Indian J Lepr 2025, 97 : 119-131

http://www.ijl.org.in

Original Article

Post-treatment Status of Leprosy Lesions: A Cross-sectional Study from a Tertiary Referral Centre

KV Anagha[1], S Sasidharanpillai[2], V Babitha[3], K Devi[4]

Received: 29.07.2024 Revised: 15.12.2024 Accepted: 07.01.2025

Persistence of skin lesions for different time periods and disabilities after completing the schedule of prescribed treatment poses problems in convincing the patients and sometimes treating doctors about adequacy of medical treatment. This study was carried out to assess the post-treatment status of leprosy lesions in patients who received multidrug therapy (MDT) from a tertiary referral centre in Kerala, India. In this cross-sectional study, carried out from January 2020 to December 2021**,** we contacted the patients who completed MDT for leprosy from our institution between January 2018 and March 2020. We included those who were willing to undergo assessment of post-treatment status of leprosy lesions. The status of leprosy lesions at recruitment to study was recorded. Out of the 109 patients who completed MDT during the given period, 65 (59.6%) gave consent for re-evaluation. Fifty four out of the 65 patients (54/65, 83.1%) had sequelae of leprosy. Persistence of skin lesions was observed in 41 patients (63.05%), while residual nerve deficits were noted in 20 patients (30.7%). A complete resolution of hypopigmented lesions was observed in 15 of 40 patients (37.5%) and no resolution in 3 (7.5%). Among 14 patients with ichthyotic lesions, 3 (21.4%) showed complete resolution, 9 (64.3%) partial and 2 (14.3%) no resolution. Of the 19 patients with erythematous lesions, 5 (26.3%) had complete resolution and 14 (73.7%) partial resolution. Sensory deficits (anaesthesia or hypoaesthesia) in leprosy lesions were present in 55 of 65 patients (84.6%) at MDT initiation. Of these, 18 (32.7%) achieved complete recovery, 28 (50.9%) showed improvement, and 7 (12.7%) had no change. Twenty-three patients (23/29, 79.3%) showed persistent grade 2 disability. Two patients (2/55,3.6%) were diagnosed as relapse at re-evaluation. More than 80% of patients who were reassessed manifesting persistent leprosy lesions indicate that management of leprosy goes beyond completion of MDT. Patients were assessed and provided with appropriate counselling, including recommendations on lifestyle modifications to prevent the development of burns and trophic ulcers. Additionally, rehabilitation exercises were advised for those with deformities. For patients with existing trophic ulcers, comprehensive instructions on ulcer care and strategies to prevent secondary infections were provided. We need population-based studies among treated cases of leprosy to assess disease-related post-treatment events so as to plan future strategies.

Keywords: Post treatment status, Leprosy, Lesion, Grade 2 disability, Multidrug therapy.

Introduction

Despite the availability of effective drugs, leprosy is still associated with much stigma owing to its potential to cause disability and deformity (Chaptini & Marshman 2015). The sensory or motor nerve function impairment (NFI) induced by the disease may persist for long periods, at times, life-long (Walker & Lockwood 2006).

[1] KV Anagha, MD, Junior Resident, Department of Dermatology and Venerology (*Presently: Senior Resident, Department of Dermatology and Venereology, Dr Moopens Medical College, DM Wayanad Institute of Medical Sciences, Naseera Nagar, Meppadi (P.O**),** Wayanad, Kerala, India. PIN 673577*)

[2] S Sasidharanpillai, MD, Professor, Dept. of Dermatology and Venereology

[3] V Babitha MS, Professor, Dept. of Ophthalmology

[4] K Devi, MD, Professor and Head, Dept of Dermatology and Venereology (*Presently: Govt Medical College, Thrissur, Kerala*)

Place of work: Government Medical College, Kozhikode, Kerala, India

Corresponding Author: Dr KV Anagha, **Email:** anaghakvnandanam@gmail.com

Lepra reactions [before, during or after treatment (late lepra reaction)] are important causes of disability in leprosy (Ramu & Dharmendra 1978, Rao & Suneetha 2018, Vijaykumaran et al 1995). Though rare, relapses are known to occur in treated patients (Kaimal & Thappa 2009).

Despite the provisions of the current FDT policy, leprosy-affected persons (LAPs) with residual disabilities often do not receive adequate care and rehabilitation support after completion of treatment (Sales et al 2013, Ganeshan & Muthunarayan 2018).

There is paucity of data on the status of leprosy lesions including grade 1 (G1D) and grade 2 disability (G2D) among treated patients. Such information will be important for policy changes for addressing the problems by such leprosy affected persons (LAPs). We aimed to assess the post-treatment status of leprosy lesions among patients who successfully completed multidrug therapy (MDT) from our institution.

Materials and Methods

Research and ethics committees of the institution granted permission. In this 2-year cross sectional study (January 2020 to December 2021), we reviewed the case records of patients who successfully completed MDT from our institution, Government Medical College, Kozhikode between January 2018 and March 2020. We excluded 10 case sheets with insufficient data. We contacted the identified patients over telephone and invited them for an assessment of post-treatment-status of leprosy lesions.

Using a pre-set proforma, we collected data of the patients, who gave written, informed consent to participate in the study. We recorded age and gender of each study participant and noted the time interval between completion of MDT and recruitment to the study. Data on clinical profile, skin smear status for acid fast bacilli (AFB) and diagnosis at initiation of treatment and treatment received and follow up data till completion of MDT were collected from previous case records. A case of leprosy can be diagnosed by demonstrating the cardinal signs of leprosy which includes- a) Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit; b) Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation and/ or weakness /paralysis of the corresponding muscles of the hands, feet or eyes; c) Demonstration of *M leprae* in the lesions (NLEP 2019). After diagnosis, patients were categorised to multi-bacillary and pauci-bacillary leprosy and MDT is initiated accordingly (NLEP 2019). Lepra reactions (when present) and the treatment received for the same were noted. G1D and G2D at diagnosis were noted as recorded in case records (NLEP 2019).

Individual patients/ LAPs (who had completed the recommended duration and doses of MDT) was carefully evaluated at the time of recruitment to the study with respect to skin lesions due to leprosy, sensory deficit involving skin lesions, nerve enlargement, sensory or motor NFI along the supply of peripheral nerves and evidence of type 1 / type 2 lepra (T1R or T2R) reaction. Inability or reduced ability to appreciate temperature, pain and fine touch was considered as sensory deficit. Test tubes containing water at 40 ^{0}C and at 25 ^{0}C were used to test temperature sensation, pain sensation was tested using sterile needle and a cotton wool was used to check perception of fine touch (Sasidharanpillai et al 2014). Individual study participant was evaluated for sensory impairment of hands and feet using Semmes Weinstein nylon monofilament as per WHO guidelines to detect G1D (NLEP 2019). Motor system (including muscles of hands and feet) was assessed by voluntary muscle testing as per medical research council scale and grade below 5 was considered as motor NFI (Brandsma & van Brakel 2001). Any other visible deformity (such as madarosis, trophic ulcers, loss of part or whole of fingers or toes), when present was

noted and considered as evidence of G2D (NLEP 2019). Slit skin smear {from representative skin lesion (when present) and from dorsal aspect of distal phalanx} and ear lobe smear were collected from individual patient and stained with Ziehl Neelsen method of staining for AFB to determine bacteriological index (BI) and morphological index (MI) (Rao et al 2017).

All the study participants were evaluated in consultation with an ophthalmologist for eye involvement due to leprosy. Slit lamp examination was carried out to rule out miliary leproma. Tonometry was performed to detect any rise in ocular pressure. Posterior subcapsular cataract (when present) was recorded.

Patients with residual skin lesions and neuropathy were counselled on self-care measures, including burn prevention by avoiding hot objects, frequent blinking to prevent ocular dryness, wound care by daily inspection and cleaning, regular use of emollients to prevent dryness and cracks, and exercises to prevent contractures.

The data were entered in Microsoft excel and analysed with Epi Info. Relation of time interval between completion of treatment (upto 6 months, 7-12 months, >12 months) and time of recruitment to the study with post-treatment status of skin lesions, NFI and disability grading was assessed by Pearson's Chi-square test and Fisher's exact test. A P value of <0.05 was considered statistically significant.

Results

Out of the 109 patients contacted, 65 (65/109, 59.6%) gave consent to participate in the study. Among the study participants, 45 (45/65, 69.2%) were men (Table 1) and 20 (20/65,30.8%) were women (male: female-2.3:1). Age distribution of study participants (Mean age - 42.4±15 years, range: 13 to 75 years) is shown in Table 1. Thirty-five study participants including two women were manual labourers (35/65, 53.8%), 16 (16/65, 24.6%) were home makers, six (6/65, 9.2%) were students and two (2/65, 3.1%) were professionals. Six of the study participants (6/65, 9.2%) were engaged in other occupations.

The time interval between the completion of MDT and recruitment to the study varied from 13 to 24 months in 30 patients (30/65, 46.2%), 7-12 months in 12 (12/65,18.5%) and less than 6 months in 23 patients (23/65, 35.4%).

Fifty four out of the 65 patients (54/65, 83.1%) evaluated had one or other sequelae of leprosy. Eleven patients (11/65, 16.9%) had attained complete resolution of skin and nerve lesions pertaining to leprosy. Six out of the 11 patients who did not manifest any sequelae of leprosy were men (6/11, 54.5%). Among these eleven patients, nine (9/11, 81.8%) were evaluated after one year of completion of treatment and two (2/11, 18.2%) within one year of completion of treatment.

Table 1 : Age and gender distribution of the study participants.

Age group (in years)	Gender	
	Men n=45(100%)	**Women n=20(100%)**
0-20 (n=6)	4 (8.9%)	2 (10%)
21-40 (n=19)	10 (22.2%)	9 (45%)
41-60 (n=33)	24 (53.3%)	9 (45%)
>60 (n=7)	7 (15.6%)	0 (0%)

The majority, 42 (42/65, 64.6%) of patients had received treatment for borderline tuberculoid leprosy (Table 2). Borderline tuberculoid leprosy was the most common type, observed in 42(64.6%) of patients. Of these, 39(92.9%) received MB-MDT, and 3(7.1%) received PB-MDT.

Fifty-six (56/65, 86.2%) and nine (9/65, 13.8%) patients had received multibacillary (MB) MDT and paucibacillary (PB) MDT respectively.

As per case records, the skin lesions at diagnosis and later stated to be persisting problem included hypopigmented (Fig. 1 (a)) macules/patches/ papules/ plaques (40/65, 61.5%), ichthyotic patches (Fig. 1 (b)]/ plaques (14/65, 21.5%) and erythematous macules/ patches (Fig. 1 (c)]/ papules/ plaques (19/65, 29.2%).

At recruitment to the study, hypopigmented lesions showed a complete resolution in 15 out of the 40 patients (37.5%). A partial resolution was noted in 12 (12/40, 30%) and no resolution in three cases (7.5%).

Out of the 14 patients who manifested ichthyotic skin lesions at initiation of treatment, three (3/14, 21.4%) attained complete resolution, nine showed partial resolution (9/14, 64.3%) and two showed no resolution (2/14, 14.3%) at the time of recruitment to the study.

Out of the 19 patients with erythematous lesions, complete resolution was noted in five (5/19, 26.3%) and partial resolution in the remaining 14 (73.7%).

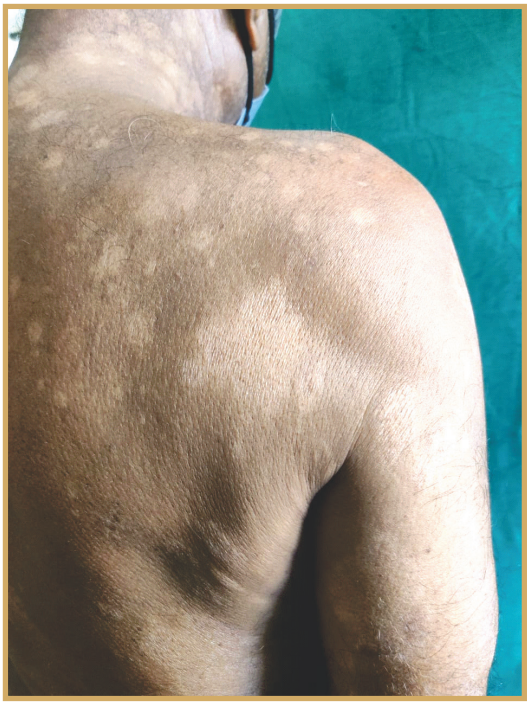

Fig. 1 (a): Multiple, discrete and confluent hypopigmented macules and patches in a treated case of lepromatous leprosy, 18 months after completion of MDT.

Fifty-five patients (55/65, 84.6%) had anaesthesia / hypoaesthesia of skin lesions at

Table 2 : Clinical type of leprosy among the study participants.

Clinical type of leprosy	Number n=65(100%)
Tuberculoid leprosy	2 (3.1%)
Borderline tuberculoid leprosy	42 (64.6%)
Borderline lepromatous leprosy	5 (7.7%)
Lepromatous leprosy	5 (7.7%)
Indeterminate leprosy	4 (6.2%)
Pure neuritic leprosy	7 (10.8%)

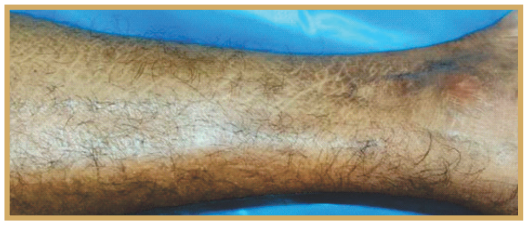

Fig. 1 (b): Persistent ill- defined ichthyotic patch in a treated case of borderline tuberculoid leprosy, 18 months after completion of MB- MDT.

the initiation of MDT (Table 3). A complete cure of the sensory deficit was noted in 18(18/55, 32.7%), improvement of sensory deficit in 28 (28/55,50.9%) and no improvement of the deficit was noted in seven (7/55,12.7%). Two patients (2/55, 3.6%) in the borderline tuberculoid spectrum had experienced an increase in the extent of the sensory deficit at the time of recruitment to the study (without any evidence of lepra reaction) (Table 3). They were recruited to the study 10 and 12 months

Table 3 : Comparison of sensory deficit at initiation of treatment and at the time of recruitment to the study among the study participants.

Sensory deficit at initiation of treatment Number of patients (%)		At the time of recruitment to the study				
		Worsening of sensory deficit		Persistence of sensory deficit	Improvement of sensory deficit	Complete cure
		Increase in intensity	Increase in extent			
Sensory impairment over the lesion n=55(100%)		0(0%)	2(3.6%)	7(12.7%)	28(50.9%)	18(32.7%)
Sensory impairment along the distribution of nerve	Radial nerve n=0 (0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
	Ulnar nerve n=12(100%)	0(0%)	0(0%)	6(50%)	3(25%)	3 (25%)
	Median nerve n=4(100%)	0(0%)	0(0%)	3(75%)	1(25%)	0(0%)
	Lateral popliteal nerve n=1(100%)	0(0%)	0(0%)	0(0%)	1 (100%)	0(0%)
	Superficial peroneal nerve n=5(100%)	0(0%)	0(0%)	2 (40%)	3 (60%)	0(0%)
	Sural nerve n=1(100%)	0(0%)	0(0%)	0(0%)	1(100%)	0(0%)
	Medial/lateral plantar nerves n=5(100%)	0(0%)	0(0%)	2 (40%)	3 (60%)	0(0%)
Glove and stocking n=3(100%)		0(0%)	0(0%)	3 (100%)	0 (0%)	0(0%)

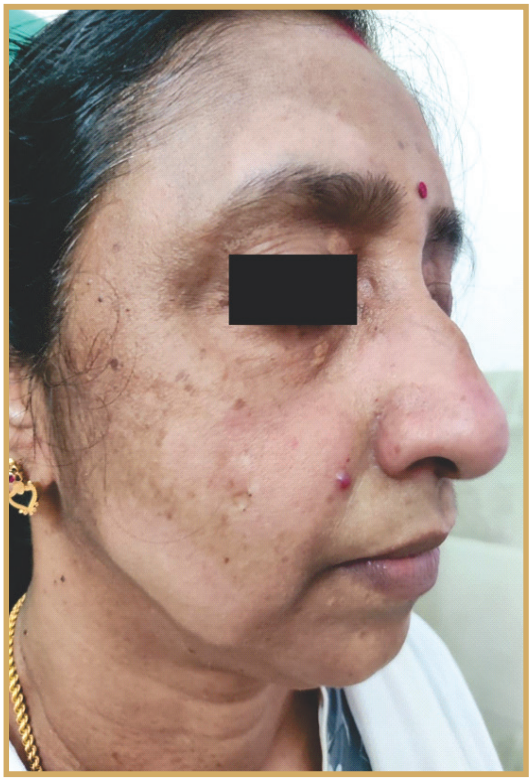

Fig. 1 (c): Partially resolving, ill-defined erythematous patch in a treated case of borderline lepromatous leprosy, 12 months after completion of MDT.

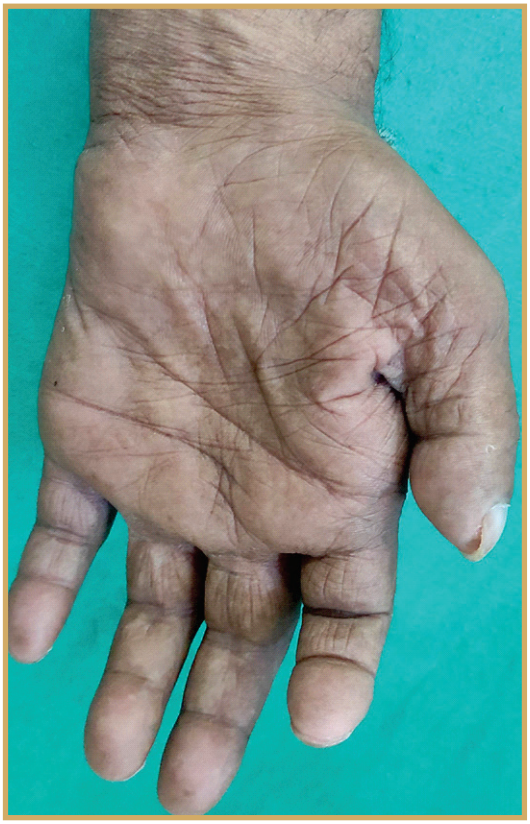

Fig. 2: Ape thumb deformity and clawing of fingers in a treated case of borderline tuberculoid leprosy.

after completion of MB and PB MDT respectively. After evaluation we made a diagnosis of relapse in the same spectrum in both cases (biopsy from the extended skin lesion showed borderline tuberculoid pathology itself).

Twenty-three patients (23/65,35.4%) had sensory impairment along the distribution of one/ more peripheral nerves at diagnosis and majority of them (13/23,56.5%) had persistence of the same in at least one of the affected nerves at the time of recruitment to the study. Seven attained partial improvement and three (3/23,13%) attained complete recovery of the sensory impairment in all affected nerves. None of the study participants had worsening of the sensory NFI (in comparison to the same recorded at initiation of treatment) at the time of recruitment to the study. Thirteen of the 35 patients (37.1%) who were manual labourers and 10/30 (33.3%) who were engaged otherwise had sensory impairment at initiation of treatment. Six of 13 (46.2%) manual labourers and 4 out of the 10 (40%) who were employed otherwise s and who had sensory impairment at initiation of treatment attained partial or complete improvement at the time of recruitment to the study.

Glove and stocking sensory impairment was present in 3 (3/65,4.6%) patients, which remained

the same at the time of recruitment to the study without any improvement or worsening (Table 3).

Out of the twenty-eight patients (28/65,43.1%) who had muscle weakness at the initiation of MDT, six (6/28, 21.4%) experienced complete cure of motor weakness in all affected nerves, 14 (14/28, 50%) showed improvement and 8 (8/28, 28.6%) showed persistent motor weakness (Table 4, Fig. 2) at the time of recruitment to the study.

Fifteen out of the 35 (42.9%) manual labourers and 13 out of the 30 (43.3%) had a motor deficit at diagnosis. Thirteen out of the 15 (86.7%) manual labourers with motor deficit at diagnosis and 7 out of the 13 (53.8%) who were not manual labourers, but had motor deficit at diagnosis showed improvement or complete resolution of the same at the time of recruitment to the study.

Trophic ulcers were recorded at the time of diagnosis in two patients (2/65, 3.1%). Five

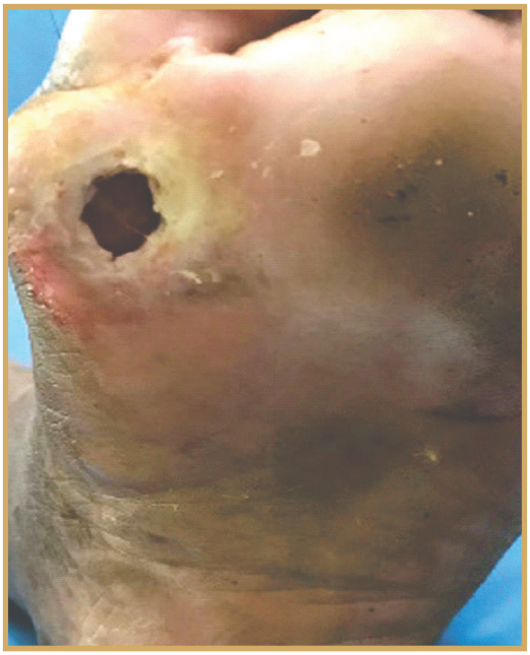

Fig. 3: Trophic ulcer proximal to the base of big toe in a treated case of pure neuritic leprosy.

Table 4 : Comparison of motor deficit at initiation of treatment and at the time of recruitment to the study among the study participants.

Motor deficit at initiation of treatment n(%)	At recruitment to the study			
	Worsening of motor deficit n=0	Persistence of motor deficit n=10	Improvement of motor deficit n=21	Complete cure n=6
Radial nerve n=0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Ulnar nerve n=15(100%)	0(0%)	5 (33.3%)	8(53.3%)	2(13.3%)
Median nerve n=5 (100%)	0(0%)	2 (40%)	3(60%)	0(0%)
Lateral popliteal nerve n=13(100%)	0(0%)	2 (15.4%)	7(53.8%)	4(30.8%)
Posterior tibial nerve n=4(100%)	0(0%)	1 (25%)	3(75%)	0(0%)
Superficial peroneal nerve n=0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

Table 5 : Ocular involvement due to leprosy at the time of recruitment to the study among the study participants.

Signs and symptoms of ocular involvement due to leprosy		Number (N=65, 100%)
Madarosis		0 (0%)
Dry eye		4 (6.2%)
Lid lag		0 (0%)
Abnormal corneal sensation	Impaired	10 (15.4%)
	Absent	1 (1.5%)
Exposure keratitis		0 (0%)
Cataract		0 (0%)
Slit lamp examination	Miliary leproma	0 (0%)
	Lepromatous panus	1 (1.5%)
Raised intra-ocular pressure		0 (0%)

Table 6 : WHO disability grading for leprosy among the study participants at the time of diagnosis and at the time of recruitment to the study.

	Disability grading	At initiation of treatment n=65 (100%)	At the time of recruitment to the study n=65 (100%)
Eye	Grade 0	65 (100%)	65 (100%)
	Grade 2	0(0%)	0(0%)
Hands	Grade 0	45 (69.2%)	47 (72.3%)
	Grade 1	5 (7.7%)	5 (7.7%)
	Grade 2	15 (23.1%)	13 (20%)
Feet	Grade 0	42 (64.6%)	45 (69.2%)
	Grade 1	4 (6.2%)	5 (7.7%)
	Grade 2	19 (29.2%)	15 (23.1%)
Disability grading of the patient	Grade 0	30 (46.2%)	35 (53.8%)
	Grade 1	6 (9.2%)	7 (10.8%)
	Grade 2	29 (44.6%)	23 (35.4%)

more patients (5/65, 7.7%) developed new ulcers during MDT and one patient (1/65, 1.5%) developed a trophic ulcer (Fig. 3) for the first time after completion of MDT.

Previous records showed no evidence of ocular involvement due to leprosy at the time of initiation of treatment in any of the patients. The ocular manifestations noted at the time of recruitment to the study are depicted in Table 5.

Sixteen out of the 51 at risk (after excluding tuberculoid leprosy, pure neuritic and indeterminate leprosy) patients (31.4%) had

T1R at the time of diagnosis of leprosy. Five (5/51,9.8%) more patients developed T1R during treatment. Late T1R was noted in none of the study participants.

One at risk (borderline lepromatous and lepromatous leprosy patients) patient (1/10,10%) had T2R at the time of diagnosis, two more (2/10,20%) experienced the same during MDT and another patient had documented evidence of having received treatment for T2R (1/10, 10%) after completion of treatment.

Table 6 shows the disability grading in study participants at the time of diagnosis and at the time of recruitment to the study.

All five (5/65, 7.7%) and four (4/65, 6.2%) patients with G1D of hands and feet respectively at the time of diagnosis showed no improvement of the same at the time of recruitment to the study. Two out of the fifteen (2/15,13.3%) patients with G2D of the hands at diagnosis had attained complete recovery by the time of recruitment to the study. Out of the 19 patients with G2D of feet at diagnosis, 15 (15/19,78.9%) showed lack of improvement, one upgraded to G1D (1/19, 5.3%) and three (3/19,15.8%) attained complete recovery to grade 0 disability.

Twentynine patients (29/65, 44.6%) had an overall disability grading of 2 at initiation of treatment; fifteen were manual labourers and 14 were occupied otherwise. Twenty three of the 29 with G2D (79.3%) showed no improvement, five (5/29,17.2%) attained complete recovery with G0D and one patient (1/29, 3.4%) attained improvement in the disability grading to grade 1. Occupation-wise, five of the fifteen (33.3%) manual labourers and one of the fourteen others (7.1%) with G2D at diagnosis attained an improvement or complete resolution at the time of recruitment to the study.

None of the patients showed a 2 log increase in BI or a positive MI at the time of recruitment to the study.

No significant association was noted between time interval between completion of treatment and recruitment to the study and presence of skin lesions or sensory or motor deficit or disability post-treatment.

Discussion

Among the 65 study participants, only eleven (16.9%) did not show any sequelae pertaining to leprosy. This could partly be due to the selection bias as patients with disease-related sequelae were more likely to opt for a re-assessment after completion of treatment. More than half of the study participants (53.8%) being manual labourers was as expected in a study conducted in a government institution.

Thirty three out of the 54 study participants (33/54, 61.1%) who showed sequelae due to leprosy were recruited within one year of completion of MDT, while the time interval between completion of MDT and recruitment to the study was 1-2 years in the remaining 21 (38.9%). Rao et al (2022) in a study on the post-treatment events in leprosy noted that majority sought treatment within the first year of completion of MDT.

A total lack of resolution was noted in 7.5% of patients for hypopigmented skin lesions and 14.3% of patients for ichthyotic skin lesions; however, all the patients attained some resolution as far as erythematous skin lesions were concerned. This could be attributed to the fact that the clinician and patient tend to consider some improvement in the lesion, when the intensity of erythema subsides, even when the size of the lesion and sensory deficit pertaining to the lesion remain as such. In such cases with persistent or recurring erythema management with anti-inflammatory drugs including steroids with MDT should be considered. In addition, counselling regarding nerve impairment and its ensuing complications is essential for patient, doctors and other health care professionals. A

low grade T1R can be perceived as erythema of the lesion and MDT itself is considered as an important risk factor for T1R (Sardana et al 2020). Hence, completion of treatment itself can lead to resolution of erythema in some of the patients. Previous authors noted complete resolution of skin lesions in 26-44% cases which was comparable to the 21-37% noted for different skin lesions by us (Rao et al 2022, Rao et al 2011, Podder et al 2018).

A complete resolution in lesional anaesthesia observed by us in 32.7% patients was contrary to one previous study where none of the affected attained complete resolution of lesional sensory deficit (Illarmendi et al 2012).

We did not observe manual labourers to be at a higher risk for manifesting sensory or motor deficit along the course of peripheral nerves or G2D at diagnosis. However, an interesting observation was a higher percentage of manual labourers attaining improvement or resolution of motor deficit (86.7% of manual labourers and 53.8% of others) or G2D (33.3% of manual labourers and 7.1% of others) at recruitment to the study in comparison to others. They might have been better counselled to more careful about their limbs, it is all speculative but worth study. The exact reason remains unclear; however, we believe it could be a reflection of the fact that 60% of those who were not manual labourers (18/30) were home makers in this study. Women with nerve function impairment are at a higher risk for sustaining repeated trauma (which go unnoticed and unattended) during household activities such as cooking. This needs to be given special attention while counselling the patients and the need to adopt safe lifestyle practices to be impressed upon each patient with leprosy, especially vulnerable groups such as women and manual labourers.

The better prognosis associated with motor deficit in comparison to sensory NFI could be a reflection of the department policy of initiating treatment with systemic steroids along with MDT, whenever a patient presents with motor function impairment. The better resolution attained for motor NFI in comparison to sensory NFI by us points to the need of introducing treatment with systemic steroids when patients presents with NFI of any type. A similar recommendation has already been made by the World Health Organization (van Brakel & Khawas 1996). However, our finding of lack of improvement of motor weakness in 78% of study participants was higher than the same noted in a previous study (57%) (Illarrmendi et al 2012).

We found no relation between the time interval between completion of the treatment and recruitment to the study and resolution of leprosy lesions. This could be attributed to the fact that the longest time interval between completion of MDT and recruitment to the study documented among our study participants was 2 years. Longer follow up data may give more accurate information regarding the relation between post-treatment duration and resolution of leprosy lesions.

Our observation of post-treatment, new-onset trophic ulcers documented in 1.5% of study participants was lower than the 13.8% noted by others (Rao et al 2022). The possibility of some of our patients seeking treatment for complaints from nearby centres and not opting for revaluation at our centre cannot be ruled out.

Sequelae of leprosy in the form of loss of corneal sensation documented in 16.9% of our patients was higher than the 2.9% reported earlier (Sarkar et al 2012). This could be attributed to the detailed evaluation by an ophthalmologist at the time of recruitment to the study in our patients. This is further supported by the fact that none of our patients were recorded to have

any eye manifestations at initiation of treatment. As per the department policy, only patients who complained of ocular symptoms received a detailed ophthalmology evaluation. We suggest that a detailed ophthalmology evaluation should be carried out at diagnosis of leprosy itself so as to ensure early detection of eye involvement and to educate the affected regarding protective ophthalmologic practices. Dry eye noted in 6.2% of our study participants was much less than the 81.4% noted in literature (Pavezzi et al 2020).

We could not arrive at a definite conclusion regarding the absence of late T1R (9.2-37.1% in previous studies) and lower rate of late T2R in our study (11.1% in our study vs 18.4% in literature) since we could evaluate only around 60% of those who completed treatment in the specified time period (Rao et al 2022, Freitas de Alencar et al 2014).

The proportion of patients manifesting G1D and G2D noted by us was comparable to literature (Rao et al 2022, Raposo et al 2018). Such high disability rates may be found/ reported from some tertiary care hospitals but not representative of situation in the community in any part of India/ elsewhere.

An important observation noted by us was the lack of reversal of G1D observed in any of the study participants. This underscores the importance of re-educating treated patients at regular intervals regrading adoption of protective life style measures so as to prevent further progression to G2D.

Though, 3.1% of study participants had evidence of relapse, we are unable to comment on the relapse rate as we could not reassess all those received treatment in the specific time period. Relapse rates in previous studies ranged from 3.2-15.3% (Ho & Lo 2006, Chagas et al 2021).

Limitations: We might have included mostly patients with post-treatment events, since those with symptoms are more likely to agree for a re-evaluation. The cross-sectional nature of the study prevented us from understanding the course of post-treatment events. The pre-treatment clinical details were collected from previous records. The small number of smear positive cases prevented us from evaluating the role of recurrent type 2 reactions on post treatment sequelae. The study was not designed to compare the histology finding before and after treatment in all the study participants, which would have given valuable inputs on post-treatment status of leprosy lesions.

Conclusion

More than 80% of patients who were reassessed manifesting sequelae of leprosy indicate that management of leprosy goes beyond completion of MDT. One patient developing trophic ulcer for the first time after successful completion of treatment and none of those with GID at diagnosis attaining a reversal of the same at re-evaluation stress the importance of providing follow up education and re-education to the treated regarding self-care, especially vulnerable groups such as manual labourers and women. We need population-based studies among treated leprosy patients to estimate the exact prevalence of disease-related sequelae so as to plan future strategies to provide comprehensive care to the affected. To prevent the sequalae of the disease after completion of MDT, patients should be counselled regarding the adhere to self-care practices aimed at preventing burns and trophic ulcer formation. These will include daily wound care, regular health check-ups, and timely referral to specialists when necessary. Patients with disabilities will be encouraged to participate in rehabilitation programs. Furthermore, psychosocial support will be provided to help address the psychological impact of the disease and reduce stigma.

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How to cite this article : Anagha KV, Sasidharanpillai S, Babitha V et al (2025). Post-treatment Status of Leprosy Lesions: A Cross-sectional Study from a Tertiary Referral Centre. *Indian J Lepr.* **97**: 119-131.