

Editorial

World Leprosy Day 2015: Renewing commitment for a leprosy free world!

“Leprosy work is not merely medical relief but it is transforming the frustration of life into joy of dedication and personal ambition into selfless services”

-Mahatma Gandhi

Leprosy control programme has been truly a success story worldwide but the last stone is yet unturned. The global registered prevalence of leprosy at the end of first quarter of 2014 was estimated as 0.32 per 10000 population¹. During 2013, a total of 215656 new cases were reported from 103 countries showing a decline of 17201 cases as compared to the previous year. Though global leprosy programmes made substantial progress in reducing the disease burden, new case detection had plateaued in the range of 215000-245000 worldwide between 2009 and 2013¹. In 2013, 13289 new cases had a grade 2 disability (G2D), which reflected low awareness in the community about leprosy and sub-optimal capacity of health systems to detect the disease early. About 9 per cent of the new cases were in children, which also indicated continued transmission of the disease. This may also imply that there has been a degree of stagnation and lack of new approaches in leprosy control. South-East Asia region (SEAR) currently has highest prevalence of 116396 (0.63) cases and highest new case detection rate of 8.38 per 1,00,000 (155385 cases with 72% of the global leprosy burden). India alone accounted for 58.85 per cent of the global leprosy burden¹.

Indian scenario

A total of 127000 new cases were detected during 2013-2014. Annual new case detection rate (ANCDR) was 9.98 per 100,000 population which decreased

marginally from 10.78 in 2012-2013. A total of 86000 cases were on record as on April 1, 2014, giving a prevalence rate (PR) of 0.68 per 10,000 population². There were 51.48 per cent multibacillary cases, 36.91 per cent females, 9.49 per cent children and 4.14 per cent had G2D. Thirty three States/ UTs have achieved the level of elimination, *i.e.* PR less than one case per 10,000 population, however, some areas still form pockets of high endemicity². Integration of primary leprosy services into existing general health services has made treatment of the disease more easily accessible and helped to reduce the stigma to a great deal.

Present & future strategies

To decrease the disease burden, the WHO has adopted Enhanced Global Strategy (2011-2015) which includes reducing the number of new cases presenting with disabilities through early detection, improving management of acute and chronic complications rehabilitating those with disabilities and fighting stigma and discrimination³. The WHO Global Target aims at 35 per cent reduction in the rate of new G2D cases per 100000 population by the end of 2015, compared to baseline (at the end of 2010) and to reduce the burden to one new G2D case per one million population by 2020⁴. The “Final Push” strategy for elimination is to expand multi drug therapy (MDT) services to all health facilities, encouraging regular and complete treatment, promoting awareness, set time bound targets and good record keeping to monitor the progress towards elimination⁵.

International Federation of Anti-Leprosy Associations (ILEP), an international federation of

autonomous non-government anti-leprosy organizations is also working in close co-operation with the national programmes, WHO and other stakeholders including persons affected by leprosy towards above goals⁶.

National Leprosy Programme (India)

National Leprosy Eradication Programme (NLEP) was launched in 1983 covering districts in a phased manner and the whole country was covered only by 1996. The final phase of this fight against leprosy is as critical as the earlier phases. Targets under Programme Implementation Plan (PIP) for 12th Plan Period (2012-2013 to 2016-2017) have been defined⁷.

Issues that need to be addressed

Problems with leprosy integration: As a part of the global strategy, leprosy services have been integrated with the general health system. Leprosy cases are noted to be sometimes wrongly diagnosed or missed by the primary health centre (PHC) medical officers⁸. This is mainly because of lack of effective training and varied presentations of the disease. Leprosy is a great mimic and confuses at times even the experienced leprologist. Strengthening referral networks is important to support integrated leprosy control services. It is well realized that even after elimination target has been achieved, new leprosy cases will keep coming for at least some years as some level of disease transmission is still continuing or subclinical cases will manifest disease⁹.

Histoid leprosy - a challenge to elimination: Wade first described histoid leprosy in 1963¹⁰. In India, new cases of histoid leprosy are still documented with the same incidence rate¹⁰. These cases are often difficult to diagnose at peripheral level and recently large case series are being reported from various parts of India. As the bacillary load is very high in these patients, they can become a potential reservoir of infection in the community especially in the post-leprosy elimination era with inadequate leprosy expertise¹¹.

Quality management of reactions and deformities in post-elimination era: Leprosy is not presently feared so much for its infectivity but rather for the unsightly deformities it can lead to. During 2013-2014, the G2D rate of 4.13/ million population was recorded in India which has increased from previous year (2012-2013) figure of 3.72 / million population^{2,12}. The possible underlying reasons could be diminishing quality care and incomplete coverage of population by leprosy control activities. Doctors/health workers

at PHC level are sometimes unable to detect silent neuritis, atypical presentations, reactions at early stage, and find difficulty in managing steroid resistant chronic and recurrent erythema nodosum leprosum cases¹³. Stigma at their place of origin and fear of detection by the authorities in case of illegal immigrants are other important factors for patients not reporting to government hospitals for appropriate management¹³.

Decline in number of leprosy experts: Over the last few years involvement of dermatologists in vertical programme has diminished in India and moreover, dermatologists are also now more focused towards lucrative branches of dermatology. Services of dermatologists are essential for making better policies, search of newer drugs, developing the training modules and teaching leprosy management skills to health workers and new generation of medical students¹⁴.

Drug resistance: The emergence of drug resistance is a cause for concern and a threat in post-elimination era. It is important to monitor the emergence of rifampicin-resistant mutants as it is an important bactericidal component in MDT. Poverty, fear of losing their daily wages, limited job opportunities coupled with difficulties encountered to sustain day-to-day life results in migration of patients back to their home towns abandoning treatment midway. This leads to poor treatment compliance, high drop-out rates, rising defaulter rates and possible emergence of drug resistance. It is essential to monitor drug sensitivity patterns and to accomplish this, the WHO has adopted a network for global surveillance of drug resistance¹⁵.

Chemoprophylaxis & immunoprophylaxis: An expert group meeting organized by the Novartis Foundation in January 2014 at Zurich, Switzerland, concluded that chemoprophylaxis with single-dose rifampicin (SDR) was efficacious in reducing the risk of developing leprosy, although the protective effect appeared to be smaller in close contacts than distant contacts¹⁶. Therefore, blanket approach may be more appropriate in endemic areas. Further research is needed to determine the effect of chemoprophylaxis with repeat doses of rifampicin, other regimens (e.g. rifapentine or ROM), or in combination with BCG immunoprophylaxis. Also the duration of long prophylactic treatment and the specific biomarkers that can differentiate infected (asymptomatic) contacts from non-infected contacts need to be evaluated¹⁶.

Findings from multi-arm vaccine trial in south India showed the overall protective efficacy to be 67 per cent for BCG + killed *Mycobacterium leprae*, 51 per cent for Indian Cancer Research Centre (ICRC), 41 per cent for M. w. and 22 per cent for BCG alone¹⁷. Though these vaccines provide some degree of protection against leprosy, but there is no clarity regarding the ideal target population. Also there is lack of adequate clinical trials because of long and variable incubation periods of the disease. Subunit vaccines and peptide synthesized using recombinant DNA technology may prove more efficacious with less side effects as the epitopes used in these vaccines are much purer. But these vaccines are still under investigation¹⁸.

Recent advances

Ultrasound and MRI are recently being used worldwide to detect the structural changes in peripheral nerves. Unlike MRI, ultrasound is cheap, easily available, less time consuming and can be easily used to follow peripheral nerve along its superficial course. It is useful to detect cases of pure neuritic leprosy, silent neuritis, impending nerve damage during acute reactions and nerve abscess. This non invasive technique may act as a cost-effective tool in early diagnosis of disease as well as reaction¹⁹.

PCR and reverse transcription-PCR-based techniques have specificity of 100 per cent and a sensitivity of 34 to 80 per cent in paucibacillary patients and greater than 90 per cent in multibacillary patients²⁰. Therefore, PCR can provide an excellent adjunct to clinical and histopathological diagnosis of leprosy. PCR coupled with mutation detection analyses rapidly detects drug susceptibility and resistance patterns. Studies have shown that *PARK2/PACRG* gene located on chromosome 6q25-q27 is associated with overall susceptibility of human populations to *M. leprae*. Also, *NRAMP1* located on chromosome 2q35 may be associated with different leprosy types in some populations. Molecular techniques in future can help in rapid case detection even before the appearance of clinical signs and symptoms²⁰.

Among the various cytokines, C-X-C motif chemokine 10 (CXCL10) and interleukin (IL) 6 are elevated during type 1 reaction, while IL7 and Platelet derived growth factor BB chain (PDGF-BB) represent potential markers of Type 2 reaction (T2R). These cytokines may be useful in early diagnosis of reaction

and monitoring response to treatment, but their sensitivity and specificity need to be determined²¹.

Future challenges

Consolidation of the gains achieved is the immediate need of the hour²². Screening tools need to be developed to detect sub-clinical infection and to decrease the delay between diagnosis and treatment. Predicting leprosy reactions, their early detection and adequate management will change the perception about the disease morbidity and its potential to produce deformities. Diagnosing and managing a relapse is still a challenge. Drug resistance is a serious potential threat to conquer this disease²².

Sustaining the commitment

After achieving the target of elimination at all levels, the emphasis now must shift on to sustaining the quality of services. Support from all partners is of utmost importance to ensure that leprosy remains on the health agenda as long as it is necessary. Government, non-governmental organizations (NGOs) and private organizations need to work together in a coordinated fashion in the final battle against leprosy²³. Continued training of medical officers, nurses, physiotherapists, paramedical workers about quality diagnosis and treatment of leprosy is necessary^{24,25}.

Rehabilitation

Empathy rather than sympathy is important in leprosy rehabilitation. Physical rehabilitation includes physiotherapy, occupational therapy and various reconstructive surgeries to improve the function of the hands, feet and eyes. Social and economic rehabilitation is equally important to restore dignity of leprosy patients²⁶. Disability prevention and medical rehabilitation (DPMR) services, training in self-care (skin care, wound care and joint care), provision of necessary protective equipment, orthotic appliances, physiotherapy, mobility aid and reconstructive surgery are very crucial in post-elimination era to make the patient self-sufficient and to further reduce the stigma²³.

Leprosy is one of the most ancient and dreadful diseases. The stigma associated with the disease is an important hurdle in self-reporting. A new environment free of stigma and fear needs to be created for early diagnosis and treatment of the remaining cases towards a leprosy free world.

“The biggest disease today is not leprosy or tuberculosis, but rather the feeling of being unwanted.”

- Mother Teresa

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