e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(2); 756-760

Original Research Article

A Study of Demographic Trends in Leprosy Cases a Silent Menace Still Prevalent in the Post-Elimination Era

Niladri Sekhar Das[1], Ashok Prasad[2], Dipmala Das[3], Atanu Roy[4]

[1]PGT-3rd Year, Department of Microbiology, MGM Medical College & LSK Hospital, Kishanganj, Bihar, India

[2]Associate professor, Department of Microbiology, MGM Medical College & LSK Hospital, Kishanganj, Bihar, India

[3]Department of microbiology, Department of Microbiology, MGM Medical College & LSK Hospital, Kishanganj, Bihar, India

[4]HOD, Department of Microbiology, Department of Microbiology, MGM Medical College & LSK Hospital, Kishanganj, Bihar, India

Received: 09-12-2022 / Revised: 14-01-2023 / Accepted: 18-02-2023

Corresponding author: Niladri Sekhar Das

Conflict of interest: Nil

Abstract

A persistent inflammatory disorder of the skin and peripheral nerves, leprosy. Leprosy was declared eradicated as a public health issue worldwide in 2000 and in India on December 31, 2005. Following that, leprosy services in India were included into the General Health-Care System, which resulted in a decrease in attention and funding. There is no time for complacency as maintaining the progress gained in leprosy control thus far is a significant task. In many states, there are still areas of high endemicity with prevalence rates above 2. Our results from a tertiary care facility show that epidemiological control is subpar and that disease transmission is still occurring. Dermatologists should continue to be at the forefront of developing the skills of undergraduate and graduate students, medical officers, and field workers in order to address this.

Keywords: Elimination, Epidemiological Indicators, Leprosy, The Prevalence Rate.

Introduction

A persistent infectious condition brought on by Mycobacterium leprae [1] Additionally called Hansen's Disease. This illness mostly impacts the skin, eyes, limbs, nerves, and ear lobes. A significant number of instances of this disease have returned in northern Bihar despite the several initiatives and regimens devised to eradicate it. Mode of transmission is it can spread through droplets in the air or through coughs and sneezes. Typically, it shows little pathogenicity [2] At birth or through sexual contact, it cannot be passed from mother to kid [3]. Mycobacterium leprae attaches to schwann cells, causing demyelination and nerve injury that impairs nerve function (axonal conductance). Peripheral nerve laminin is impacted by the glycoconjugate (PGL-1) and laminin-binding protein [4].

Skin lesions or anaesthetic patches, lymphadenopathies, nodule growth,

deformities, and nerve fibrosis are among the signs and symptoms [5]. Leprosy was histologically categorised in 1960 by Ridley and Jopling into six severity levels (I, TT, BT, BB, BL, and LL) [6].

One or a few hypo/hyperpigmented cutaneous macules with paucibacillary leprosy show loss of sensation as a result of an infection of the nearby peripheral nerves. (I, TT & BT). BI <= 2 Generalized or widespread skin pigmentation swollen peripheral nerves in multibacillary leprosy. Advanced nodule development is visible. It's also possible to see distant organ involvement. (LL, BB, & BL).

Biological Index (BI): The patient's bacterial load is expressed as using a semi-logarithmic scale.

- 1-10 bacilli/100 high power fields =1+
- 1-10 bacilli/10 high power fields = 2+
- 1-10 bacilli/high power field = 3+
- 10-100 bacilli/high power field = 4+
- 100-1000 bacilli/high power field = 5+
- >1000 bacilli/high power field = 6+

Bacilli viability is indicated by the morphological index. Bacilli that are solid are believed to be viable, whereas those that are fragmented are not. In paucibacillary instances, it might not be appropriate. It is stated as a percentage.

The main and major objective of this study was to assess the demographic trends of Mycobacterium leprae in patients who reported having symptoms that might indicate the disease in the dermatology outpatient department (OPD) of MGM Medical College and LSK Hospital.

Method

There was no particular age range that was chosen for the study population. Regardless of age or gender, all patients with probable leprosy symptoms were taken into account. The patient's age ranged from 14 to 60 years, with 14 being the minimum and 60 being the maximum.

Patients were first clinically examined for:

i. Anesthetic patches,
ii. Any nodule formation,
iii. Deformities,
iv. Fibrosed nerves or any lymphadenopathies

Slit Skin Smear samples from patients were collected from the body parts that were afflicted, and ZN dye was used. These samples were then examined under a microscope to check for Acid Fast Bacilli. The Morphological Index (MI) and Bacterial Index (BI) were investigated.

Results

180 out of 450 cases, or 40% of cases, had positive slit skin smear results.

Study results indicated that the male-to-female ratio was about 2:1 among the positive cases. The most afflicted group among the male positive cases had two peaks (14-18 years & 45-60 years). A significant portion of the female cases was apparently in the 40+ age range. Although there were more male cases, it was observed that their BI was typically 2+ or 3+ while there were fewer female cases, but their BI was typically 3+ or higher.

Clinically, 130 patients (29.30%) belonged to the Borderline Tuberculoid (BT) group, followed by the Lepromatous Leprosy (LL) group with 99 cases (21.11%), the Borderline Lepromatous (BL) group with 78 cases (17.01%), the Borderline Borderline (BB) group with 41 cases (9.04%), the Pure Neuritic group with 45 cases (9.90%), the Tuberculoid group with 23 cases (5.16%), the In [Table 1].

Table 1: Clinical disease range among different patients

Spectrum	No. of Cases	Percentage
TT	23	5.16%
BT	130	29.30%
BL	78	17.01%
LL	99	21.11%
Indeterminate	20	4.50
Pure neuritic	45	9.90%

Discussion

Leprosy has been successfully managed and eradicated in India at the public health level (less than 1/10,000 of the population). Despite this, new cases of leprosy were still being recorded from various regions of India in the post-elimination era. Leprosy is still present in several places, according to the most recent studies or assessments. Mehta et al. [7] conducted a retrospective analysis to evaluate the number of new leprosy cases found during the pre-elimination phase (2004–05) and the post-elimination phase (2006–07), which revealed a higher number of cases being found during the post elimination phase. Although leprosy is not a very difficult condition to treat, it does have some special characteristics that necessitate extra care. However, leprosy in young individuals suggests that the condition is prevalent. Out of 450 patients in our study group, 260 (478.33%) belonged to the age groups of 14 to 18 and 45 to 60, which corresponds to the productive era of life for both sexes. Other researchers [8,9] made comparable findings as well. Increased incidence in this demographic suggests vulnerability due to increased mobility and interaction opportunities in a large community. Additionally, this group is self-driven in their pursuit of good health.

It is generally established that age at diagnosis, rather than age at the disease beginning, frequently correlates with disease occurrence in leprosy cases. Our study's male preponderance was also observed in earlier studies [9, 10]. This can be explained by the fact that men labour outside more often than women do, leading to more exposure and a higher risk of contracting the illness. Additionally, there are differences between how men and women seek out health care. However, Suri et al study [11] found that both sexes experienced approximately identical incidences. When the chance for touch is the same, hardly any difference is apparent [12].

Relhan et al. [9] and Tiwary et al. [13] recorded percentages of 7.59% and 10.2%, respectively for cases of leprosy in childhood. As a result, the percentage of childhood leprosy cases was slightly decreased, albeit it is unclear if this is because more people are seeking treatment. In our study, the prevalence of female patients is increasing while the incidence of childhood leprosy is on the decline. According to Tiwary et al. [13], there is a bad association between the percentage of female patients and childhood leprosy. The prevalence of childhood leprosy is a sign of active disease transmission in the neighbourhood and warrants special consideration.

The majority of patients in our study fall within the borderline range (BT+BB+BL), with a preponderance of BT cases. This was consistent with the findings of Chhabra et al. [14] and Swarnakumari et al. [15] who discovered that clinically the majority of patients were LL.

The number of lepromatous leprosy patients in the current study wasn't the highest, but it was still concerning because BT was immediately after it. Increased LL prevalence suggests immunologically

depressed populations or a delay in starting therapy. [15] The lower patient numbers in TT and IL could be the result of misdiagnosis or spontaneous regression with a healthy CMI. When tuberculoid cases present late, more patients in the BT and BB group are automatically detected, increasing the borderline spectrum.

The cornerstone of leprosy control is early diagnosis and thorough treatment since it stops both illness and deformity transmission. However, this is taking place as lepromatous leprosy cases are increasing while the number of patients with abnormalities is decreasing. Our analysis highlights the fact that the proportion of multibacillary cases is still significant and warrants concern given the current focus on leprosy elimination. The diagnosis and classification of leprosy cases must therefore be understood well and in depth, especially at the field level. Leprosy was no longer regarded as a public health issue after.

Conclusion:

Studies indicate that, even on a national level, Bihar continues to record a sizable number of leprosy cases, along with the majority of the other states where leprosy cases are still very common. Leprosy is still widespread among us despite the development of modern multidrug regimens and medicines, and the warning symptoms should not be disregarded. Public education campaigns about leprosy's symptoms, indicators, societal stigmas, and misperceptions about the disease need to be more proactive.

Reference:

1. Sotiriou MC, Stryjewska BM, Hill C. Case report: two cases of leprosy in siblings caused by Mycobacterium lepromatosis and review of the literature. The American Journal of Tropical Medicine and Hygiene. 2016 Sep 9;95(3):522.
1. World Health Organization. Guidelines for the diagnosis, treatment and prevention of leprosy.
2. Sahu SK, Mohanty P, Banerjee M. In silico design of dapsone analogues effective towards enoyl acyl carrier protein reductase enzyme of mycobacterium leprae.
3. Bhat RM, Prakash C. Leprosy: an overview of pathophysiology. Interdisciplinary perspectives on infectious diseases. 2012 Sep 4;2012.
4. Reinar LM, Forsetlund L, Lehman LF, Brurberg KG. Interventions for ulceration and other skin changes caused by nerve damage in leprosy. Cochrane Database of Systematic Reviews. 2019(7).
5. Singh N, Manucha V, Bhattacharya SN, K. Arora V, Bhatia A. Pitfalls in the cytological classification of borderline leprosy in the Ridley-Jopling scale. Diagnostic cytopathology. 2004 Jun;30(6):386-8.
6. Kumar B, Leprosy SD. A disease with diagnostic and management challenges Indian J Dermatol Venereol Leprol.
7. Shivamurthy V, Gurubasavaraj H, Shashikala P, Kumar P. Histomorphological study of leprosy. African Journal of Medical and Health Sciences. 2013 Jul 1;12(2):66-.
8. Relhan V, Ghunawat S, Tenani A, Mittal S, Garg V. Trends in profile of leprosy cases reporting to a tertiary care centre in Delhi during 2006-2015. Indian J Lepr. 2016;88:217-5.
9. Hazarika D, Pawar MK, Dowerah E. A Prospective Study of Clinico-Histopathological Correlation among Leprosy Patients Attending a Tertiary Referral Centre in Assam. This Post Elimination Era. Int J Health Sci Educ [Internet]. 2017:148-53.
10. Suri SK, Iyer RR, Patel DU, Bandil S, Baxi S. Histopathology and clinic histopathological correlation in Hansen's disease. J Res Med Den Sci. 2014;2(1):37-44.

11. Chaturvedi RM. Epidemiological study of leprosy in Malwani suburb of Bombay. Leprosy review. 1988 Jun 1; 59(2):113-20.
12. Tiwary PK, Kar HK, Sharma PK, Gautam RK, Arora TC, Naik H, Dhir V. Epidemiological trends of leprosy in an urban leprosy centre of Delhi: a retrospective study of 16 years. Indian Journal of Leprosy. 2011 Oct 1;83(4): 201-8.
13. Chhabra N, Grover C, Singal A, Bhattacharya SN, Kaur R. Leprosy scenario at a tertiary level hospital in Delhi: A 5-year retrospective study. Indian journal of dermatology. 2015 Jan;60(1):55.
14. Swarnakumari G, Narasimha Rao TV, Ngeswaramma S, Vani T, Rammohan CH, Neenavathu RN. A study of clinical profile of leprosy in post leprosy elimination era. IOSR J Dent Med Sci. 2015 Nov;14:04-12.
15. Fedidat Raphael Ariel A. Benson, Harold Jacob, & Eran Israeli. Gastrointestinal bleeding on anticoagulant therapy: Comparison of patients receiving vitamin K antagonists and non-vitamin K oral antagonists. Journal of Medical Research and Health Sciences. 2022; 6(2): 2398–2413.