

Original Research Article

## Pattern and Complications of Leprosy among Patients attended Leprosy Clinic, Jesu Ashram, Siliguri, West Bengal: A 3 Years Record Based Study

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### Abstract

**Introduction:** *Leprosy is a chronic infectious disease caused by Mycobacterium leprae and widely prevalent in India. Deformities are the common complications of leprosy. Plantar ulceration is the commonest serious disability in leprosy and they occur in about 10–20% of leprosy patients.*

**Objectives:** *This study was planned to know the pattern and complications of leprosy and to ascertain the socio-demographic profile of Leprosy cases.*

**Methods:** *A record based cross-sectional study was conducted for 3 months in 2019. All the registered cases of Leprosy patients at the Leprosy Clinic, Jesu Ashram, Siliguri, West Bengal, during last 3 years (2016 – 2018) were included in the study, and their relevant records were reviewed using predesigned schedule. Collected data were analyzed using appropriate statistical measures.*

**Results:** *There were total 884 cases. Male to female ratio was 2.14:1. Total 1.4% were children. 162 (19.2%) patients gave family history of leprosy, 531 (62.9%) were from rural area. The most common type was Multi-bacillary leprosy 659 (78.1%). Total 695 (82.3%) of the patients had Plantar ulcer deformity and 819 (97%) of the cases had absent nerve sensation.*

**Conclusion:** *Majority of patients had plantar ulcer deformity. It indicates that the patients were not aware of it & not sought the consultation for the same at the earliest. Cases of Multi-bacillary (MB) leprosy are predominant. There is a need of strong follow-up system for defaulters in order to reduce the deformities.*

**Keywords:** *Leprosy, Pattern of Leprosy, Deformity, Plantar ulcer.*

### Introduction

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* and widely prevalent in

India. Though the disease is present throughout the country, the distribution is uneven. After introduction of MDT in the country, the recorded

leprosy case load has come down from 57.6 cases per ten thousand populations in 1981 to less than one case per 10,000 population at national level in December 2005.<sup>1</sup>

However, the new case detection rate which is an important statistical indicator in National Leprosy Eradication Programme has not shown any significant decline.<sup>2</sup>

The term 'plantar trophic' or perforating ulcer was introduced by Price in 1959. It was defined as a chronic ulceration of the anaesthetic sole of the foot, situated in well defined areas overlying bony prominences, resistant to local or systemic therapy and characterized by a marked tendency to recurrence.<sup>3</sup>

Anaesthesia of the foot is the central factor in the pathogenesis of plantar ulcers and an anaesthetic foot is said to be 'ulcer-labile'. The moment an ulceration occurs, this foot becomes 'ulcer-prone' and a vicious cycle of scar-ulcer-scar sets in.<sup>4</sup>

Plantar anaesthesia, unprotective walking, poor quality of scar resulting from previous ulceration, excessive load on this scar and persisting foci of infection are some of the main reasons for recurrence of plantar ulcers.<sup>5</sup>

Among major endemic countries, the proportion of new cases presenting with WHO grade 2 disability range from 6 to 21%.<sup>6,7</sup> Plantar ulceration is the commonest serious disability in leprosy<sup>8</sup> and they occur in about 10–20% of leprosy patients.<sup>9</sup>

The front part of the foot accounting for 71 to 90 percentage of plantar ulcers. Its medial part is more vulnerable than the lateral part. The proximal phalanx of the large toe is the most common site for trophic ulcers.<sup>10</sup>

There is a lack of published literature in this regard in the study area. So, as an important public health topic, the present Clinic-based study was undertaken to determine the pattern and complications of leprosy and to ascertain the socio-demographic profile of Leprosy cases.

## Methods

A record based cross-sectional study was conducted for 3 months in 2019. With prior permission from the Director of the Leprosy Clinic, all the registered cases of Leprosy patients at the Leprosy Clinic, Jesu Ashram, Siliguri, West Bengal during last 3 years (2016 – 2018) were included in the study, and their relevant records were reviewed using predesigned schedule. Collected data were analyzed for descriptive statistical analysis using percentage & proportion. Ethical approval was obtained from the Institutional Ethics Committee.

## Results

The present study included total 844 Leprosy cases, out of which majority of the cases 353 (41.8%) belonged to the (36 -55 years') age group, while the 30.9% belonged to above 55 years age group, 25.9% were in the age group 13 – 35 years and only 1.4% were in the paediatric age group. Age ranged between 6 to 90 years with mean age 46.3 years and SD 15.427. Maximum cases 576 (68.2%) were Male and 268 (31.8%) were Female; 493 (58.4%) were Hindu, while 205 (24.3%) were Muslim and 146 (17.3%) were Christian. Most of the cases 375 (44.5%) were Scheduled tribe followed by 32% General caste, Scheduled caste & other backward class (OBC) were nearly equal 11.8% & 11.9% respectively. Majority 62.9% of the cases were from the rural and 37.1% from the urban area. There were total 682 (80.8%) of the study subjects had no family history of contact and only 162 (19.2%) had family history of Leprosy [Table 1].

**Table 1:** Distribution of Leprosy cases as per Socio-demographic characteristics (n=844)

Age (In years)	Frequency	Percentage
≤ 12	11	1.4
13 – 35	219	25.9
36 – 55	353	41.8
Above 55	261	30.9
<b>Sex</b>		
Male	576	68.2
Female	268	31.8
<b>Religion</b>		
Hindu	493	58.4
Muslim	205	24.3
Christian	146	17.3
<b>Caste</b>		
General	270	31.9
Schedule caste	99	11.8
Schedule tribe	374	44.4
OBC	101	11.9
<b>Residence</b>		
Rural	531	62.9
Urban	313	37.1
<b>Family History of Leprosy</b>		
Present	162	19.2
Absent	682	80.8
<b>Total</b>	<b>844</b>	<b>100</b>

The most commonly noted types 659 (78.1%) was Multi-bacillary (MB) and 21.9% was Pauci-bacilliary Leprosy. Maximum 819 (97%) of the

cases had no nerve sensation and only 3% of the cases had intact nerve sensation [Table 2].

**Table 2:** Distribution of cases according to the pattern of Leprosy & Nerve sensation (n=844)

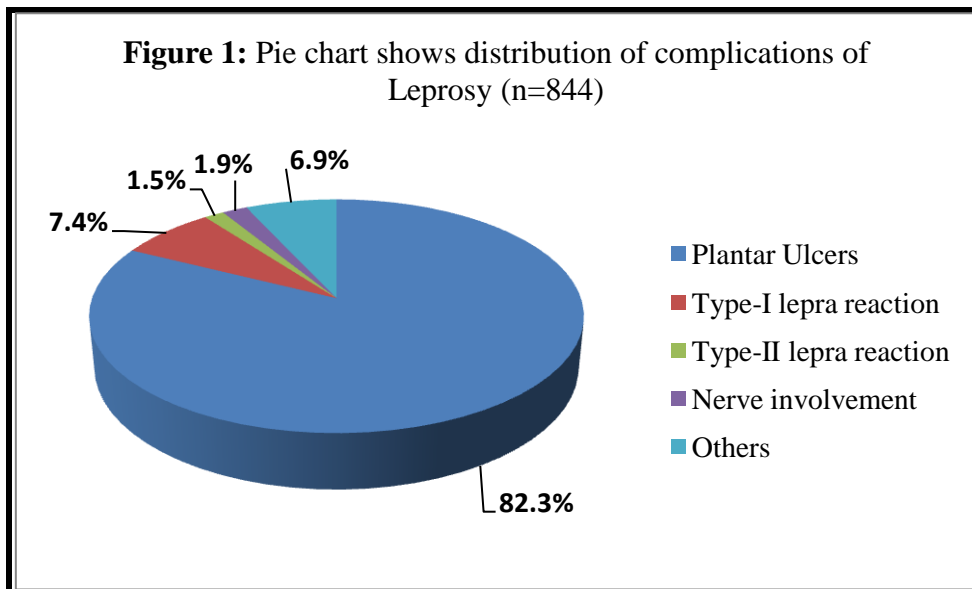
Types of Leprosy	Frequency	Percentage
Multi-bacillary (MB)	659	78.1
Pauci-bacillary (PB)	185	21.9
<b>Nerve sensation</b>		
Absent	819	97
Present	25	3
<b>Total</b>	<b>844</b>	<b>100</b>

There were total 695 (82.3%) of the cases, who had planter ulcer, followed by Type-1 & Type-2 lepra reaction 7.4% and 1.5% respectively. Only

1.9% of the cases had nerve involvement and 6.9% of the cases had ulcer in the other parts of the body [Table 3].

**Table 3:** Distribution of complications of Leprosy (n=844)

Pattern of complications	Frequency	Percentage
Planter ulcer	695	82.3
Type-1 lepra reaction	62	7.4
Type-2 lepra reaction	13	1.5
Nerve involvement	16	1.9
Ulcer in others parts of body	58	6.9
<b>Total</b>	<b>844</b>	<b>100</b>



Most of the Planter ulcer 296 (42.6%) was noted at the heads of the first & second metatarsal area followed by 39.2% at the heads of the lateral

metatarsal area, 17.9% at the mid-foot, 12.4% over heels and 11.1% & 5.2% at the big toe & other toes respectively [Table 4].

**Table 4: Distribution of Planter ulcers according to site (n=695)\***

Site of planter ulcers	Frequency	Percentage
Big toe	77	11.1
Other toes	36	5.2
Heads of the 1 <sup>st</sup> and 2 <sup>nd</sup> Metatarsals (MM)	296	42.6
Heads of the lateral Metatarsals (ML)	272	39.2
Mid-foot (MF)	125	17.9
Heels (H)	86	12.4

\*Multiple sites ulcer

**Discussion**

This record-based study conducted in a Leprosy Clinic includes total 844 cases which were diagnosed clinically. Age of patients ranged from 6 years to 90 years with mean age of 46.31 years. Maximum cases observed in the age group of 36-55 years. Similar findings are noted by other studies.<sup>11,12,13,14,15</sup>

Generally leprosy believed to be common in males. In the present study gender wise male predominance was observed with male to female ratio of 2.14:1. Similar findings were noted by other studies.<sup>2,11,13,14,15,16,17</sup>

In this study only in 162 (19.2%) patients gave history of leprosy in family or close contact. This proportion is higher than the study from Maharashtra & Himachal Pradesh.<sup>2,11</sup> There were total 11(1.4%) patients of paediatric age group &

none of them had history of leprosy in family. This indicates chances of contracting the infection in children outside the family is persistently high & still there is continuous transmission of the disease.<sup>18</sup> There is a study on post-elimination status of childhood leprosy from South India by Chitra *et al* and they found more than half of child cases had a history of household contact.<sup>19</sup>

In the present study total 695 (82.3%) of the patient had plantar ulcer deformity. Majority 296 (42.6%) ulcers were found at Heads of 1<sup>st</sup> and 2<sup>nd</sup> Metatarsal area 272 (39.2%) at Heads of Lateral Metatarsal area. It indicates that the patients were not aware of it & not sought the consultation for the same at the earliest.

Nerve sensation was absent in maximum 819 (97%) of the cases. This proportion is much higher than a study from Dakar and by Kadam *et*

al which mentions it as 68.49 % and 50% respectively.<sup>11,15</sup> Pure neuritic cases were not observed in this study. Similar finding is noted by a hospital based study from Maharashtra.<sup>20</sup> There were 75 (8.9%) cases who suffered from lepra reaction in this study. This was similar to the finding noted in the study by Kadam *et al.*<sup>11</sup>

### Conclusion

Majority of patients had plantar ulcer deformity. It indicates that the patients were not aware of it & not sought the consultation for the same at the earliest. Cases of Multi-bacillary (MB) leprosy are predominant. History of contact in study subject was not common & presence of leprosy in paediatric age group indicates continued transmission. However, there is a need of strong follow-up system for defaulters in order to reduce the deformities.

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### Reference

1. Park K. Park's Textbook of Preventive & Social Medicine. Leprosy. Ms. Banarasidas Bhanot Publishers; 25th Edition. 2019: 342-357.
2. Jindal N, Shanker V, Tegta GR, Gupta M, Verma GK. Clinico-epidemiological Trends of Leprosy in Himachal Pradesh: A Five Year Study. *Indian J Lepr.* 2009;81:173-9.
3. Price EW. The problem of plantar ulcer. *Lepr Rev*, 1964; 35: 267–272.
4. Andersen JG. Plantar ulcers in leprosy: their pathogenesis and natural history, and their therapy and prevention. *Lepr Rev*, 1961; 32: 16–26.
5. Srinivasan H. Trophic ulcers in leprosy III: surgical management of chronic foot ulceration. *Lepr Ind*, 1964; 27:186–193.
6. WHO. Leprosy disabilities: magnitude of the problem. *Wkly Epidemiol Rec*, 1995; 70: 269–275.
7. Croft RP, Richards JH, Nicholls PG, Smith WLS. Nerve function impairment in leprosy: design, methodology and intake status of a prospective cohort study of 2664 new leprosy cases in Bangladesh (The Bangladesh Acute Nerve Damage Study). *Lepr Rev*, 1995; 70: 140–159.
8. Bryceson A, Pfaltzgraff RE, Leprosy 3rd edn. Churchill Livingstone, Edinburgh, 1990, p. 165.
9. Liwen D, Futian W, Zaiming W et al. Techniques for covering soft tissue defects resulting from plantar ulcers in leprosy: Part I- general considerations and summary of results. *Ind. J Lepr*, 1999; 71: 285–295.
10. Gahalaut P, Pinto J, Pai G, et al. A novel treatment of plantar ulcers in leprosy: local superficial flaps. *Lepr Rev.* 2005;76:220–231.
11. Kadam YR, Ashtekar RS, Pawar VR, Pimpale AN. A study of leprosy patients attended tertiary care hospital. *Int J Community Med Public Health* 2016;3:3419-22.
12. Singh A, Gaur R, Ambey R. Spectrum of leprosy patients with clinic-histopathological correlation: A hospital based study. *Asian J Med Sci.* 2013;4(4):11-6.
13. Suri SK, Iyer RR, Patel DU, Bandil S, Baxi S. Histopathology & clinicohistopathological correlation in Hansen's Disease. *J Res Med Dental Sci.* 2014;2(1):37-43.
14. Parekh R, Mulchndani V, Parakh KK. Clinico-histopathological correlation in leprosy: A tertiary care hospital based study at Udaypur. *IJSR.* 2015;4(10):56-8.

15. Niang SO, Diallo M, Ndiaye M, Diop A, Diatta B.A, Wadih M, Kane A, Dieng MT, Badiane CI. Epidemiological & clinic pathologic aspects of leprosy in Dakar; evaluation of 73 new cases. *Dermatology Reports*. 2011;3(e18):40-2.
16. Giridhar M, Arora G, Lajpal K, Chahal K.S. Clinicohistopathological concordance in leprosy: A clinical, histopathological & bacteriological study of 100 cases. *Indian J Lepr*. 2012;84:217-25.
17. Vora RV, Diwan NG, Patel NH, Singhal RR, Ashok P. Clinico-histopathological correlation in leprosy: A study at a rural based tertiary care centre, Gujrat. *Indian J Clinical & Experimental Dermatology*. 2016;2(1):23-6.
18. Singh I, Lavania M, Nigam A, Ravindra P, Turank A.R, Ahuja M, John A.S, Sengupta U. Symposium on emerging needs in leprosy research in the post elimination era: The Leprosy Mission Trust India. *Lepr Rev*. 2016;87:132-43.
19. Chaitra P, Bhat RM. Post elimination status of childhood leprosy: Report from a tertiary care hospital in South India. *BioMed Research International* 2013. <http://dx.doi.org/10.1155/2013/328673>.
20. Rizvi AA, Sharma YK, Dash K, Tyagi N, Yadava R, Sadana D. An epidemiological and clinic-histopathological study of leprosy in semi-urban area under Pimpari Chinchwad Municipal Corporation in Pune district of Maharashtra. *Med J Dr. D. Y. Patil University*. 2015;8(5):609-13.