ORIGINAL ARTICLE

A Clinico-epidemiological profile of Hansen's disease in a tertiary care institute of Western India : A six year study

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ABSTRACT

Introduction: Knowledge and understanding of clinico-epidemiological profile of Hansen's disease is an essential pre-requisite to assess and address public heath need in the country and to enable efficient programme planning and management.

Aim: The main objective of present study was to study the clinico-epidemiological profile of Hansen's disease patients in leprosy centre of a tertiary care institute.

Material and Method: In this retrospective study of clinical and epidemiological details of all Hansen's disease patients who attended the leprosy centre of Western India, in last 6 years were analyzed from departmental record.

Result: Among 205 patients, Male/Female ratio was 3.18: 1. Majority of patients (47.3%) belonged to 21-40 year age group. In clinical spectrum, 30.73% patients were in Lepromatous leprosy followed by Borderline tuberculoid (27.8%), Borderline lepromatous (19.02%) and polar Tuberculoid leprosy (12.19%). Histoid leprosy were present in 7 patients (3.41%). Multibacillary (MB) cases were more prevalent (83.41%) than Paucibacillary (PB) cases (16.59%). Total 52 (25.36%) patients had Lepra reaction, 16.1% had type-1 and 9.26% type-2 reactions. 35.12% patients had Grade 1 deformity while 14.63% had Grade 2 deformity.

Conclusion: In post-elimination era, increasing number of new cases of lepromatous leprosy and with grade 2 deformity indicates the need of early case detection and appropriate intervention to reduce overall deformity and morbidity.

KEYWORDS: Leprosy, Epidemiology, Clinical profile, Lepra reaction, Disability

INTRODUCTION

Hansen's disease/Leprosy is a chronic infectious, granulomatous disease, caused by *Mycobacterium leprae*. The main route of transmission is through respiratory droplets from an active case of leprosy to susceptible individuals.[1] It mainly involves the peripheral nerves & skin and secondarily it can affect muscles, eyes, bones and other internal organs, which may lead to disabilities. National Leprosy Control Programme was launched in 1954 in India and was switched to National Leprosy Elimination Programme in 1983. India has achieved the leprosy elimination goal in 2005.[2] The main objective of present study was to study the clinico-epidemiological profile of Hansen's disease in our leprosy centre.

MATERIAL AND METHODS

This is a retrospective study of six year duration

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(November-2012 to October-2018) done in leprosy centre of Mahatma Gandhi university of medical sciences and technology, Jaipur, Rajasthan. All the cases of leprosy who attended the leprosy centre during study period were included. The data were collected from the patient record and recorded in a performa.

Age, sex, duration of illness, history of treatment and family history were noted. A thorough cutaneous examination including lepra reaction and peripheral nerve examination (for thickness, tenderness or any abscess) were noted. Deformities like facial palsy, claw hand, wrist drop, foot drop, plantar ulcer according to WHO grading were noted. Slit skin smear and histopathological slides were also reviewed.

All the patients were classified according to Ridley-Jopling and Indian Academy of Leprologist (IAL) Classification, based on their clinical finding and investigation reports.

RESULTS

A total of 205 patients attended the leprosy centre of our institute during the period of November-2012 to October-2018

Among 205 patients, there were 156 (76.1%) males and 49 (23.9%) females with M/F ratio of 3.18:1. Maximum number of patients 49 (47.3%) were in the age group 21-40 years (Fig.1). The minimum and maximum age was 7 and 77 years respectively with average age of 36.6 years.

Child leprosy (≤ 16 years) constituted 12 (5.85%) cases, out of these 8 multibacillary (MB) and 4 paucibacillary (PB) cases. The family history was positive in 13 (6.34%) patients of which 12 had contact with Lepromatous leprosy (LL) and 1 had contact with Borderline tuberculoid (BT) leprosy patient.

Among 205 patients, 178 (86.82%) patients were from west India and 27 (13.18 %) patients were immigrants from neighbouring states of East india (i.e. Uttar Pradesh, Madhya Pradesh, Bihar). The majority of patients 95 (46.34%) had duration of illness of 0-6 months.

The most common primary skin lesion was plaque in 99 (48.29%), followed by macule in 91 (44.39%), Cutaneous nodule in 23 (11.21%), Subcutaneous nodule 19 (9.26%), and papule in 7 (3.41%) patients (Fig. 2). There were no primary skin lesion present in 5 (2.43%) patients, all of them were diagnosed as Pure neuritic leprosy.

Peripheral nerve were thickened in 93 (45.36%)

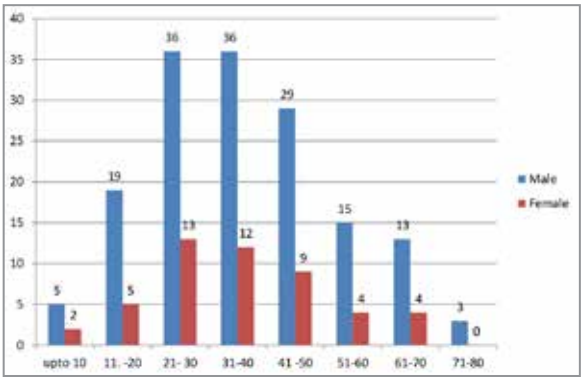

Fig. 1 Age and Sex distribution.

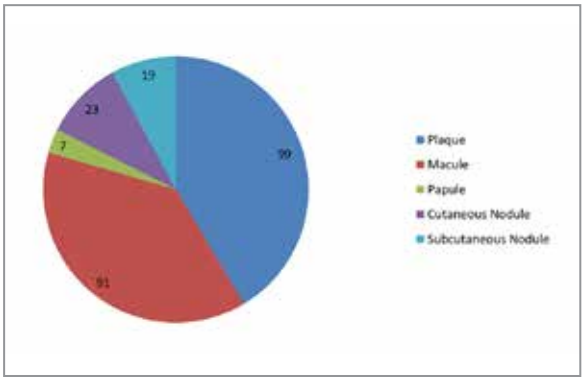

Fig. 2 Types of Primary lesion.

and tenderness present in 33 (16.1%) patients. Most common nerve involved was ulnar nerve in 48 (23.41%) followed by common peroneal nerve in 16 (7.8%) patients (Table No.1).

Grade-2 deformity were present in 30 (14.63%) patients. Out of these 14 had trophic ulcer (Fig. 4), followed by claw hand (Fig. 5) in 8 patients (Table No. 2).

The Bacteriological index (B.I.) with relation to type of leprosy is shown in Table no. In which B.I. +5 / +6 were mainly seen in Lepromatous leprosy and Histoid leprosy, B.I. +3 / +4 were mainly seen in Borderline leprosy (BB, BL), B.I. +1 / +2 were mainly seen in Borderline tu-

Fig. 4 A case of BL leprosy with trophic ulcer.

Fig. 5 A case of pure neuritic leprosy with partial claw hand.

Table 1 Peripheral nerve involvement

Peripheral nerve	Thickened	Tender	Nerve abscess
Great auricular	12	-	-
Radial	3	-	-
Ulnar	48	24	1
Median	5	2	-
Common peroneal	16	6	-
Sural	2	-	-
Posterior tibial	7	1	-

Table 2 Distribution as per WHO disability grades

WHO disability grading	Male	Female	Total
Grade-0	78	25	103
Grade-1	57	15	72
Grade-2			
Lagophthalmos	2	0	2
Wrist drop	1	0	1
Claw hand	6	2	8
Foot drop	4	1	5
Trophic ulcer	8	6	14
Total	156	49	205

Table 3 Clinical spectrum and Bacteriological index

Type of Leprosy	0	+1	+2	+3	+4	+5	+6	Total cases
TT	25	-	-	-	-	-	-	**25**
BT	40	2	10	5	-	-	-	**57**
BB	-	1	1	3	1	-	-	**6**
BL	1	-	2	10	21	5	-	**39**
LL	-	-	-	3	8	27	25	**63**
PNL	5	-	-	-	-	-	-	**5**
IL	3	-	-	-	-	-	-	**3**
Histoid	-	-	-	1	1	3	2	**7**
Total cases	**78**	**3**	**15**	**25**	**32**	**28**	**24**	**205**

berculoid (BT) leprosy (Table No.3).

In types of leprosy Lepromatous leprosy was most common seen in 63 (30.73%), followed by Borderline tuberculoid in 57 (27.80%), Borderline lepromatous in 39 (19.02%) patients (Fig.3)

There were 7 patients of Histoid leprosy (Fig. 6), out of these 5 were de novo cases (development of Histoid lesion without previous evidence of Hansen's disease), one patient who was diagnosed as BL leprosy, took irregular treatment and presented with histoid lesion after 3 year, interestingly their 2 brothers were also diagnosed as BT-leprosy and one patient had prior inadequate treatment with dapsone for few months.

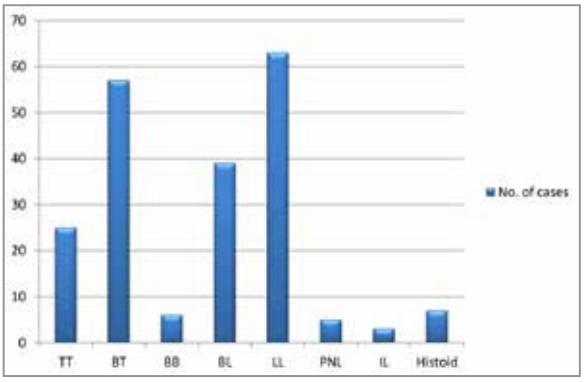

Fig. 3 Type of Leprosy.

Fig. 6 A 56 year male case of Histoid leprosy.

Among 205 patients, Multibacillary (MB) therapy were given to 171 (83.41%) and Paucibacillary (PB) therapy were given to 34 (16.59%) patients.

Type-1 lepra reaction was present in 33 (16.1%) patients, out of these 23 patients had reaction at clinical presentation and 10 patients had developed reaction after starting MDT therapy. Type-2 lepra reaction was present in 19 (9.26%) patients, out of these 5 patients had reaction at clinical presentation and 14 patients had developed after starting MDT therapy (Table No. 4). During treatment 7 (3.41%) patients had developed allergy to dapsone. In these patients, we gave Rifampicin 600 mg daily and Ofloxacin 200 mg twice daily. Out of 7, 1 patient had no response with this regimen.

Among 205 patients, 177 were new, 8 relapse and 20 defaulter cases. Out of 8 relapse cases, 6 presented with Lepromatous leprosy (LL) and 2 with Borderline leprosy (BL) type leprosy. Out of 20 defaulter cases, 7 presented with BT, 5 with BL and 8 with LL type leprosy.

Table 4 Lepra reaction and Clinical spectrum

Reaction	Type-1	Type-2
Disease spectrum	TT= 3 BT=21 BB=1 BL=7 LL=1	BB=1 BL=5 LL=13
Number of cases	33	19

DISCUSSION

The global prevalence of leprosy was 1, 92,713 cases (0.25/10,000 population) at the end of 2017. The WHO launched a "Global leprosy strategy 2016 - 2020' titled 'accelerating to-

wards a leprosy-free world'.

This strategy is based on 3 pillars: (i) strengthen government ownership, coordination and partnerships, (ii) stop leprosy and its complications, and (iii) stop discrimination and promote inclusion.[3]

India has succeeded with the implementation of MDT in bringing the national prevalence down to "elimination as a public health problem" of < 1/10,000 in December 2005 and even further down to 0.66/10,000 in 2016. A total of 1,35,485 new cases were detected during the year 2016-17, which gives Annual New Case Detection Rate (ANCDR) of 10.17 per 100,000 population. New leprosy cases detected during 2016-17 indicates the proportion of MB (49.57%), Female (39.17%), Child (8.7%), Grade - 2 Deformity (3.87%).[4]

The average national child leprosy rate is approximately 9%, the proportion of child cases was more than 10% of new cases detected in eleven states/Union Territaries of India (Tamil Nadu, Punjab, Dadra & Nagar haveli, Bihar, Mizoram, Arunachal Pradesh , etc.)

In our study, we analyzed the clinic-epidemiological profile of Hansen's disease in a leprosy centre of a tertiary care institute. Majority of patients were of age group 21-40 years, which is similar to other Indian studies (chhabra *et al* 2015, Rizvi *et al* 2015).[5,6] We found male preponderance (76.1%) with M/F ratio being 3.18:1, which is higher than ratio of 2.87 by Tiwary *et al* (2011).[7] It may be due to difference in health seeking behavior, as females are less likely to self report due to social stigma. The prevalence of child leprosy was 5.85% in our study, which is lower than 7.48% (state-wise) as per NLEP 2016-2017. This could be due to the early health care seeking attitude of parents when their children develop skin lesion.

In present study, the majority of patients belong to Lepromatous leprosy followed by Borderline tuberculoid that is in contrast to other studies (Girdhar *et al* 2012)[8] where BT leprosy was the commonest with 43.87% while LL leprosy was present in 17.35% patients. This shows that spectrum of disease may vary from area to area and will be indicative of access to services, awareness and management practices. So considering these variation, it will be necessary to carry out actual assessment of situation in different areas for devising need based strategies.

Assessment of Bacteriological index by slit skin smear examination is very important, as this shows the risk of transmission in the community. In our study, 25 (100%) TT leprosy cases and 77 (77.19%) BT leprosy cases were AFB negative, which was comparable to 100 % and 78.26% respectively reported by Agrawal *et al* 2018.[9] In present study, 63 (100%) cases of LL leprosy and 38 (97.43%) cases of BL leprosy were AFB positive, which was comparable to other Indian study.[9] The AFB negative cases found in LL leprosy might be due to improper quality of approach / technique used and also may be due to past treatment.

The Lepra reaction is of two types; Type-1 reaction is sudden appearance of erythematous plaque in pre-existing lesion or appearance of new lesions, development of neuritis, may present at the time of presentation or during treatment and even after release from treatment (RFT). Type-2 reaction is appearance of crops of skin lesion in the form of painful/tender evanescent papular, nodular or plaque type lesion along with fever and other systemic manifestations.[10]

In present study, incidence of Type-1 lepra reaction was seen in 33 (16.1%) and Type-2 lepra reaction was 19 (9.26%). Out of type 1 reaction, 75.75% in TT-BT pole, 15.15% in BB and 9.1% in BL pole, which is almost similar to reported by Sharma *et al* 2017.[11] Type-2 reaction was seen in 19 (9.26%), out of these 4 (21.1%) patients presented with erythema nodosum necroticans.

In present study, total 102 patients (49.75%) presented with deformity. There were 72 patients (35.12%) with Grade-1 and 30 patients (14.63 %) with Grade-2 deformity. Trophic ulcer was the most common type of deformity seen. These deformities rate on higher side (Agrawal *et al* 2018) and may be indicative of late reporting, being a tertiary care hospital where many referred cases also comes as well as inadequate treatment in some cases.

The proportion of Multibacillary (MB) cases 171 (83.41%) was significantly higher than Paucibacillary cases 34 (16.59%), which is almost similar to other Indian studies (Bachaspatimayum *et al* 2018).[12] This may be because of the patients noticing the lesions late or their reluctance to come forward early in the course of their disease.

CONCLUSION

In our study there is preponderance of new leprosy cases in 3rd and 4th decade with more case (30.73%) of lepromatous leprosy and grade 2 deformity (14.63%). It denotes presence of hidden undiagnosed cases in community and will require an intensification of leprosy control activities through contact tracing and active case detection.

Therefore, knowledge and understanding of clinic-epidemiological profile is an essential pre-requisite to enable efficient programme planning and management.

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