

Epidemiology, Frequency and Localisation of Plantar Ulcers in Leprosy Patients Attending a Tertiary Care Centre of Jharkhand.

Dr. Sujata¹, Dr. Prabhat Kumar², Dr. Kumar Shubham³, Dr. Rajeev Kumar⁴

¹Junior Resident Academic, Department of Dermatology, Venereology & Leprosy, RIMS, Ranchi, India.

²Associate Professor, Department of Dermatology, Venereology & Leprosy, RIMS, Ranchi, India.

³Junior Resident Academic, Department of Dermatology, Venereology & Leprosy, RIMS, Ranchi, India.

⁴Junior Resident Academic, Department of Dermatology, Venereology & Leprosy, RIMS, Ranchi, India.

Corresponding Author- Dr Sujata.

Abstract:-

Background: Leprosy along with its sequelae are quite prevalent in developing countries like India. Due to the nerve damage that occurs in this disease, patients are prone for developing ulcerations at pressure bearing sites. The aim of this study was to study epidemiology, frequency and localisation of plantar ulcers in leprosy patients. **Materials and Methods:** A cross sectional study was done over a period of 8 months from July 2019 to February 2020 on all Leprosy patients attending OPD and IPD of Department of Dermatology, Venereology and Leprosy at a tertiary care centre. **Results:** A total of 344 patients of Leprosy were selected. 22.1% of these which is around 76 patients were found to have plantar ulcers (49-males & 27-females). The study revealed that 38.2% of plantar ulcers were localised to base of 1st great toe, whereas 15.8% were seen at base of 2nd, 3rd, 4th & 5th toe, 19.7% on heel, 14.5% at medial border of foot, 9.2% at lateral border of foot, 2.6% at plantar arch. **Conclusion:** Deformities like Plantar Ulcers are commonly seen in patients of Leprosy, however they are preventable. Proper counselling, health education and ensuring availability of protective footwear are some basic measures which can counter this problem to maximum extent.

Keywords: -Leprosy, Nerve damage, Epidemiology, Frequency, Localisation, Plantar Ulcer, Deformities, Protective footwear.

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I. Introduction

Leprosy continues to be of major concern in developing countries, not only because of the large number of people affected by it and their potential for communicating the disease to others, but also because of high incidence of deformities seen in majority of patients.

While the introduction and widespread application of multidrug therapy over the past decade has resulted in significant reductions in disease burden, the impact on the associated disabilities and deformities has been very limited.¹

The disease is associated with irreversible peripheral neurological damage with subsequent sensory loss in the skin. As a consequence, people with leprosy are at risk of having injuries to their limbs and joints, such as thickened and cracked skin or ulceration.²

Trophic ulcer is defined as a chronic ulceration of anesthetic foot, situated in well defined areas overlying bony prominences and characterized by resistance to systemic and local therapy and marked tendency of recurrence with deformities.

Anesthesia of the foot is the central factor in the pathogenesis of plantar ulcers. An anesthetic foot is "ulcer-labile", and ulceration of the foot makes it "ulcer-prone", producing a cycle of scar.³

It is agreed that loss of light touch is not really a disability, but if a patient cannot localize a firm touch, he is liable to suffer frequent injury, this is known as loss of "protective sensation".⁴ Protective Sensation is a term which has been used to describe the level at which the sensibility threshold of the skin to light touch stimuli is still sufficient to prevent the formation of ulcers.⁵⁻⁷

Any further impairment in sensibility beyond this level means that there is insufficient sensory awareness in the skin to detect the insult which has the potential to lead to significant tissue damage and subsequent ulceration.

Plantar anesthesia, unprotected walking, excessive load, and foci of infection are some of the main factors responsible for the persistence of plantar ulcer.⁸

The present study was conducted to study epidemiology, frequency and localization of plantar ulcers in Leprosy patients attending our tertiary care centre. In addition, efforts were made to raise awareness and

educate these patients regarding necessary precautions , self care , specialized footwear etc so as to help prevent such morbidity associated with the disease.

II. Materials And Methods

This study was a cross sectional observational study carried on all leprosy patients attending Dermatology OPD and admitted into ward over a period of 8 months from July 2019 to February 2020 .

All patients , irrespective of age and sex, who were under treatment for leprosy or defaulters or who were diagnosed for the first time with Leprosy were included in our study. Also patients who were RFT but in the surveillance period were included.

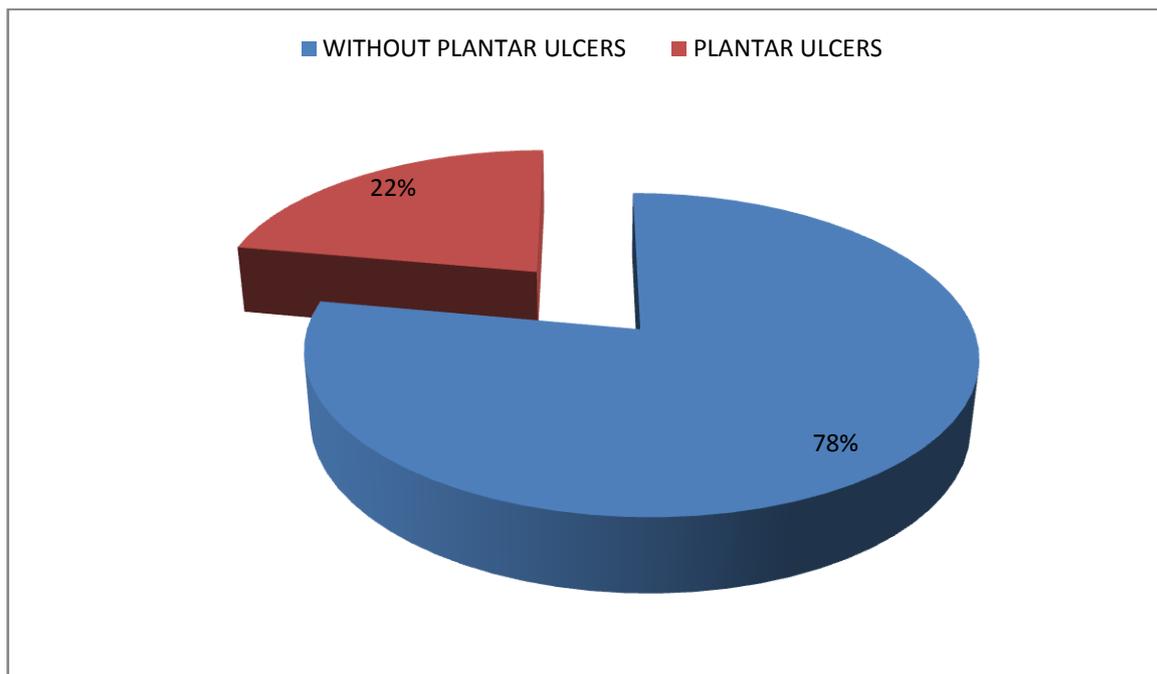
Routine laboratory investigations like CBC , Blood Sugar was done to rule out anaemia, diabetes etc that could predispose to infections and interfere with wound healing. Patients were evaluated for vasculopathies like Vasculitis, Sickle cell disease, Thromboangitis Obliterans , Venous insufficiency etc and those found to have the same were not included.

Detailed history was taken for each patient followed by examination in daylight. Sensation was checked for fine touch, crude touch and also for temperature. Nerves were palpated for thickness and tenderness. Evaluation of plantar ulcer was done through detailed history and local clinical examination.

Frequency of plantar ulcers were noted by obtaining the total number of leprosy patients attended and total number of plantar ulcer cases found among them.

III. Results

During the study period , a total of 344 patients of Leprosy were selected. These included newly diagnosed cases, previously diagnosed cases (either on treatment or defaulter) and RFT cases. Among these, 76 patients were found to have plantar ulcers which is about 22.1% of Leprosy cases.



Pie Chart 1- Frequency of Plantar Ulcers among Leprosy patients.

In relation with Hansen's disease, most patients with plantar ulcers fell under the category of previously diagnosed cases (under treatment or defaulter) – 51 patients (67.1%). Around 19 patients (25%) were RFT cases of Hansen's disease. Only 7.9% - 6 patients were newly diagnosed case of Hansen's.

	Number (n)	Percentage(%)
Already Diagnosed Cases	51	67.1%
RFT Cases	19	25%
Newly Diagnosed Cases	06	7.9%

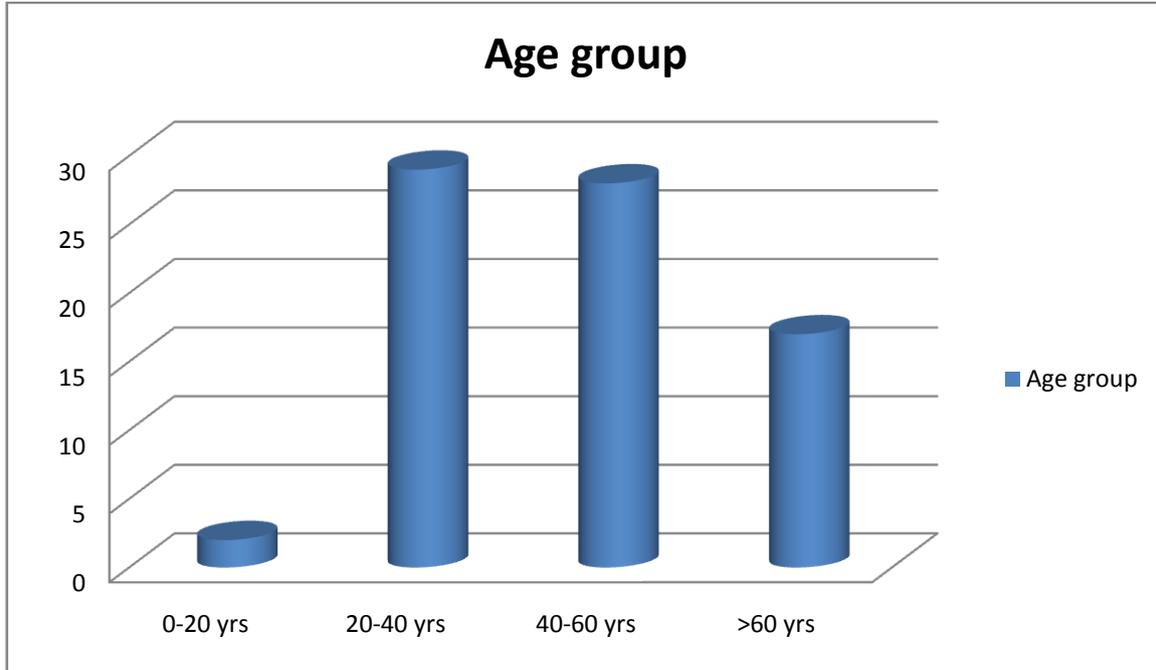
Table 1- Trophic ulcers seen in patients with respect to their status of Leprosy disease.

Among patients with ulcer majority were males – 49 cases and remaining 27 were females.

	Number(<i>n</i>)	Percentage(%)
<i>Males</i>	49	64.5%
<i>Females</i>	27	35.5%

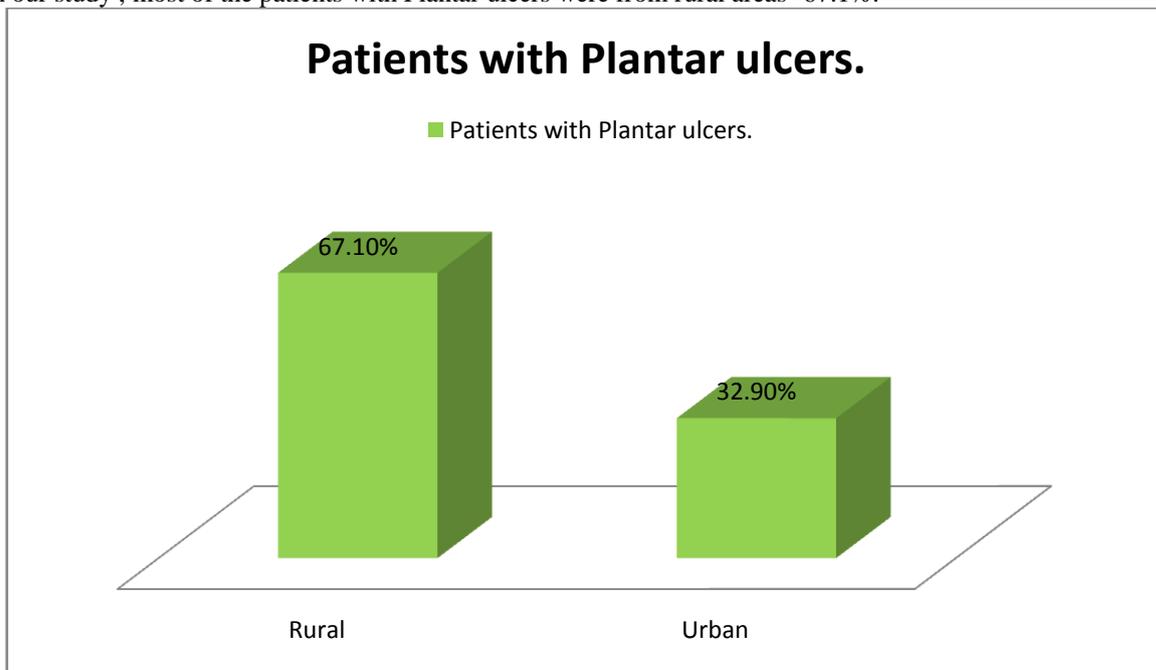
Table 2- Gender Distribution among patients with Plantar Ulcer.

According to our study , majority of patients suffering with plantar ulcer belonged to 20-40 yrs age group- 29 cases (38.2%) followed by 40-60 yrs age group- 28 cases (36.8%).



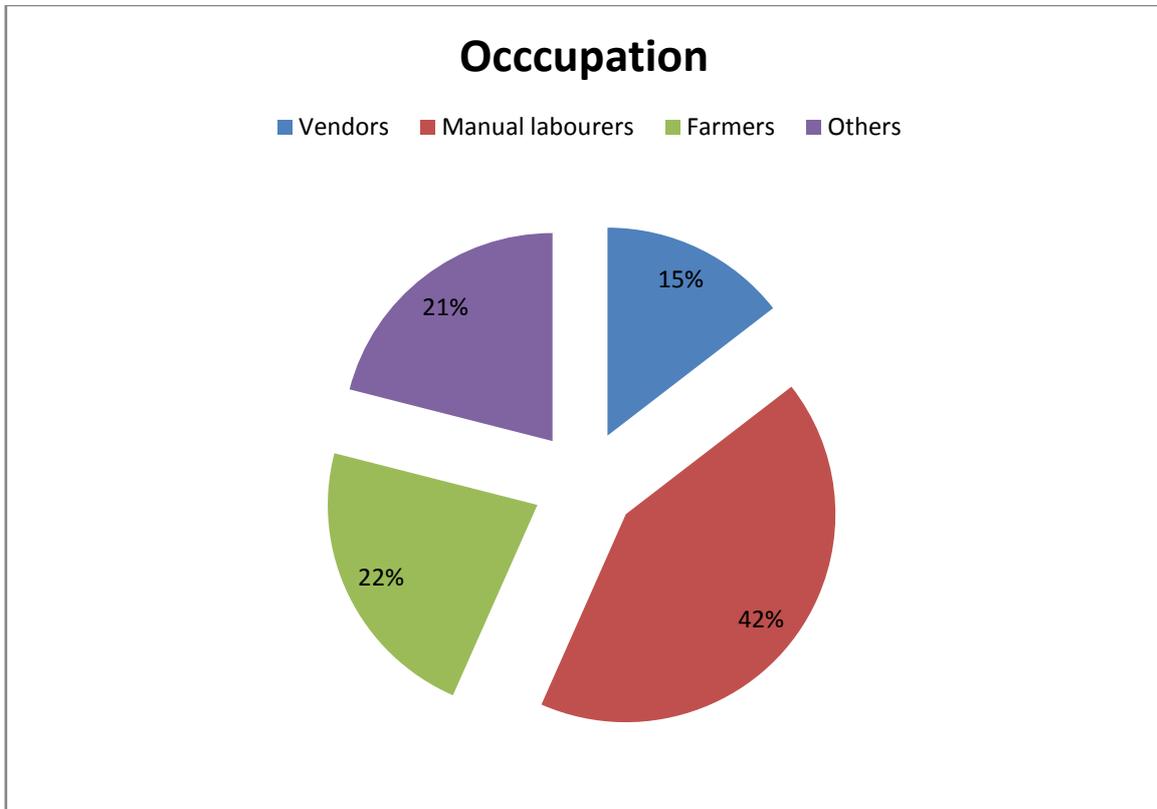
Bar 1- Age distribution among Plantar Ulcer patients.

In our study , most of the patients with Plantar ulcers were from rural areas- 67.1%.



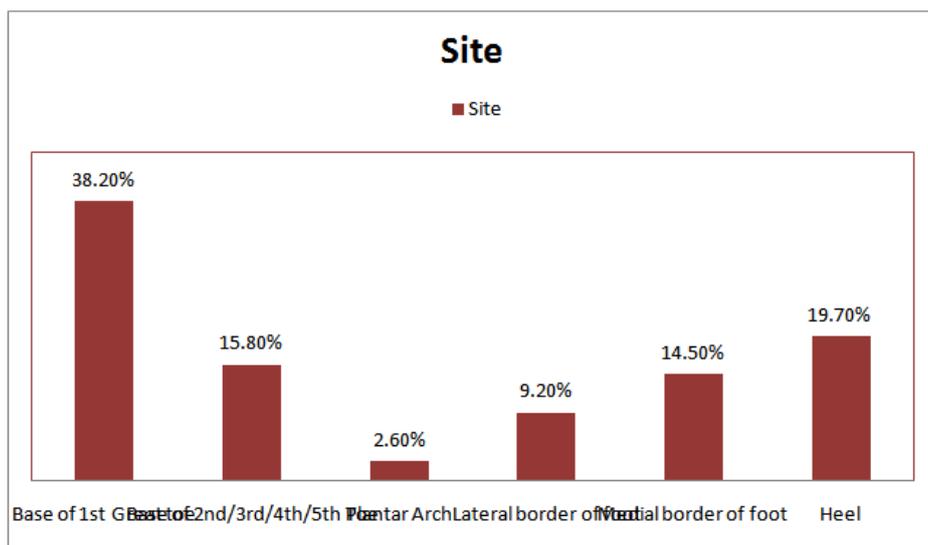
Bar 2- Patients with Plantar ulcers – Rural and urban distribution.

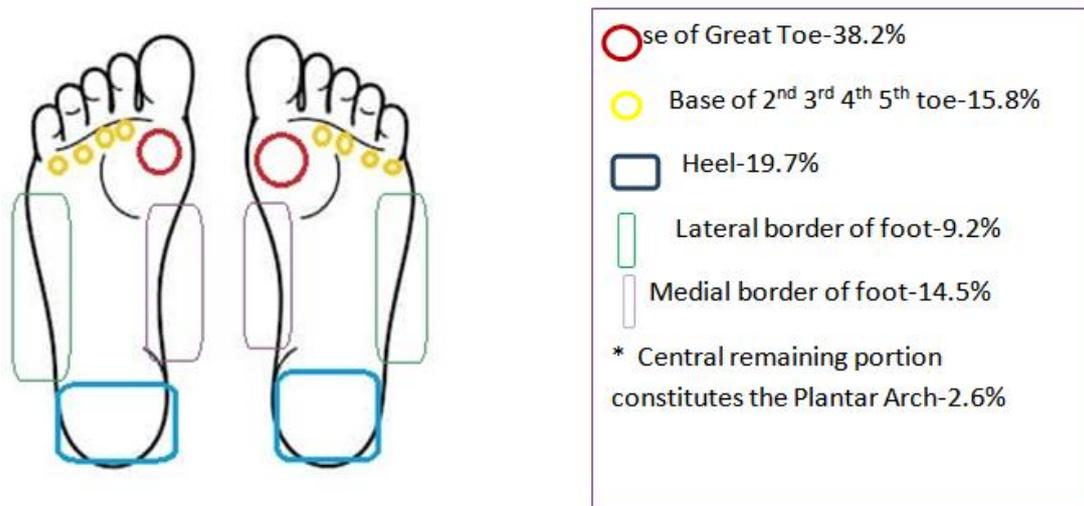
The study revealed that occurrence of Plantar ulcers varied according to occupation of patients. Majority of patients were manual labourers – 32 patients (42.1%) followed by farmers – 17 patients (22.4%) and vendors - 11 patients (14.5%).



Pie chart 2 – Occurrence of Plantar ulcers in relation to the occupation of Leprosy patients. (Others include patients doing sedentary work)

The study revealed that 38.2% of plantar ulcers were localised to base of Great Toe , whereas around 15.8% were seen at base of 2nd / 3rd /4th or 5th Toe. Medial border of foot was the site for 14.5% of ulcers and heel for 19.7% of ulcers





Bar 3& Schematic Diagram representing Frequency according to Site of Plantar Ulcers.



Figure 1-Patient of Hansen's with Plantar Ulcer at Base of Great Toe.



Figure 2-Trophic Ulcer at Base of 2nd Toe



Figure 3- Ulcer with surrounding callosities located at the Heel.



Figure 4- A Female presented with Ulceration at medial border of foot and was found to have Hansen's disease.

IV. Discussion

Plantar ulcers occur in many Leprosy patients not because of Leprosy but because of its neuropathic effect leading to increased risk for trauma and burns leading to ulcers.¹

In our study around 22% of leprosy patients had plantar ulcers which was more, compared to finding of Languillon J. whose study showed an occurrence of 12%.⁹ Majority of patients with plantar ulcers were male (64.5%) compared to 35.5% females, which was similar in a study by Languillon J.⁹ The study revealed that majority of plantar ulcers were seen at base of Great toe – 38.2%. This was supported by finding of Languillon J.⁹

According to our study more than 1/5th of cases of Hansen's disease were suffering from plantar ulcer. Among these around 25% cases were RFT. These cases can be assumed to be having proper knowledge about their underlying disease and would have received proper counselling in the past. Despite this, they were suffering from Plantar Ulcer which can be attributed to a major extent to their gross negligence.

Majority of patients in our study were Male – 49 (64.5%) and the age group of 20-40 yrs had most of the cases- 29 (38.2%), suggestive of the incidence being more in the working class mostly manual labourers and farmers. Inadequate rest combined with improper footwear and precautions may be the aggravating factor in these cases. The findings of the study also showed that majority of plantar ulcers were seen in the weight bearing areas of foot such as base of great toe.

It is well established that Plantar Ulcers although common among patients of Leprosy are totally preventable. The best preventive measures are self care training, daily treatment with soaking and oiling along

with use of preventive footwear. Self care is defined as “health care which the individual provides to him/herself without outside professional assistance”.^{4,10} The idea of self care is based on usage of common, simple, available, and sustainable tools found in patients homes and surroundings.¹⁰⁻¹² These self care routines are ultimately based on instructions provided by healthcare professionals. Therefore health care workers need to counsel and instruct these patients and also make sure adherence to these self care routines by regular follow ups.

In addition to these, protective footwear should be provided to all Leprosy patients with at least one anaesthetic point on foot.² These protective footwear should have the following characteristics cushioned soft insole, hard under sole, adjustable straps and heel support.²

V. Conclusion

Leprosy as a disease and social stigma has plagued a developing country like us for centuries. To further add to the problem are sequelae associated with the disease. Occurrence of plantar ulcers is a common finding which is not only a source of distress and discomfort for the patients but also a huge burden for the healthcare.

There is no doubt a patient suffering from leprosy has multi-fold increased risk of trophic ulcers however the point of focus should be the fact that it can be prevented if all patients at risk are identified early and supported with appropriate footwear and education on self care.

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