Trends of leprosy in pre and post elimination era - A statistical and clinical update

Sushruth G Kamoji[1,*], Shilpa V Dastikop[2], Naveenkumar[3]

[1]Senior Resident, [2]Associate Professor, [3]Specialist, Dept. of Dermatology, [1,2]Belagavi Institute of Medical Sciences, Belagavi, [3]Wenlock District Hospital, Mangalore, Karnataka, India

***Corresponding Author:**
Email: drsushruthk@yahoo.co.in

Abstract

Introduction: Leprosy is an age old disease caused by *Mycobacterium leprae*, predominantly affecting skin and peripheral nerves leading to a plethora of clinical manifestations. The immense efforts to eliminate the disease led to a fruitful outcome in the year 2006 in India. Yet, we contribute more than 50% of world case load of leprosy.

Materials and Methods: 1. A retrospective analysis of Leprosy cases, diagnosed and treated in the entire Belagavi District between 2000 and 2014 was done and the data was analyzed. **2.** A retrospective analysis of all patients diagnosed and registered in our department between Jan 2013 to Dec 2014 was undertaken.

Results: Between Jan 2000 to Dec 2014, a total of 6373 cases were treated for leprosy in Belagavi district. The annual new case detection rate (ANCDR) in this district fell from 26.2 to 4.22. The prevalence of leprosy also declined from 1.79 to 0.33. The child proportion among new leprosy cases fell to 8.21 from 22.06 indicating a containment of the infection.

In our department, 132 new cases of leprosy were detected during the year 2013 and 2014. The male to female ratio was 2.14:1. 8.3% of the cases were children (<14 years). A overwhelming majority (91%) of the cases were multibacillary, which is in sharp contrast to the national average of 51.48%. In 23% of our patients, the presenting feature was a lepra reaction (Type I in 14% cases and Type II in 9% cases). We observed grade II deformities (as per WHO) in 19% of cases at the time of presentation.

Conclusion: The leprosy programs have brought down the statistics but some pockets of active transmission exist. The focus should now be to bring the incidence of leprosy to zero.

Keywords: Leprosy Elimination MDT.

Introduction

Leprosy has prevailed in the human race for thousands of years. This mutilating disease has not just handicapped millions but has instilled stigma against the affected ones in our society. It is a chronic infectious disease caused by *Mycobacterium leprae* which mainly affects the skin and peripheral nerves. The World Health Assembly in 1991 adopted a resolution to "eliminate leprosy as a public health problem by the year 2000". But even after 27 years, leprosy remains an important cause of global chronic neurological disability. Even today there are many countries in Asia, Africa and Latin America with a large number of leprosy cases. India achieved the target of leprosy elimination in 2006, but even today contributes to the majority of the cases detected globally. In 2015, a total of 211,973 new leprosy cases were reported globally; more than 50% of which were from India.[1] WHO chose disease prevalence as a measure to evaluate leprosy program, because incidence could not be measured by routine surveillance.[2]

It is true that a full course of Multi Drug Therapy makes leprosy cases non-infectious but it does not prevent occurrence of new cases or guarantee that the patient will not develop disability in future. Thus, Annual new case detection rate (ANCDR) is a more significant parameter than PR.

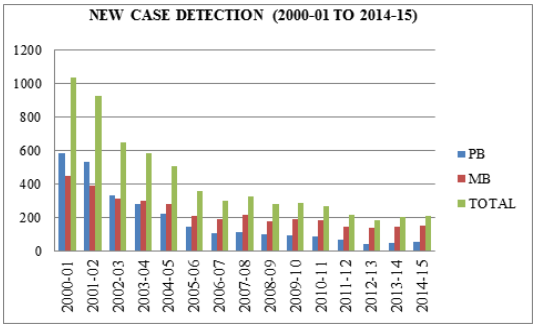
Materials and Methods

1. A retrospective analysis of Leprosy cases, diagnosed and treated in the entire Belagavi District between 2000 and 2014 was done and the data was analyzed.
2. A retrospective analysis of all patients diagnosed and registered in our department between Jan 2013 to Dec 2014 was undertaken.

Results

A total of 6373 cases were treated in entire Belagavi district between Jan 2000 to Dec 2014, of which 2849 received Paucibacillary drug therapy and 3524 Multi bacillary drug therapy. During the same period the annual new case detection rate (ANCDR) in this district dropped from 26.2 to 4.22 and the prevalence reduced from 1.79 to 0.33. Child proportion among new cases fell to 8.21 from 22.06 indicating a good reduction in transmission of infection. However there was a steep increase in the multibacillary cases from 40.8 to 72.4 in those 14 years which is comparable to national statistics. A look at the graph of ANCDR shows a rapid decline in the initial 5 years, after which it slows down and almost reaches a plateau. Though this may be a desirable effect it clearly depicts slowing of the efforts to bring down the ANCDR to a near zero after the year 2010.

Graph 1: Clinical profile of leprosy as seen in our OPD between Jan 2013 to Dec 2014



A total of 132 new cases of leprosy were registered during the study period of 2 years in our department. The age wise distribution can be seen in Fig. 1. The youngest patient in this study was just 2 years old and eldest 80 years. A majority of the patients (22%) were in the middle age group (31-40 years). A total of 11 (8.3%) of these patients were children (<14 years). However, it is quite disappointing to note that about 17% of them were under the age of 20 years indicating ongoing transmission of infection. There was a male preponderance with M:F ratio of 2.14:1. The most common clinical type of leprosy encountered in 91%patients (*n =120*) was of multibacillary type. This again indicates a delay in detection of cases. 75% of the patients had peripheral nerve enlargement with ulnar nerve being the most commonly thickened nerve. This finding very well correlates with the fact that most of the cases seen were multibacillary type. It is interesting to note that 23% of patients presented to us in lepra reaction. Type I reaction (T1R) was present in 14% and Type II reaction (T2R) in 9% patients. All these denote the laxity in active case finding. The overall incidence of various deformities of the hands, feet, or eyes (WHO deformity Grade II) was 19% detected at the time of diagnosis. Three MB cases were found to be HIV positive.

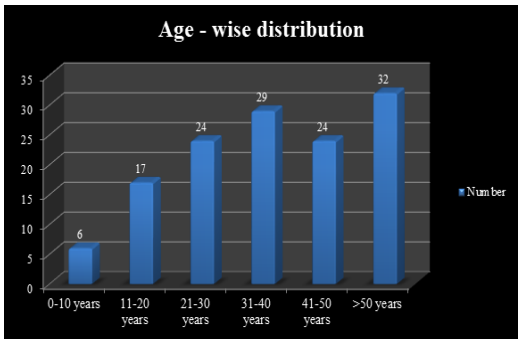


Fig. 1

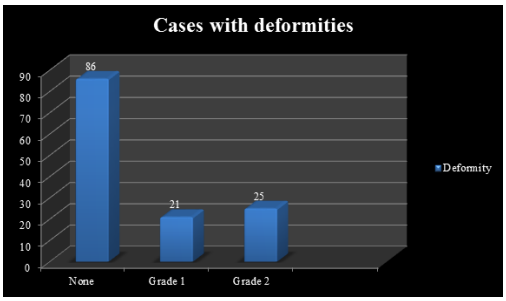


Fig. 2

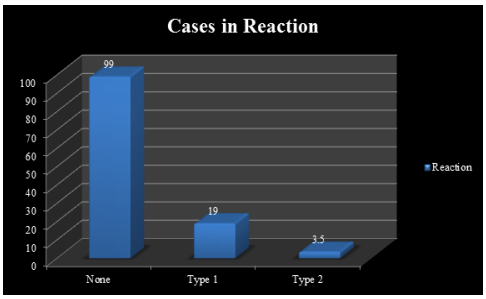


Fig. 3

Discussion

Leprosy has always provoked wide range emotions from different corners. Eminent personalities like Mahatma Gandhi, Mother Teresa contributed immensely in the upliftment of lepers, while much debate took place on various therapeutic modalities before finalizing the multidrug therapy. Despite the efforts of various organizations and individuals, the disease still remains elusive. With regard to transmission of leprosy in Scandinavia and Western Europe, it was seen that when prevalence reduced to less than 1 case per 10,000 population the transmission of the infection also reduced and it would eventually lead to elimination of leprosy. Hence, WHO incorporated prevalence as a measure of the disease.[2] But the confounding factor in Indian scenario was perhaps the density of population allowing easy transmission of infection. Richardus et al published by 2007 itself about the validity of such drastic reduction in the case load and incidence of cases. The authors pointed out that such phenomenal reduction was not biologically expected for a disease which had such variable incubation period.[3]

Several Indian authors had also pointed about the fallacies. Ganpati et al,[4] in 2005 emphasised the need for equal focus on rehabilitation since the number of active cases were on the decline. We are presently living that day. The intense efforts to eradicate leprosy has brought down the case load but the residual disability is something which is difficult to address and even more difficult to prevent the progression. The multidrug therapy can cure the infection but the neurological damage in most cases remains progressive even after disease cure. These drawbacks were rightly pointed out by Singal et al.[5] and Prasad et al[6] who

reiterated the need for fund allocation for rehabilitation and also questioned the integration of leprosy program with general health services which has led to a dilution in the efforts. If these things are not considered now, we may see the resurgence of leprosy. The over enthusiastic efforts to bring down the prevalence has certainly led to its downfall but the big question is whether it will be sustainable. Though anecdotal, a large number of Indian Dermatologists opine there is a slow and steady surge in leprosy in recent times. This anecdotal finding is supported by our study, where the youngest patient was a 2 year old baby diagnosed after a skin biopsy while the eldest patient was a 80 year old person. If this statement were considered seriously, then it implies that the infection remained prevalent about 7-10 years ago and only now we are seeing the clinical manifestations because leprosy has a long incubation period. This would be quite a disturbing trend because it would only mean that we will see more and more cases because the efforts for leprosy eradication have drastically reduced since the year 2006.

MDT has drastically reduced the prevalence of the disease from 25.9 to 0.69 in the last 25 years.[7] The percentage of childhood leprosy in our study was 8.3% which is comparable with the national average of 9.49% and also that reported by Grover et al[8] who reported an incidence of 7.06% from a tertiary hospital at Delhi. These findings clearly indicate an ongoing transmission of infection in the community inspite of all these efforts.

Most of the patients in our study were classified as multibacillary cases (91%) which was nearly double of the national statistics (51.48%). This was consistent with a study conducted from a tertiary hospital in Delhi who also reported multibacillary cases to the tune of 86.9%.[9] Another study from Satara district in Maharashtra reported 53.6% MB cases in the year 2007-08.[10] The high proportion of MB cases in our study is probably because of qualified dermatologists being able to gather even subtle signs (patches and nerve examination both) which may be missed by field workers and quite difficult for them to examine thoroughly during the field visits.

In our study, 14% of patients presented with Type 1 reaction, which was less than that reported by Kumar et al. (30.9%).[11] Type 2 reaction was seen in 9% patients, which is lower as compared to that reported by Jindal et al. (17.2%).[8] Our study showed a higher incidence of WHO grade 2 deformity at presentation (19%) which is much higher than the national average (4.14%), but is comparable to that reported by Jindal et al. (17.8%).[7] These statistics again point out that there is a delay in early detection of cases and hence the need for active case finding should still remain a priority. If we can achieve this, then the chances of disability can be minimized and hence it was adopted in the enhanced Global Leprosy Strategy 2011-2015. The aim was to reduce grade 2 disabilities by 35% by the year 2015.[12]

The choice of using prevalence as a parameter for determining leprosy elimination has been critically questioned all along and these findings are a testimony of the same. The practice of reporting point prevalence at the end of a calendar year has only helped in reducing the numbers and cleaning up of the registers while leaving behind pockets of infection and completely ignoring rehabilitation of the crippled patients. Thus, the cleaning of registers in terms of patients who passed away, been cured or been on treatment for indefinite prolonged periods, had a striking immediate effect on prevalence. However, the single greatest influence on prevalence was the WHO's decision to reduce the treatment period of lepromatous leprosy patients from 24 to 12 months. This literally halved the global burden of registered leprosy cases. This was just a simple mathematical elimination rather than focusing on the ground reality. The recent drive by the WHO to further reduce the treatment period to only six months for all leprosy patients irrespective of disease classification will certainly achieve global elimination and appeal the satiety of policy makers, but will it help in achieving elimination of leprosy in a true sense?

The major limitation of our study was that data was collected from a tertiary care institution which does not reflect the status of disease in the general population. This study has also been unable to pick up those cases treated by private practitioners or those who have been treated by field workers.

Conclusion

This study draws attention to the fact that leprosy still prevails on a scale larger than portrayed and requires steps to contain the infection as well as address the residual disability left after completion of treatment.

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