Indian J Lepr 2025, 97 : 61-66

http://www.ijl.org.in

Opinion Article

Care of Anaesthetic Areas in Leprosy

P Gupta[1], Priyanka[2], CS Sirka[3]

Received: 16.06.2024 Revised: 21.09.2024 Accepted: 07.10.2024

Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae*. Characteristic feature of leprosy is loss of sensation on skin. The loss of sensation in leprosy is either due to organism directly invading nerve and/or granuloma compressing the nerve fibres. Failure to protect anaesthetic area from noxious stimulus like pinprick, and external temperature may evoke development of injury (trophic ulcer) and lack of activity may produce deformity. Hence, there is an urgent need for educating and bringing awareness about the skin care in physicians, nursing and other health care professionals as well as patients/ leprosy affected persons. This article discusses various ways to protect the anaesthetic areas and care for trophic ulcers in leprosy patients/ leprosy affected persons. The care includes general measures like inspecting anaesthetic areas daily for ulcers or impending ulcers, avoid barefoot walking, use of appropriate measures for protecting anaesthetic areas (handling objects of extreme temperatures with gloves, educating patients for use of available devices for the prospect of anaesthetic area or trophic ulcer). Educating patients/ leprosy affected persons about the method of emollients application for minimizing the dryness and fissuring at the anaesthetic area is important.

Keywords: Care, Anaesthetic, Hands, Feet, Leprosy

Introduction

Leprosy is a chronic granulomatous mycobacterial disease by *Mycobacterium leprae*. It involves the nerve and cutaneous tissue. The anaesthesia induce by nerve damage in leprosy may remain lifelong (Chen et al 2022, WHO 2022). Hence, anaesthetic areas are prone to injury, deformity and trophic ulcers from the external trauma.

The nerve damage in leprosy is either due to direct invasion of *Mycobacterium leprae* or granuloma compressing the nerve and impairing the nerve-function. The nerve damage in leprosy may involve both autonomic sensory nerve endings and later even the motor fibres. As a result, the area supplied by the nerve may have both thermal, tactile, and painful sensation loss. Patient does not feel the pain and continues to use that limb/ part of the body without withdrawal from the stimulus. Such a repeated episodes of external trauma may lead to damage/ ulceration/ blister formation of the skin at the anaesthetic site if care is not taken immediately and timely. Due to loss of sensation and lack of awareness about skin care measures for the anaesthetic area patients/ leprosy affected persons do not notice it and this leads to trophic ulcers. Therefore, examination and

[1] Priyansh Gupta, MD, Senior Resident
[2] Priyanka, MD, Senior Resident
[3] Dr Chandra Shekhar Sirka, MD, Professor
Department of Dermatology and Venereology, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India-751019.
Corresponding Author: Prof CS Sirka, **Email id:** csirka2006@gmail.com

cleaning of hands and feet daily/ self-examination are required by the patients/ leprosy affected persons to prevent as well as take care of the affected part. In such cases preventive measures for anaesthetic areas and care of trophic ulcer may improve the quality of life in leprosy patients (Chen et al 2022, NSP 2023-2027, NLEP 2024). This article discussed ways to protect, care the anaesthetic areas and care the trophic ulcer by leprosy patients themselves, nursing and other healthcare professionals as well as by treating physicians/ surgeons (Shah & Shah 2023, Kaur and Singh 2023).

Essential of General and Specific Care

General advice to all leprosy patients/ leprosy affected persons:

1. Recommended total duration of anti-leprosy therapy.
2. Anti leprosy treatment is free and supplied by govt of India.
3. Not to discontinue the anti-leprosy therapy self.
4. Reactions may develop during the therapy, but anti- leprosy treatment is not to be discontinued.
5. Reaction requires a different treatment, for that patient needs to consult with the physician.
6. Inspection of anaesthetic area daily in daylight for identification of ulcer or impending ulcer.
7. Educating patients, that loss of sensation following nerve damage in leprosy may remain lifelong. Secondly, persistence of loss of sensation in a treated leprosy patient does not suggest resurgence, or recurrence of the leprosy disease. So, it's important for both patient and treating doctor to remember protecting the anaesthetic area is a necessary in leprosy patient.
8. Educating patients for the use of appropriate pressure offloading method at the site trophic ulcers/ anaesthetic areas with impending ulcer for preventing trophic ulcer and healing of trophic ulcer (Sirka et al 2022), and seeking physicians help if trophic ulcers become complicated, secondarily infected or do not heal over 2-3 weeks.
9. Educating about the use of MCR foot wear and use of different measures (designed according to his/ her profession) during daily activity for protecting the anaesthetic area.
10. Avoid repairing footwear with nails.
11. Educating patient, that, the trophic ulcer is not due to organism, it's the sequel of repeated trauma to the anaesthetic area.

Care for the dry skin:

Dryness occurs due to involvement of autonomic nerve fibres in leprosy. To minimize dryness and fissure formation emollients should be applied after cleaning the area with lukewarm water for around 10- 15 minutes (Kaur & Singh 2023).

Care of Callosities:

Self-care kit or pumice stone can be used to scrape the dead superficial layers of skin after immersion in lukewarm water/ normal saline. Followed by *gentle rubbing* of the area with cloth/ pumice stone to remove dead/necrotic tissue from the ulcer edge (Soderberg et al 1982). However, use pumice stone scrape by patients may be avoided. Removal of callosity at ulcer edge is best done by physician or health worker. In the end, the area is smeared with bland emollient or vegetable oil to retain moisture in the skin. Self-care kit is adopted by government and nongovernment organizations, which contain scraper, antiseptic cream, antiseptic solution, sterile-gauge pieces, vaseline bottle, bandage with scissors and sticking plaster.

Care after development of ulcers:

1. General measures like daily inspection of the trophic ulcer/ ulcer for evidence of secondary infection (i.e. oozing, discharge and redness).
2. Use of specific measure for offloading pressure at the trophic ulcer or ulcer site for facilitating reepithelization. The measures include rest to ulcer site, use of appropriate footwear with velcro straps and /or laces (Fig. 1a), contact-cast with window for the ulcer on the sole of foot (Fig. 1b) or extra soft-sole with hole for at ulcer at planter aspects of foot (Fig. 1c), removal of sole from the ulcer areas, bangle covered with cloth for offloading pressure at the lateral malleolar trophic ulcer (Sirka et al 2022).
3. Daily cleaning with soap and water.
4. Dressing the trophic ulcer with zinc sulphate, zinc oxide impregnated adhesive plaster or povidone-iodine dressings (Reiner et al 2019).
5. Callosity at the ulcer margin should not be scrapped by patient, he/she should consult the doctor or health worker in case of callosity at ulcer edge.

Preventing development of ulcers and trophic ulcer at the anaesthetic area:

Anaesthetic areas may develop ulcer or trophic ulcer because patient fail to perceive noxious stimulus. The noxious stimuli like prolonged pressure/ trauma, extreme temperature and pricks can be minimized by following measures:

1. Avoid barefoot walking (both outdoors and indoors) in leprosy patient with anaesthetic areas on the sole of foot.
2. Use of appropriate foot wear like well-fitting shoes (i.e. Footwear with Velcro straps and / or laces) so that the foot wear fits properly to the foot and friction between skin and shoe is minimized.
3. Use of appropriate pressure offloading measures for the trophic ulcer or ulcers present at different areas of the body.

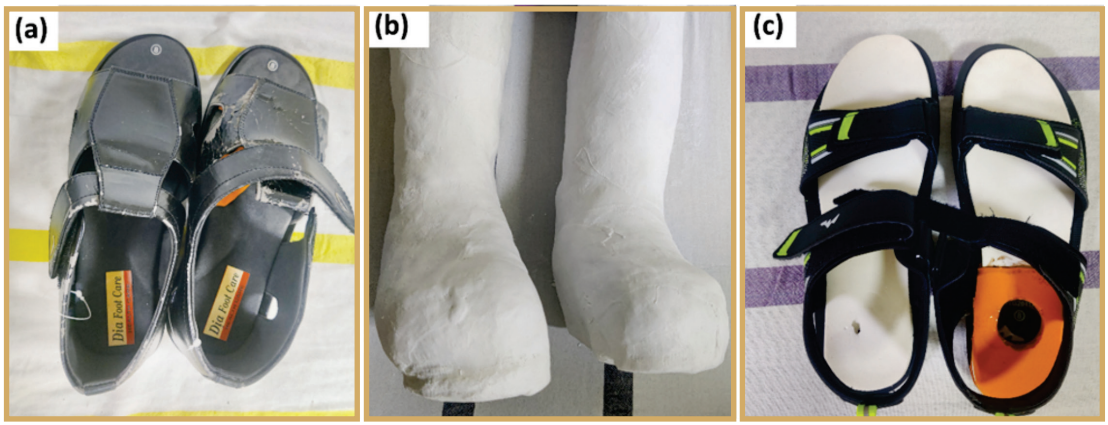

Fig. 1 : (a) Image showing MCR footwear available in the hospital. (b) Clinical image of the patient with total contact plaster of Paris cast with window. (c) Image showing MCR footwear with extra sole having circular hole corresponding to the site of ulcer in the patient sole.

Fig. 2 : (a) Demonstration of method of cooking food (sitting opposite to oven /chulha). (b) use of cloth to hold hot utensils. (c) using a wooden stick to hold hot utensils. (d) covering the eyes with pads in lagophthalmos.

4. Tips to minimize trauma induced by MCR foot wear is by a) rest following short distance walk for minimizing heat produced by friction between skin and foot wear, and b) use of padded footwear for minimizing trauma.
5. Use of appropriate device for preventing injury to the anaesthetic areas during daily activity include avoid sitting near the fireplace/or use an appropriate oven/chulha that protects the anaesthetic areas on the shin in village women involved in cooking from extreme heat (Fig. 2a) and by use of wooden spoons/ or proper wooden handled spoons so that the anaesthetic fingers/ thumbs can be protected from excessive heat and burns. Women should also use cookware with long wooden handles to avoid burns while cooking.
6. For protecting anaesthetic areas on the hands by use of suitable devices like spoons for taking hot /cold food, use cloths/ gloves to hold hot and cold objects (Fig. 2b) and use of wooden spoons/ wooden handled spoons (Fig. 2c).

Care of eyes:

Care of eyes includes

1. Think-blink approach in lagophthalmos; where patient consciously blink eyes to ensure uniform spread of tear film over cornea and prevent xerophthalmia.
2. Patients with extraocular muscle weakness are advised to cover eyes with cotton pad or eye shield during sleep to prevent infection or any injury from entry of foreign material (Fig. 2d).
3. Artificial tear drops are advised for dry eyes to provide lubrication (Yowan et al 2002).

Conclusion

Anaesthesia may persist lifelong in leprosy patients despite adequate anti-leprosy therapy. So, counselling and educating patients about care of anaesthetic areas and trophic ulcer may reduce morbidity. This article aims to help residents, nursing and other health care staff improve counselling, use appropriate care and preventive measures and may help advice leprosy patients with different work of life. We hope that residents as well as post-residency dermatologists will benefit from the key points described in this article.

References

1. Chen KH, Lin CY, Su S Bin et al (2022). Leprosy: A review of epidemiology, clinical diagnosis, and management. *J Trop Med*. 2022: 8652062. DOI: 10.1155/2022/8652062.
2. Kaur V, Singh G (2023). Nursing care in leprosy patients. In: IAL Textbook of Leprosy (Kumar B, Kar HK, Dogra S, Eds), Chapter 41, 3rd edition. Jaypee Brothers Medical Publishers (P) Ltd., New Delhi/ London, pp 652-661.
3. National Leprosy Eradication Programme (2024). National Health Mission [Internet]. Directorate General of Health Services, Ministry of Health and Family Welfare, Govt of India. https:nhm.gov.in.
4. National Strategic Plan and Roadmap for Leprosy 2023-2027. Central Leprosy Division, Directorate General of Health Sciences, Ministry of Health and Family Welfare, Government of India, January 2023. Available at https://dghs.gov.in/
5. Reinar LM, Forsetlund L, Bjorndal A et al (2019). Interventions for ulceration and other skin changes caused by nerve damage in leprosy. *Cochrane Database Syst Rev*. **8(8)**: CD004833.DOI: 10.1002/14651858.CD004833.
6. Shah A, Shah N (2023). Deformities of face, hands, feet and trophic ulcers: Surgical and nonsurgical management. In: IAL Textbook of Leprosy (Kumar B, Kar HK, Dogra S, Eds), Chapter 40, 3rd edition.

Jaypee Brothers Medical Publishers (P) Ltd., New Delhi/London, pp 632-651.

7. Sirka CS, Rout AN, Dash G et al (2022). Trophic ulcer over lateral malleolus successfully treated using a bangle for off-loading pressure. *Indian J Dermatol Venereol Leprol*. **88(5**): 689–690.
8. Soderberg T, Hallmans G, Stenstrom S et al (1982). Treatment of leprosy wounds with adhesive zinc tape. *Lepr Rev*. **53(4**): 271–276.
9. World Health Organization (2022). Global leprosy (Hansen disease) update2021: moving towards interruption of transmission - Situation de la lèpre (maladie de Hansen) dans le monde, 2021: vers l'interruption de la transmission. *Wkly Epidemiol Rec*. **97(36**): 429-450.
10. Yowan P, Danneman K, Koshy S et al (2002). Knowledge and practice of eye-care among leprosy patients. *Indian J Lepr*. **74(2**): 129–135.

How to cite this article : Gupta P, Priyanka, Sirka CS (2025). Care of Anaesthetic Areas in Leprosy. *Indian J Lepr.* **97**: 61-66.