Original Article

A RETROSPECTIVE STUDY OF EPIDEMIOLOGICAL TRENDS OF LEPROSY IN AN URBAN LEPROSY CENTRE OF MADHYA PRADESH

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ABSTRACT

Introduction: Leprosy is a chronic infectious disease caused by Mycobacterium Leprae, affecting mainly peripheral nerves and skin. An impressive decline in leprosy prevalence rate (PR) in India is seen in the post-MDT era. This study was carried out to find out the trend of leprosy in urban leprosy center of Madhya Pradesh and to interpret this data with respect to different epidemiological variable.

Methodology: This was a retrospective study conducted by analyzing records of Urban Leprosy Center, from Jan2004 to Dec 2013.

Result: A total 304 patient attended ULC (Urban Leprosy Center) during last 10 years (2004-2013), among which 58.2% were male and 41.8% female. Analysis of data showed a gradual decline in new case detection till 2006 in this set-up with marginal rise observed in 2007, 2009 and 2012 when compared with previous years. However, majority of patient 173 (56.9%) belonged to multibacillary (MB) group while 131(43.1%) were paucibacillary (PB) cases. Prevalence of disability (both grade 1 and grade 2) was more in male than in female. Disability rate was more in multibacillary leprosy than in paucibacillary patient. Most common deformity among study subjects were claw hand (60%).

Conclusion: To conclude while leprosy incidence has declined after MDT, early detection & proper monitoring of new cases was required to facilitate effective management, disability limitation and rehabilitation.

Key Words: Leprosy, Urban center, Epidemiology, Multibacillary, Paucibacillary, Deformities.

INTRODUCTION

Leprosy is a chronic infectious disease caused by M. leprae. It affects mainly the peripheral nerves. It also affects the skin, muscles, eyes, bones, testes and internal organs.[1]The South East Asian region accounts for about 66.21% of the global prevalence and 71% of all new detected cases at the end of first quarter of 2013.[2]The National Leprosy Control Programme was launched in 1954 in India and converted to National Leprosy Elimination Programme (NLEP) in 1983 with the objective to eliminate leprosy.[1] With the introduction of MDT(Multi Drug Treatment) since 1983 as recommended by the WHO study group, India has achieved the goal of elimination of leprosy in December 2005.[3]A total of 0.92 lakh cases are on record as on 1st April 2013, giving a Prevalence rate (PR) of 0.73 per 10,000 population .[4]

The aim of present study was to find out the trend in presentations of leprosy patients in an urban leprosy centre (ULC) from 2004 to 2013, and to interpret this data with respect to different epidemiological variables like age, sex, type of disease, deformity, treatment of diseases.

MATERIAL & METHODS

A retrospective analytical study, carried out using health centre based data. All new cases of leprosy registered under the ULC during this period were taken in to the study. The centre has record of all the leprosy cases attending the clinic. Records of all leprosy cases who were registered in Urban Leprosy Centre over a period of ten year i.e. Jan 2004 to Dec2013 were analyzed. Clinical spectrum of the patients was decided after recording detailed clinical history, clinical and slit-skin smear examination. Histopatho-logical ex-

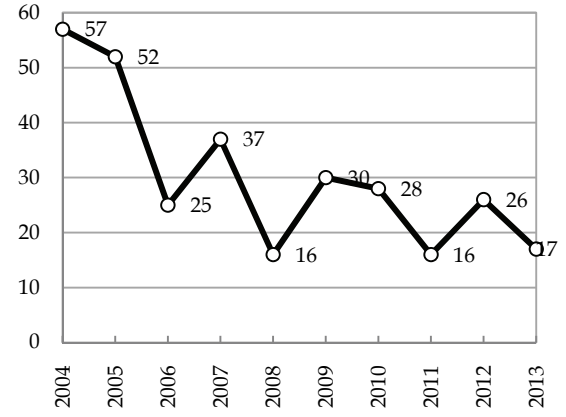
amination was done where needed. All the patients were put on MDT as per standard MDT regimen. The epidemiological and demographic data of all patients (total 304) who attended the urban leprosy centre during the last 10 years i.e. from 2004 to 2013 were analyzed to observe the various epidemiological trends. Data was analyzed using SPSS version 20 statistical software. Chi square test was applied as a test of significance with a significance level of $p \leq 0.05$.

RESULT

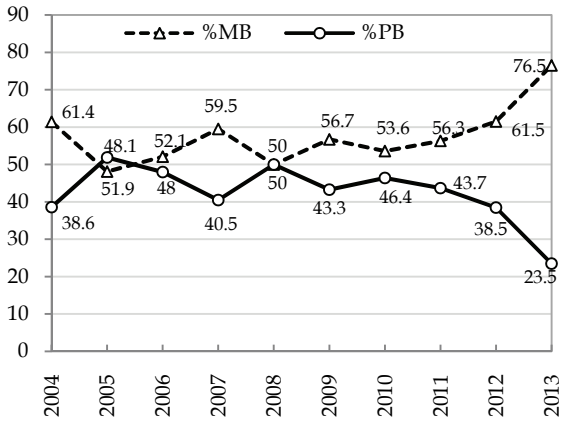
Out of the total 304 patient who attended the urban leprosy clinic during last 10 years (2004-2013), there were 177(58.2%) male and 127(41.8%) female. Males outnumbered female with a ratio of 1.5:1 as evident in Table 1 which shows age wise distribution of new cases. The average age of disease onset was 35.73 years (SD 15.5) ranging from 6 years to 75 years. The median age of leprosy was 33 years. Majority of cases 36.8% belonged to 15-30 years closely followed by 29.6% in 31-45 year age-group which represent i.e. reproductive active age group.

In this hospital based study, the total numbers of new cases were 57 in 2004 which decreased to 17cases in 2013. The graph of new case detection shows a gradual decline but this decline is not consistent, marginal rise in prevalence reported in the year 2007, 2009 and 2012 as compared to previous years. (Graph-1)Overall hospital based prevalence of leprosy in study area was 2.4 per ten thousand patients. The prevalence has shown a decreasing trend from 2004(7.3 /10,000 patient) to 2006 (2.4/10,000 patient). However in 2007(3.5/10,000patient) little rise was reported, after that decreasing trend started & reached to 1/10,000 patient in 2013. (Graph-2)

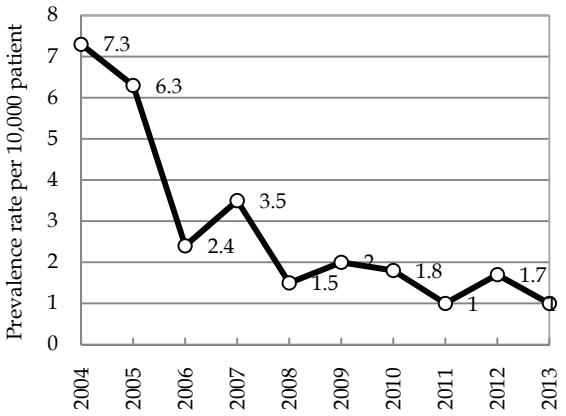
Out of the total 304 cases, majority of patient 173 (56.9%) belonged to multibacillary group treated with MB MDT while 131(43.1%) were paucibacillary treated with PB MDT. The percentage of MB Leprosy among male and female patient are shown in Table-1. The difference between male and female for multibacillary diseases was not significant (Chi-square value 3.77, p=0.052).



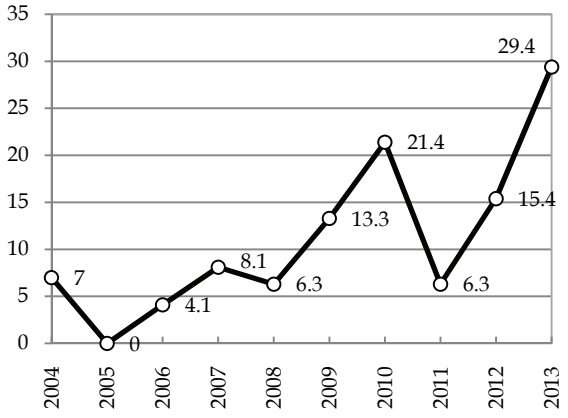
Graph-1: Trend of new case detection from the year 2004 to 2013



Graph-3: Overall trend of MB & PB casesfrom 2004 to 2013



Graph-2: Trend of hospital based prevalence rate of leprosy from the year 2004 to 2013



Graph-4: Year wise distribution of disability (in %) amongst leprosy cases

Table 1: Distribution of Leprosy cases according to their socio demographic profile and type and complication of diseases

	Male (%)	Female (%)	Total (%)
Age group(Years)			
1-15	15 (60)	10 (40)	25 (8.2)
15-30	72 (64.3)	40 (35.7)	112 (36.8)
31-45	46 (51.1)	44 (48.9)	90 (29.6)
46-60	27 (50)	27 (50)	54 (17.8)
>60	17 (73.9)	06 (26.1)	23 (7.6)
Type of Disease			
Multibacillary	109 (63)	64 (37)	173 (56.9)
Paucibacillary	68 (51.9)	63 (48)	131 (43.1)
Grading of Diseases			
Grade-0	156 (56.7)	119 (43.3)	275 (90.4)
Grade-1	07 (77.8)	02 (22.2)	09 (3)
Grade-2	14 (70)	06 (30)	20 (6.6)
Deformities			
Hands			
Type-1	07 (58.3)	05 (41.7)	12 (4)
Type-2	09 (64.3)	05 (35.7)	14 (4.6)
Feet			
Type-1	08 (66.7)	04 (33.3)	12 (4.1)
Type-2	04 (50)	04 (50)	08 (2.6)
Eyes	02(100)	00 (0)	02 (0.7)

Table 2: Distribution of disability amongst PB & MB leprosy cases

Grade of Disability	PB (%)	MB (%)	Total
Grade 0	122(93.1)	153(88.4)	275(90.4)
Grade 1	01(0.8)	08(4.6)	09 (3)
Grade 2	08(6.1)	12(7)	20 (6.6)
Total	131(43.1)	173(56.9)	304

The percentage of MB & PB cases during the period 2004 to 2013 are given in Graph-3.The percentage of MB cases which were falling consistently but very slowly till 2006, shows abrupt upward trend in 2007 & reached around 76.5% of total cases in 2013. This increase in MB patients is a plausible sign and may be due to of existence of inaccessible pockets of population harboring undiagnosed leprosy patients for a long time. These patients are now coming forward voluntarily for treatment to the medical centers and the hospitals through improved IEC (Information, education and Communication) programme of NLEP.[5]

In leprosy circles, the terms deformity and disability are used synonymously and graded as Grade 0, 1 or 2. Deformity assessment was based on WHO guidelines for assessment and grading for disability in leprosy.[6] Out of 304 new cases 29(9.5%) patient suffered from various deformities. Prevalence of type 2 deformity was higher than type 1 deformities. About 3 % had Grade 1 (loss of sensation) and 6.6% had Grade 2 deformity (visible deformity). (Table-1) Among the patient with Grade 2 deformities, most common deformity observed was claw hand12(60%) and planter ulcer 7 (35%) followed by ulcers in hands 2(10%), foot drop 1(5%) and loss of tissue (absorption of toe) 1 (5%). Eye involvement was present in two patients with lagopthalmos and chorioretinitis in one patient each. Prevalence of disability (both grade 1 and grade 2) was more in male than in female. Disability rate was more in Multi-Bacillary leprosy patients than in Pauci-Bacillary (P value=0.134). (Table-2) The pattern of deformity shows almost a constant trend. There was a declining trend from 2004 to 2008 and again it started increasing gradually. (Graph-4) There is very impressive improvement of MDT completion rate over the years. Out of 304 patient during 2004-2013 only 10 (3.3%) patient left treatment , 279 (91.8%) patient complete their treatment and release from treatment(RFT),14 (4.6%) patient still under treatment and only 1 (0.3%) died during treatment.

DISCUSSION

The world wide application of MDT has cured millions of leprosy patients. In India, MDT has brought down the prevalence of disease from 25.9 in 1991 to 0.73 per 10,000 population in April 2013. [4]Traditionally, male: female ratio is reported to have shown preponderance of males from sulfone to MDT era (Norman et al 2006)[7]. In our study too, males outnumbering female with ratio of 1.5:1, this is the general pattern in India where male frequently self report for treatment.

In present study majority of patient were of reproductive age group .Findings are in consonance with study conducted by Arora et al in a tertiary care center.[8] Peak incidence of disease observed in female in reproductive age group could be related to hormonal imbalance during puberty, pregnancy & puerpurium. There are about 57% cases belongs to multibacillary group which is almost similar(57.5%) with a study conducted by Kumar et al.[9]However Arora et al[8] reported 63-69% cases of multibacillary leprosy which is little higher than our study due to difference in place of study. In present study, percentage of MB cases increased from 2004 (61.4%) to 2013(76.5%).Sanghavi Mithun M in their study also reported that the proportion of MB cases among new cases was increasing from 50.89% in 2000-01 to 88.32% in 2010-11.[10]Increase proportion of multibacillary cases is important as they represent major source of infection and they are at greater risk of reactions.[9]

In this study, disability rate among new cases was 9.5%.Various studies have reported disability rate which vary from 7.9% by Casabianca, [11] to 20-25% by Norman et al.[7]Current study find 6.6% grade-2 disability rate which is greater than national average (3.5%) but similar to State average (5.2%).[4] Proportion of cases with disability (both grade 1 and grade 2) is more in males than in females. This male preponderance in disability incidence has been also reported in studies conducted by Arora et al.[8] Instead of active search, the present National Leprosy Eradication Programme only includes voluntary reporting so the patient often present late when they have some form of deformities.

CONCLUSION

With the introduction of MDT in India, an impressive decline in leprosy prevalence rate is seen. This study was conducted to find out the trend in presentation of leprosy patient which was found to be declining with few spurts in this study. The rising trend of proportion of female cases may be interpreted as improvement in female literacy rate & changing social customs. This also indirectly indicated the health-seeking behaviour of women in accessing health services. The rise in the MB cases and preponderance of leprosy patient in children and reproductive age groups denotes the presence of active infection of leprosy in the community and will require much greater intervention to promote early detection of leprosy. The family member of newly diagnosed patient should be screened regularly for leprosy. This would allow earlier institution of therapy and reduce morbidity and deformity. The present IEC strategies and BCC (behavior change communication) activities should be modified for increasing voluntary & early reporting of patient in health facility as well as to remove the social stigma associated with leprosy.

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REFERENCES

1. Park JE,Park K. Text Book Of Preventive and Social Medicine,22nd Edition, M/S. Banarsidas Bhanot, Jabalpur;2013:287-302.
2. World Health Organization(2013),Weekly Epidemiological Record, No.35,30th Aug.,2013:365-380. Available from: http://www.who.int/wer. (Last Accessed on 20.01.2014)
3. National Institute of Epidemiology & Indian Council of Medical Research. Report on national Workshop on surveillance of leprosy, 20 sept 2005.Chennai,India:National Institute of Epidemiology.p37.
4. Govt. of India (2013), National Leprosy Eradication Programme, Progress report for the year 2012-13. Dept. of Deputy Director General Leprosy,DGHS, New Delhi. .Available from: http://www.nlep.nic.in (Last accessed on17.01.2014).
5. Tiwary PK, Kar HK, Sharma PK, Gautam RK, Arora TC, Naik H, Dhir V .Epidemiological trends of leprosy in an urban leprosy centre. Indian J Leprosy 2011;83 : 201-08.
6. World Health Organization, Regional Office for South-East Asia.Global strategy for further reducing the leprosy burden and sustaining leprosy control activities-2006-2010. Operational Guideline.New Delhi,India:WHO;2006.p15.
7. Norman G, Bhushanam JDRS and Samuel P. Trends in Leprosy over fifty years in Gudiyatham Taluk, Vellore, Tamilnadu. Indian J Lepr 2006; 78:167-85.
8. Arora M, Matoch K, Natrajan M, Kamal R, Yadav VS. Changing profile of disease in leprosy patients diagnosed in a tertiary care centre during years 1995-2000.Indian J Lepr 2008; 80:257-65.
9. Kumar B,Dogra S, Kaur I.Epidemiological characteristics of leprosy reaction:15 years experience from North India. Int J Lepr Other Mycobact Dis 2004; 72:125-33.
10. Sanghavi MM. A Review of Trend of Leprosy Situation in Jamnagar District of Gujarat. Natl J Community Med 2012; 3(3):486-90.
11. Casabianca MN.Leprosy situation in Uttar Pradesh.J Commun Dis 2006;38:7-14.