Impact of Lockdown Restrictions on Treatment of Leprosy: A Retrospective Analysis

Abstract

Context: Coronavirus disease 2019 (COVID-19) has shown the potential to affect the life of people all over the world either directly or indirectly. Aim: To assess the impact of lockdown measures on treatment of leprosy among patients who received treatment from a tertiary referral centre.

Settings and Design: A retrospective study was conducted at the dermatology department of a tertiary referral centre. Materials and Methods: We did a retrospective analysis of case records of patients with leprosy who received treatment from our tertiary referral centre from March 2020 to May 2021. Results: During the 15-month period, 59 patients received multi-drug therapy (MDT) for leprosy from our centre. Thirty-two patients (54.2%) were already receiving MDT as on March 2020, and 27 others (45.8%) were diagnosed with leprosy and started on MDT during the period from March 2020 to May 2021. Two patients (3.4%) developed COVID-19 while on MDT. When lockdown measures were implemented, 12 patients (12/59, 20.3%) discontinued treatment, citing conveyance difficulties. Three patients (3/59, 5.1%) were lost to follow-up. Limitations: Small sample size and reliance on retrospective data from a single centre were the major limitations of the study. Conclusion: A conscious effort is needed from healthcare professionals and the government to ensure that implementation of national programmes is not adversely affected by the ongoing COVID-19 pandemic.

Keywords: Coronavirus disease-2019, Kerala, leprosy, lockdown measures, regular treatment

Introduction

Coronavirus disease 2019 (COVID-19) has affected the life of everyone worldwide either directly or indirectly. Most of the countries have struggled with scarcity of healthcare workers (HCWs).[1] Moreover, leprosy, with its age-old stigma, often forces the affected to seek treatment from far-away tertiary care centres rather than from nearby healthcare facilities. The travel restrictions enforced to prevent the spread of COVID-19, though unavoidable, have created major hardships to such patients.

In this scenario, we considered it worthwhile to study the impact of lockdown measures on the treatment of leprosy.

Materials and Methods

We did a retrospective analysis of hard copies of case records of patients who satisfied the World Health Organisation cardinal criteria for leprosy and who attended our tertiary referral centre from March 2020 to May 2021.[2]

We excluded patients who opted to receive treatment from nearby centres after receiving a diagnosis of leprosy. Using a pre-set proforma, we collected information on the patient profile; clinical details including features of lepra reactions; diagnosis based on clinical, skin smear, and histopathology findings; and disability grading at the time of diagnosis and treatment received.[3] We recorded the follow-up details in each case till the completion of multi-drug therapy (MDT) or 31 August 2021, whichever was earlier. As per the institutional policy, whenever a patient misses the monthly review for assessment and collection of MDT, we contact him/her at the given telephone number. When this fails, we contact the patient at the given address with the help of HCWs from the nearby primary health centre (PHC), taking care to ensure the privacy of the patient. The reason for the irregular follow-up is enquired, and patient

How to cite this article: Dominic S, Sasidharanpillai S, Gangan R, Minu U, Sneha KS, Hameed J, et al. Impact of lockdown restrictions on treatment of leprosy: A retrospective analysis. Indian Dermatol Online J 2022;13:370-4.

Received: 31-Dec-2021. Revised: 07-Jan-2022. Accepted: 08-Jan-2022. Published: 05-May-2022.

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How to access this article online

Website: www.idoj.in

DOI: 10.4103/idoj.idoj_768_21

Quick Response Code:
is encouraged to continue treatment from our institution or the nearby PHC.

Whenever a patient discontinued treatment, the duration for which treatment was discontinued and the reason for the same were collected from case records. Whenever a patient developed COVID-19 during the course of MDT, we noted the treatment received for the same, the disease course and outcome, and the effect of COVID-19 on leprosy.

The data were entered in a Microsoft Excel sheet and analysed with SPSS Inc IBM company version 18 Chicago, SPSS Inc. (United States of America). The ethics committee of the institution approved the study.

Results

From March 2020 to May 2021, 59 patients received treatment for leprosy from our centre. There were 42 males and 17 females (male:female – 2.5:1). The age of the affected ranged from 8 to 75 years (mean and standard deviation – 39.5 ± 17.3 years). Three patients were migrant labourers.

As on March 2020, 32 patients (54.2% of study participants) were receiving MDT from our institution and the duration of treatment required for completion of MDT varied from 2 to 11.5 months (mean and standard deviation – 6.8 ± 3.4 months). Between 01 March 2020 and 31 May 2021, 27 (27/59, 45.8%), more patients received a diagnosis of leprosy.

The state of Kerala implemented complete state-wide lockdown twice during the study period (24 March 2020 to 07 June 2020 and 08 May 2021 to 09 June 2021).[4,5]

Table 1 shows the clinical profile and treatment received by the study participants. Type 2 lepra reaction (T2R) and Type 1 lepra reaction (T1R) were noted in two (2/10 at risk cases, 20%) and 16 (16/49 at risk cases, 32.7%) patients, respectively. Twenty-five patients (25/59, 42.4%) had grade 2 disability at the time of diagnosis.[9]

Thirty patients (30/59, 50.8%) did not turn up for monthly review and collection of medicines when travel restrictions were enforced. Out of the 30, three patients (3/30, 10%) were lost to follow-up and two of them were migrant labourers (2/3, 66.7%). One patient (1/30, 3.3%) had died of medical illness within 6 weeks of starting MDT. The relatives were unable to provide further details.

We could contact 26 of the 30 patients (86.7%). Twelve (12/26, 46.2%) patients were continuing treatment from nearby PHCs. Fourteen patients (14/26, 53.8%) had discontinued the treatment. Two patients (2/14, 14.3%) discontinued treatment when they developed COVID-19 [Table 2]. Twelve patients (12/14, 85.7%) cited conveyance difficulties as the reason for irregular follow-up and discontinuation of treatment [Table 3]. Four patients (4/14, 28.6%) had discontinued treatment long enough to warrant re-treatment with a full course of MDT. Ten patients (10/14, 71.4%), including the two patients who developed COVID-19, had discontinued treatment for a shorter duration and were advised to continue the same so as to complete the recommended duration of MDT.

As on 31 August 2021, 34 out of the 59 patients (57.6%) have successfully completed MDT. After excluding the patient who died and the three others who were lost to follow-up, the remaining 21 patients (21/59, 35.6%) are currently on treatment either from our institution (19/21, 90.5%) or from nearby health centres (2/21, 9.5%).

Discussion

The annual number of patients who attended our department and who needed treatment for leprosy ranged 56–90 during the 10-year period from 2010 to 2019 (mean ± standard deviation – 70.5 ± 9.8). However, only 27 patients were diagnosed with leprosy during the 15-month period from March 2020 to May 2021. The sharp decline in the number of cases during the study period could be owing to the tendency of people to postpone a visit to a healthcare facility (unless compelled by the severity of the symptoms) in the prevailing scenario of fear of the pandemic and difficulty in arranging a conveyance.[6] De Arquer et al.[7] have warned against the possibility of delay in detection or non-detection of new cases of leprosy in India in the setting of the COVID-19 pandemic.

Though leprosy is a manifestation of reduced immunity of an individual that is specific to Mycobacterium leprae, certain factors may place a leprosy patient at a higher risk for COVID-19. They include the immunosuppressive effect
of co-administered systemic corticosteroids (for severe lepra reactions or incomplete or recent onset nerve palsy) and the neutrophilia that accompanies T2R. Apart from this, leprosy is a disease of poverty and over-crowding, which in turn places a leprosy patient at a higher risk for acquiring infection from household contacts. Two (3.4%) out of the 59 study participants developed COVID-19 during the study period, but we cannot derive any conclusion regarding the frequency of COVID-19 in leprosy from this. At least some of the patients might have developed asymptomatic infections, which went undetected. Both the patients who developed COVID-19 had mild symptoms and received only acetaminophen for fever and recovered completely. This was contrary to the observation of Santos et al. but comparable to the findings of Dertlioğlu et al. Santos et al. reported COVID-19 in four lepromatous leprosy (LL) patients, all of whom succumbed to the disease, but the nine LL patients reported by Dertlioğlu et al. experienced a less severe viral infection. Both our patients who manifested COVID-19 had borderline tuberculoid leprosy. Whether COVID-19 had precipitated the derangement in liver functions on re-introduction of MDT in one of our patients (who had tolerated MDT for 9 months before the viral infection) remains unclear [Table 2]. Both the patients, on receiving a diagnosis of COVID-19, had stopped anti-leprosy drugs on their own, though MDT is not contraindicated in COVID-19. In fact, reports suggest a potential beneficial role for MDT, especially clofazimine, against COVID-19.

Previous authors have warned against the possibility of a higher risk for lepra reactions in COVID-19. We are unable to comment on the same since the possibility of an asymptomatic COVID-19 cannot be ruled out in some of the study participants. However, no significant difference was noted between the frequencies of T2R (20%) and T1R (32.7%) in the current cohort and the same in the pre-COVID-19 era (20.6% for T2R and 26.5% for T1R) documented at our centre. More information on similar cases (co-infection of leprosy and COVID-19) may delineate the effect of COVID-19 on leprosy and vice versa.

In a disease such as leprosy, which requires prolonged and regular treatment, proper patient education and counselling are of paramount importance in ensuring adequate treatment. The counselling services in most of the healthcare facilities are affected by the shortage of HCWs (due to deputation of many HCWs for COVID-19-related work or due to the absence of HCWs from work due to infection or quarantine). The personal protection measures adopted by both the patients and the HCWs have the potential to hinder effective communication. Twelve patients (12/59, 20.3%) opting to discontinue treatment when the travel restrictions were implemented rather than continuing treatment from nearby healthcare facilities could be a reflection of the patients’ lack of awareness regarding the importance of regular treatment.

**Limitations**

Retrospective study design, small sample sizes, and the reliance on data from a single centre were the major limitations.

A unified effort of HCWs and government agencies is essential to overcome the pandemic; however, it is also important to make a conscious effort to ensure that the national programmes for prevention of other communicable diseases do not suffer. Otherwise, we will be witnessing a surge in many of the communicable diseases in the COVID and post-COVID era.

**Acknowledgments**

We are grateful to Mr Asokan AT, Assistant Leprosy Officer and Mr Haneeshan TC, Junior Health Inspector, Department of Dermatology and Venereology, Govt Medical College Kozhikode for their invaluable help in data collection.

**Financial support and sponsorship**

Nil.
Table 3: Clinical profile and follow-up information of study participants who discontinued MDT due to conveyance difficulties

| Gender | Age in years | Diagnosis | Treatment given | Duration of MDT before interruption of treatment (last date of follow-up before interruption of treatment) | Daily dose of prednisolone at the time of interruption of treatment | Disease and treatment status after interruption of treatment (duration of interruption of treatment) | *Native place |
|--------|--------------|-----------|-----------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-----------------|
| F      | 67           | BT        | PB MDT          | 4 months (20.3.2020)                              | Nil                                              | Persistence of lesion, no aggravation, re-started PB MDT and completed treatment (3.5 months)          | Same district   |
| F      | 28           | LL, ENL, early bilateral ulnar palsy | MB MDT for 24 months, prednisolone | 1 year 5 months (22.3.2020) | 15 mg | Recurrence of T2R, worsening of ulnar palsy, continued treatment for 7 more months, completed treatment, prednisolone started at 30 mg and slowly tapered over 5 months (9 months) | Same district   |
| M      | 25           | BT, bilateral ulnar palsy, foot drop left side | MB MDT          | 4 months (16.3.2020)                              | 10 mg                                              | No exacerbation, continued treatment for 8 more months, completed treatment, prednisolone restarted at 10 mg and tapered over 8 weeks (56 days) | Odisha          |
| F      | 8            | BT        | MB MDT          | 1 month (11/11/2020)                              | Nil                                              | No aggravation, re-started treatment and continuing the same (8 months)                             | Neighbouring district Pondicherry |
| M      | 52           | BT, TIR, bilateral foot drop, trophic ulcer left hand. | MB MDT, prednisolone | 3 months (30.4.2021)                              | 15 mg                                              | Exacerbation of T1R manifested as erythema and tenderness of face lesions, advised to continue MDT for 9 more months, continuing treatment, prednisolone re-started at 30 mg (1 month). | Neighbouring district Lakshadweep |
| M      | 32           | LL, TIR, bilateral foot drop, trophic ulcer left hand. | MB MDT, prednisolone | 2 months (5.9. 2020)                              | 15 mg                                              | Worsening of foot drop, developed bilateral ulnar palsy and trophic ulcer right foot. Trophic ulcer on the left hand had healed, advised to continue MDT for 10 more months, continuing treatment, prednisolone re-started at 30 mg and tapered to 15 mg over 12 weeks, as on 31 August 2021 (2.5 months) | Neighbouring district Odisha |
| M      | 43           | BT (left ulnar palsy, trophic ulcer left foot) | MB MDT          | 3 months (19.2.2020)                              | 15 mg                                              | Re-started MB MDT and prednisolone 30 mg, worsening of left ulnar palsy, trophic ulcer had healed (7 months) | Neighbouring district Odisha |
| M      | 67           | BT        | MB MDT          | 3 months (31.1.2021)                              | Nil                                              | Re-started MDT (6.5 months)                                                                           | Same district   |
| M      | 31           | BL, Left foot drop | MB MDT and prednisolone 30 mg | 3 months (19.3.2021)                              | 15 mg                                              | Continued MDT, worsening of foot drop; hence, re-started prednisolone at 30 mg (24 days)              | Neighbouring district Odisha |
| M      | 25           | BT with TIR. | MB MDT and prednisolone 30 mg | 1 month (31.12.2020)                              | 30 mg                                              | Continued MB MDT, no exacerbation of lesions, the patient was continuing prednisolone at 30 mg (2 months) | Neighbouring district Odisha |
| M      | 49           | Neuritic leprosy with right ulnar palsy | MB MDT and prednisolone 30 mg | 2 months (10.4.2021)                              | 20 mg                                              | Worsening of right ulnar palsy, MDT continued, prednisolone re-started at 30 mg (3 months)              | Neighbouring district Odisha |
| M      | 28           | BT with right ulnar palsy | PB MDT and 30 mg prednisolone | 2 months (10.3.2021)                              | 15 mg                                              | Continued MB MDT and re-started prednisolone at 20 mg, ulnar palsy had not worsened from the status at the last follow-up (45 days). | Neighbouring district Odisha |

MDT: Multi-drug therapy; BT: Borderline tuberculoid; LL: Lepromatous leprosy; ENL: Erythema nodosum leprosum; TIR: Type 1 lepra reaction; T2R: Type 2 lepra reaction; PB: Paucibacillary; MB: Multi-bacillary; *Same district/neighbouring district: Distinction is made with respect to the locality of the institution where the study was carried out.
Conflicts of interest

There are no conflicts of interest.

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