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Profile of Disability in Children with Leprosy

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Abstract- Inspite of taking complete Multidrug treatment some patients with leprosy are left with disability and deformities. They remain reminders of disease leading to social discrimination , economical constraints and loss of confidence among patients . Recent increase in number of cases of leprosy with disability at our tertiary care centre especially in children encouraged us to undertake a descriptive study for the last 5 years. Records were analysed to describe the clinical pattern of disability in children with leprosy pertaining to the period 2010 to 2014.

Objective : To find out prevalence of disability in children (below 15 years of age) with leprosy registered at Department of skin during the period 2010 to 2014.

Results :- Amongst 664 new cases of leprosy registered between the period 2010 to 2014 , total 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 belonged to 10-15 years of age group (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 cases respectively.

Conclusion : . Significant rise in number of children with leprosy was noted in our Hospital during last 2 to 3 years. Early case detection ,and thorough neurological examination is needed to decrease the chance of developing disability

Index Terms- Children **,** Disability, Deformity, Leprosy, Tertiary Care Centre.

I. INTRODUCTION

India accounts for 55% of new leprosy cases detected globally. Global figures for 2011-12 show 21,349 new child cases with 76.5% of these residing in south East Asia region [1]. The prevalence of childhood leprosy in highly endemic zones of world varies from 0.012 in Argentina to 41.6 in Micronesia [2]. In India the proportion of new childhood cases reduced from 13,387(9.6%) in 2012-2013 [3] to 12043 (9.4%) in the year 2013-2014 [4].Ten states in India have child proportion of over 10% while in Daman & Diu it was 30 % . Occurrence of childhood leprosy in urban clinics and tertiary care hospitals varied from 5.1 – 11.4%[5] .The figure dropped to 7 - 9% in studies done at tertiary centres between 1995 to 2003[3] . At National level percentage of new childhood cases from year 2005 to 2012 remained unchanged (9.4% to 10.4%) . Contrary to the expectation number of childhood leprosy in Maharashtra were higher (13.04%) during the year 2011-2012 with prevalence of 1.07 and 12.7% during year 2012-2013 [6] **.** Leprosy is one of the foremost causes of disability and crippling deformities. Deformities may occur due to disease process (like loss of eye brows, facial deformities) or due to loss of motor functions (Clawing of hand, foot drop, lagopthalmos) or those resulting from injuries (like ulcers , resorption of fingers , fracture of bones and corneal ulcers). Prevalence rate of disability in leprosy patients varies between 16 to 56%. Timely diagnosis of Grade I disability is of great importance for disability elimination. In 2009 WHO launched enhanced Global strategy for further reducing the disease burden due to leprosy for 2011-2015 (reduction of new case of Leprosy with Grade 2 disability per lakh by 35% at the end of 2015) . Disability prevention can be achieved by active collaboration between health care professionals , patients and their family .Only then the goal of prevention of disability in leprosy patients can be realized .In the light of seriousness of the problem, this study has been undertaken at this tertiary care centre during the period between 2010-2014 with objective of studying proportion of disability among childhood leprosy patients and epidemiological factors associated with it.

MATERIAL AND METHODS :

The present study was a observational non analytical study of new patients who were diagnosed as having leprosy during the period from 2010 to 2014 and who had not taken any anti-leprotic treatment in the past. Before data collection permission was obtained from administrative authority of this tertiary care centre. 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. Cases were classified as Multibacillary (MB), Paucibacillary (PB). The data recorded was coded and analyzed. Mean and standard deviation was used for quantitative data. Data regarding type of disability , socio-demographic variables like age , sex , education was recorded. For disability classification WHO 3 point scale in 1998 was followed for hands and feet.

WHO disability grading 1998

Hands and feet

Grade 0 : No anaesthesia , no visible deformity or damage.

Grade 1 : Anaesthesia present but no visible deformity or damage .

Grade 2 : Visible deformity or damage present.

RESULTS:

During the period from 2010 to 2014 it was noticed that total 664 new cases of leprosy were diagnosed as having leprosy . Out of these 162 cases (24 %) were found to be having disability. 106 (65.43 %) were males and 56 (34.56 %) were females. 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. ***(Table 1)*** The majority of patients belonged to 10-15 age group (59%), with a male preponderance M: F = (1.5:1) . 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 neuritis 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 presentation for PB cases 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 2)*** Eleven patients had deformity of upper extremity and only one patient showed deformity of lower extremity. It was noticed that out of 25 MB cases deformity was seen in 32 %, whereas out of 61 PB cases the deformity was seen in 6.5 % of cases. ***(Table 3)*** This difference was found to be statistically significant . None of the children had deformity on the face. Lagopthalmous and severe visual impairment was not seen in any of our cases . 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 intrafamilial.

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 : Leprosy cases by age group, Type of Leprosy and deformity according to WHO classification

Variable	Age groups			
	0-5	6-10	11-15	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 3 : 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, $p<0.05$

DISCUSSION:

The disease profile in children with disabilities can be evaluated either with community surveys, school surveys or hospital based case studies. Various studies have been done in different age groups ranging from 0 to 18 years of age. Present study is a descriptive non - analytical study of childhood cases belonging to age group 0-15 years in 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 as compared to other studies. Various studies have demonstrated the prevalence of 7 to 10 % . As per National leprosy eradication programme (NLEP), it was 9.7% in 2012[3] and 9.49% in 2013 [4]. It is less than 16.34% as reported by Rohini G [8]. Male preponderance in our study is in concurrence with observations made by others [7, 8]. Corroborating with other studies maximum number of cases were noted in 10-15 age group [8], youngest being 4 year of age. Surprisingly children as young as 6 months of age have been reported to be having leprosy . In our study 21% children were having history of contact either intrafamilial or in neighbours . 12% of cases were

found to be having single skin lesion which is similar to reports by Burman D. [9] but less than reported in other studies [16 ,19].

Majority of cases belonged to Borderline Tuberculoid (77%) leprosy which concurs with findings by Jain et al. (66.3%), Mahim J. (86.3%), and Rao (68%) [10, 11]. Cases of Tuberculoid leprosy (7%), Borderline Borderline (6%), Indeterminate leprosy (3.5%), pure neuritis (2.3%) and Borderline Lepromatous 5%, were also detected. Although few studies have reported occurance of Lepromatous leprosy and Histoid leprosy , 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 Sardana K. (63%) and Elisia B (70.7%) . Surprisingly higher numbers of MB cases were reported by Mahim Jain (91.6%) and Singhal (51.7%) [12] . Higher number of PB cases in our studies is encouraging. It indicates enhanced awareness and concern among parents for their children leading to early consultation.

Nerve involvement was noted in 20% of cases. This is less than reports by other authors (27.4% to 80%) which could be due to lesser number of MB cases with nerve thickening. 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. As suggested by C Ruth it might have protective effect for 5-10 years after which it wanes [4].Whether the second dose sustains the effect for longer duration is uncertain.

33-56% of newly registered leprosy patients already have clinically detectable nerve function impairment) . In the present study it was found that 14 % of patients having leprosy suffered with disability .These rates are lower than rates reported by others Singhi et al 2004 (35 %) (13) and Farooq R 2008 (55%) (14) .This indicates the decrease in disability rates as compared to last decade . Grade 1 and Grade 2 deformities were noticed in 8 % and 6 % patients respectively. The higher prevalence of Grade 2 disability was also reported in studies by other authors . This was slightly more than as reported by Mahajan (4.6 %) (15) and less than as reported by Sarkar (9.4%) (16). This was in accordance with other authors . Disability rate was significantly higher in males (65.4 %) than females (34.56.%) . Ulnar nerve was commonly involved (71%) followed by lateral poplitial nerve and great auricular nerve . Cases with MB leprosy were seen to have higher prevalence of disability (9.3 %)compared to PB patients (5 %) . Our study clearly indicates that chances of acquiring disability in leprosy patients increased in MB cases .

II. **CONCLUSION** Contrary to the conventional concepts childhood leprosy is more frequent in Indian children. Illiteracy, ignorance about the consequences of the disease, reluctance to seek advice in early stages by the parents contributes towards non decline of childhood cases and 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. This has led to increase in undiagnosed, hidden cases in the community contributing to active transmission of the disease especially in children who owing to less immunity are more susceptible than adults. Prevention of disability/ deformity can be done easily by basic level health workers . Early case detection , contact tracing , timely treatment and thorough examination for signs of possible nerve function impairments is need of the hour. Keeping close watch on development of nerve involvement , periodic examinations for nerve function impairment and reactions in leprosy during and after MDT is essential . Special emphasis on physiotherapy is needed

References

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1) Reddy BN, Bansal RD. An epidemiological study of leprosy disability in a leprosy andemic rural population of Pondicherry (South India) clinic in Gwalior. India .J Lepr 56 (1984) 191-194 .
2) World Health Organization. Global Leprosy: Update on 2012 situation.Weekly epidemiological record 2013;88:360-380. Available from :http://www.WHO.int/wer.
3) NLEP Progress report for year 2011-12. Central Leprosy Division . New Delhi: Directorate General Of Health Services Nirman Bhavan 2012. Available from :http://www.nlep.nic.in/Revised%20progress%report%203 1st 0%20March%202011-12pdf.
4) NLEP Progress report for year 2013-14. Central Leprosy Division . New Delhi: Directorate General Of Health Services Nirman Bhavan 2014. Available from :http://www.nlep.nic.in / pdf /. Progress report 31st march 2013-14.
5) Mahajan S, Sardana k (2006) . A study of Leprosy in children , from a tertiary Pediatric hospital in India. Lepr Rev . 77:160-2.
6) Palit A , Inamdar A (2014). Childhood leprosy in India over past two decades. Lepr Rev . 85: 93-99.
7) Mahim jain, Chitra N , Ramaya C.C (Jan-April 2014) . Clinical , bacteriological, and histopathological characteristics of children with leprosy : A retrospective analytical study in Dermatological department of tertiary care centre. Indian Journal of Paediatric Dermatolology . 15: 16-19.
8) Prasad PV (1998) . Childhood Leprosy in rural hospital . Indian J of Paeds . 65:751-4
9) Burman KD , Rijal A et al (2003) . Childhood leprosy in Eastern Nepal : A hospital based study. Indian J Lepr . 75 (1) : 47-52.
10) Jain PK et al :A study of high disability rate among LAPs in Gwalior district .Indian Journal of Community Health . Vol 23 , No. 2, July 2011-2011
11) Rao PS, Karat A.B , Karat S. Prevalence of deformities and disabilities among leprosy patients in an endemic area . Indian J Leprosy 1970. (38) : 1-11.
12) Singhal A , Sonthalia S (2011) . Childhood leprosy in a tertiary care hospital in Delhi, India :A reappraisal in post elimination era . Lepr Rev . 82: 259-269.

13) Singhi MK, Ghiya BC , Gupta D, Kachhawa D. Disability rates in leprosy. Indian J Dermatol Venerol Leprol 2004; 70 :314-6.
14) Farrokh R, Ghaderi E, Moradi G. A study of disability status of live leprosy patients in Kurdistan Province of Iran .Pak J Med Sci . 23 (6) 857-61.
15) Mahajan PM , Jogaikar DG , Mehta JM . a study of pure neuritic leprosy – clinical
Experience. Indian J Lepr 1996 ; 68 : 137-41
16) Sarkar J , Dasgupta A , Duta D. Disability among new leprosy patients , an issue of Concern . Indian J Dermatol Venerol Leprol 2012. 78 (3) 328-334 .

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