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Original Article

Profile of Childhood Leprosy Cases Attending a Tertiary Care Centre

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In spite of 33 years of use of Multidrug Treatment (MDT) implemented by National Leprosy Eradication Programme (NLEP), leprosy continues to be a major public health problem in some regions of India. Recent increase in number of cases of leprosy at our tertiary care centre especially in children encouraged us to undertake a descriptive study for last 5 years. Records were analysed to describe the clinical pattern of leprosy in children below 15 years pertaining to the period 2010 to 2014. Amongst 664 leprosy cases registered during 2010 to 2014, 86 were found to be children between 0-15 years of age (13.1%). The number of newly detected children with leprosy increased from 7 cases (8%) in the year 2010 to 29 cases (34%) in the year 2014. Majority of patients of childhood category belonged to 10-15 years of age group 51/86 (59%), with a male preponderance. PB cases were significantly more (71%) than cases of MB (29%). Borderline tuberculoid leprosy was the commonest type seen (77%). Grade 1 and grade 2 deformity were observed in 8% and 6% of childhood cases respectively. 91% of these childhood cases had history of BCG vaccination. 21% of children had a contact in family or neighbourhood which shows the importance of asking the patients to bring family contacts specially children for examination or public health workers being asked to approach the families for check up of contacts. Active surveys/school surveys to find cases specially in female children should be considered. As this is a hospital based study it may be indicative of trends only which should be followed by properly designed field based studies.

Keywords : Leprosy profile, children, Akola, Maharashtra

Introduction

India accounts for 55% of new leprosy cases detected globally. In India number of reported new leprosy cases were 0.13 million in the year 2012-13 (NLEP 12-13) and 0.12 million in the year 2013-2014 (NLEP 2013-14). Global figures for 2011-12 showed 21,349 new child cases with 76.5% of these residing in south East Asia region (WHO 2013). The prevalence of childhood leprosy in highly endemic zones of world varies from 0.012 in Argentina to 41.6 in Micronesia (Butlin and Saunderson 2014). In India the proportion of new childhood cases has been around 9% - 13,387 (9.6%) in 2012-2013 (NLEP 2012-13) to 12043

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(9.4%) in the year 2013-2014 (NLEP 2013-14), ten states in India have child proportion of over 10%. Daman & Diu had 30% belonging to childhood group (Mahajan and Sardana 2006).

Occurrence of childhood leprosy in urban clinics and tertiary care hospitals varied from 5.1% - 11.4% (Shetty et al 2009). The figure was in the range of 7 - 9% in studies done at tertiary centres between 1995 to 2003 (WHO 2013). At National level, the percentage of new childhood cases from year 2005 to 2012 remained unchanged (9.4% to 10.4%) (Palit and Inamdar (2014). These figures for Maharashtra were 13.04% and 12.70% during the year 2011-2012 and 2012-13 respectively (Gaikwad 2014). Gaikwad (2014) also reported that among the leprosy cases seen by them during 1998-2014, 16.54% belonged to 4-18 years age group. As the numbers of childhood leprosy cases are important to determine the level of disease transmission in society, the present study aims to analyze 5 year record of newly diagnosed childhood leprosy cases and discuss relevant epidemiological implications of our observations.

Materials and Methods

This descriptive study was conducted at outdoor and indoor services in Department of Dermatology of Hospital of Govt Medical College, Akola which is a tertiary care hospital situated in Maharashtra, India from 2010-2014. The permission from the head of Institution and clearance from ethical committee was obtained before starting the study. Cases of leprosy up to 15 years of age who presented in the in the Department of Dermatology during the period 2010-2014 were included in this study. Demographic data were noted from records. Clinical presentation including number of patches, presence of sensations, nerve involvement, presence of reaction and deformities were noted. Diagnosis was made by clinical, bacteriological and histopathological criteria of IAL (1982), Ridley and Jopling (1966) and were classified into Multibacillary (MB), Paucibacillary (PB) as per criteria of WHO (1988). Disability was graded into 0, 1, 2 grades as per WHO criteria (1970). The data recorded was coded and analyzed. Mean and standard deviation was used for quantitative data.

Results

A total of 664 new cases of leprosy were registered between the years 2010 to 2014. 86 patients were found to be children below 15 years of age (13.1%). Mean age of presentation was 11.11 with SD 3.09. Out of 86 cases seen in last 5 years, 7 cases (8%) were seen in year 2010, 13 cases (15%) were seen in year 2011, 14 cases (16%) were seen in year 2012, 23 cases (27%) were seen in year 2013, 29 cases (34%) were seen in year 2014. The majority of patients belonged to 10-15 age group (59%), with a male preponderance M:F = (1.5:1) (Table 1). 60 out of 80 cases had less than 5 patches and ten out of 60 cases had single lesion. 24 cases had more than 5 patches. (Table 2). Borderline Tuberculoid leprosy (77%) was the commonest type followed by Tuberculoid leprosy 7%, Borderline Borderline (6%), Indeterminate leprosy (3.5%), 2.3% Pure Neuriticleprosy and Borderline Lepromatous 5%, Nerve thickening single or multiple was seen in 17 cases (20%) (Table 3).

Out of total 86 cases of childhood leprosy, 61 cases (71%) were of PB type whereas 25 cases (29%) were MB. Mean age of PB cases at the time presentation was 10.60 with SD 3.08. Mean age for MB cases was 12.36 with SD 3.04. Seven cases (8%) showed grade 1 deformity and five cases (6%) showed grade 2 deformity (Table 4). Eleven patients had deformity of upper extremity and only one patient showed deformity of lower

Table 1 : Year wise Leprosy cases by age group, gender and clinical classification

Variable	Year wise distribution					Total
	2010	2011	2012	2013	2014	
Total Cases of leprosy	74	89	113	192	196	664
Age group (childhood cases) in years						
0-5 years	1	1	0	1	2	5
6-10 years	2	2	7	10	9	30
11-15 years	4	10	7	12	18	51
Total	**7**	**13**	**14**	**23**	**29**	**86**
Gender (childhood cases)						
Male	4	5	8	13	18	48
Female	3	8	6	10	11	38
Total	**7**	**13**	**14**	**23**	**29**	**86**

Table 2 : Distribution of patients according to Number of Lesions

No. of lesions	No. of Patients	Percentage
Single lesion	10	12
< 5	50	58
>5	24	28
Pure neuritic	02	2.3

Table 3 : Clinical Types of Leprosy according to Ridley Jopling classification

Types of Leprosy	No. of Patients	Percentage
TT	6	7
BT	66	77
BB	5	6
BL	4	5
LL	0	0
Pure Neuritic	2	2.3
Indeterminate	3	3.5

Table 4 : Leprosy cases in children classified by age group, Type of Leprosy and grade of disability

Variable	Age groups			
	0-5	5+	10+	Total
Type				
PB	5	23	33	61
MB	0	7	18	25
Deformity				
Grade 0	5	25	44	74
Grade 1	0	4	3	7
Grade 2	0	1	4	5

Table 5 : Presence of Deformity according to Type of Leprosy

Deformity	PB	%	MB	%
Deformity not seen	57	93.5	17	68
Deformity seen	04	6.5	08	32
Total	61	71	25	29

Yates corrected Chi square = 7.55, d f = 1, p<0.05

extremity. It was noticed that out of 25 MB cases deformity was seen in 8 (32%), whereas out of 61 PB cases the deformity was seen in 6.5% of cases This difference was found to be statistically significant (Table 5). None of the children had deformity on the face. Type I Lepra reaction was observed in 6 cases. 95% children had BCG scar .18 cases (21%) gave a definite history of contact out of which (12 cases) 70% were intra-familial.

Discussion

The disease profile in children can be studied by community surveys and school Hospital based case studies can be helpful in finding the trends which should be followed by properly designed field based studies. Various studies have been done in different age groups ranging from 0 to 18 years of age. Present study is a descriptive analytical study of childhood cases belonging to age group 0-15 years who reported to our hospital which is a tertiary care centre in Maharashtra. Childhood leprosy accounts for 13.1% of all leprosy patients attending our centre in last 5 years, which is more compared to some other studies. Various studies have reported the child proportion in the range of 7 to 10% (Vara 2006, Jain and Reddy 2002, Jain et al 2014). As per National leprosy eradication programme (NLEP), it was 9.7% in 2012 (NLEP 2011-12) and 9.49% in 2013 (NLEP 2013-14). Gaikwad (2014) had reported a higher proportion of 16.34% child cases in the age group of 4-18 years. Higher prevalence in our centre may be indicative of increased awareness among people leading to self reporting, however, this inference needs to be validated by appropriate studies targeting socio-behavioural aspects. The key aspect of patients going to primary and secondary health care facilities for leprosy diagnosis and treatment will also have to be investigated. Male preponderance in our study is similar to observations made by others (Prasad 1998, Sachdevaand Suhail 2010). Corroborating with other studies maximum number of cases were noted in 10-15 age group (Sachdeva and Suhail 2010), youngest being 4 year of age. In some studies children as young as 6 months of age have been reported to be having leprosy (Brubakar and Mayers 1985). Several studies have documented the presence of contacts being possibly important in disease transmission (Shetty et al 2009, Jain and Reddy 2002, Sardana 2006, Singhal and Sonthalia 2011). In our study 21% children were having history of contact either intrafamilial or in neighbours which shows the importance of asking the patient to bring family specially children for examination or public health workers to be asked to approach the families of contacts for check up. 12% of cases were found to be having single skin lesion which is similar to reports by Burman et al (2003) but less than reported in some other studies (Sardana 2006, Dogra and Narang 2014).

Majority of cases belonged to Borderline Tuberculoid (77%) leprosy which conforms with findings by others, 66.3% (Jain and Reddy 2002), 86.3% (Jain et al 2014) and 68% (Rao2009). Cases of Tuberculoid leprosy (7%), Borderline Borderline (6%), Indeterminate leprosy (3.5%),

Pure Neuritic leprosy (2.3%) and Borderline Lepromatous 5%, were also detected. Although few studies have reported occurrence of Lepromatous leprosy (Mahajan and Sardana 2006) and Histoid leprosy (Singhal and Sonthalia 2011, Grover and Nanda 2005) none of our patients had these types. PB cases (71%) were seen to be more common than MB cases (29%). Similar predominance of PB cases were observed by others - 63% (Sardana 2006) in India and 70.7% (Imbiriba et al 2008) in Manaus, Northern Brazil during 1998-2005. Higher proportion of MB cases such as 91.6% by Jain et al (2014) and 51.7% by (Singhal and Sonthalia 2011) have been reported in the recent past. Higher number of PB cases in our studies is encouraging. It may be indicative of enhanced awareness and concern among parents for their children leading to early consultation.

Nerve involvement was noted in 20% of cases. Other authors have reported higher figures ranging from 27.4% to 80% (Singhal and Sonthalia 2011, Dogra and Narang 2014) which could be due to lesser number of MB cases with nerve thickening in our cases. Only 6% of cases showed Grade 2 deformity, claw hand being the only deformity observed. This is similar to findings by others authors. At presentation none of the patients had Lepra reactions. However, 6 cases (7%) developed Type 1 Lepra Reaction during Multidrug treatment. BCG scar was noted in 91% of children. The transmission of leprosy in children inspite of receiving BCG vaccination questions the efficacy of BCG in protecting against leprosy. It has been suggested that the protective effect of BCG may last for 5-10 years after which it wanes (Butlin and Sauderson 2014) whether the second dose will sustain the effect for longer duration is uncertain. As BCG has partial protection against borderline and extensive disease in leprosy this may be resulting in shift to milder disease in India (Mulyil et al 1991), it is thus not an effective tool to stop transmission of leprosy in our settings.

Childhood leprosy continues to be frequent in Indian children which shows transmission in the recent period of mostly less than 10 years, the common incubation period of disease. Illiteracy, ignorance about the consequences of the disease, reluctance to seek advice in early stages by the parents may carry the risk of increase in deformities. Poor housing conditions, inadequate nourishment and overcrowding in homes facilitate transmission of leprosy. MB cases may act as source for many other new children in school, households and neighbors. Undiagnosed, hidden cases in the community will contribute to active transmission of the disease especially in children who owing to less immunity are more susceptible than adults.

Recent increase in number of children with leprosy reporting to our hospital could be due to increase in voluntary reporting at our centre and social inhibition in attending health care centers at their native villages. Impact of stoppage of door to door survey and contact tracing as done earlier needs to be assessed for considering changes in strategies wherever required.

For every confirmed new case thorough counseling of parents as regards to signs of nerve impairment and care of sensory impaired limbs, importance of complete treatment along with physiotherapy is needed. School surveys in such areas like ours along with community survey may be more effective methods to detect cases of leprosy early specially in children than voluntary reporting and referred services. These issues need to be addressed if India has to achieve eradication of leprosy.

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