. Male to female ratio was 2.2:1. Defaulters were 18 with 3 relapses. 24 had ENL at the time of presentation, 5 had family history, 19 had grade 2 disabilities. There was an increase in the unusual clinical presentations.

Conclusion

An increase in the number of LL Hansen's cases places the community at high risk of infection and increase in unusual presentations further adds to the diagnostic problem. Hence early recognition, treatment and counseling regarding adherence to treatment is important to achieve the goal of elimination.

AW-8

Contact investigation among household members of Leprosy patients in slums of Mumbai: a retrospective study

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Background

World Health Organization recommends contact investigation for households and close contacts of index leprosy cases. It is crucial for early identification of active disease, reducing its severity and transmission to others, and to prevent disability. Lok Seva Sangam carried out this activity in the leprosy control project area which covers slums of two major wards of Mumbai, Maharashtra, with a key component to investigate household contacts of the index leprosy patients.

Methodology

The project implemented this activity since inception in the slums of L and M Wards of Mumbai, India. For discussion, details of the activity since 2009 have been taken. House hold contacts of registered 1479 leprosy patients were investigated by a team of leprosy trained staff under the supportive supervision of a leprosy trained medical doctors team. House hold contacts were counseled and examined in their houses.

Results

There was an average of 5 family contacts per leprosy patient. A total of 4090 contacts of 1429 registered leprosy patients were approached at their home and counseled for screening for leprosy. 48% of total contacts were women and 30% were chilen. 98 % of total contacts were

screened. The contact examination confirmed 10 (0.2%) leprosy patients among contacts that reported for examination. Among contacts confirmed for leprosy 4 were MB and 0 had Gr 2 disability and 2 were chilen. Men-women ratio is 7 : 3; majority were from lower socio-economic class. All the cases were put on MDT after counseling by staff and medical officer.

Conclusion

The close agglomeration in urban slums resulted in high transmission. Yield of contact investigation reemphasizes the need of active screening of household and neighborhood contacts of leprosy patients. This will not only lead to early detection and timely initiation of MDT and will prevent of disability.