



**ORIGINAL RESEARCH PAPER**

**Dermatology**

**LEPROMATOUS SPECTRUM -UNNOTICED OR OVERLOOKED RETROSPECTIVE ANALYSIS OF LEPROMATOUS SPECTRUM OF HANSEN'S DISEASE IN A TERTIARY CARE CENTRE.**

**KEY WORDS:** Lepromatous leprosy, Glove and stocking Anaesthesia, Pure neuritic Hansen disease.

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**ABSTRACT**

**Introduction:** Leprosy is a chronic granulomatous disease presents variedly depending on the patient's immune status at the time of infection. In this study, we are planning to perform a retrospective analysis to characterise the trend of Lepromatous spectrum of Hansen's disease cases registered in Tertiary care centre. **Aim:** To analyse the incidence, clinical patterns and variants of Lepromatous spectrum of Hansen's disease cases registered in Tertiary care centre. **Objectives:** To describe the epidemiological trend of Lepromatous Spectrum of Hansen's Disease and its clinical variants. **Methodology** A Retrospective observational study involving Lepromatous spectrum of Hansen's disease cases registered in leprosy clinic in last 5 years (2017-2021). Patient demographic details, duration of disease, clinical presentations, investigation details like slit skin smear, biopsy reports, treatment data was extracted from the Leprosy case register and data analysis was done in this study. **Results** 129 leprosy patients (BL-69, LL-43, Histoid-15, Pure neuritic-2) reported during the period of 2017 to 2021[ 5 years]. 2018 and 2019 had maximum number of cases approximately 30 new cases of lepromatous leprosy. Hypopigmented patches and glove & stocking anaesthesia seen in 59.8% cases, skin nodules seen in 45.7%, earlobe infiltration seen in 21.7%, epistaxis & saddle nose deformity seen in 4.3%, gynaeomastia seen in 2.2%, trophic ulcer seen in 26.1% at the time of presentation mainly involving the foot followed by hands, only nerve involvement without skin lesion present in 1.1% of cases. Claw hand was the most common deformity witnessed. The presence of Wartenberg sign was observed in 10 patients. Apart from ulnar and common peroneal nerve involvement present in 100 % of the patients, other peripheral nerves were involved in significant number of patients. All these patients showed positive acid fast bacilli in slit skin smear. **Conclusion** Active surveillance and early detection of the disease are imperative to prevent the spread of M. leprae. It is essential for timely implementation of treatment which will prevent deformities and disabilities. Active case detection plays the major role in early diagnosis of leprosy.

**INTRODUCTION:**

leprosy is a chronic disease with diverse clinical presentations depending on the immune status of the patient. Among the spectrum of Hansen disease, identifying a case of Hansen disease is of significant importance, as it is a very infectious form of Hansen disease with devastating consequences and deformities. Although lepromatous leprosy is characterised by prototypical signs of macaroni, shiny skin models, ear lobe infiltration, gynaeomastia. Not all patients present with clinical signs and symptoms. Hence in this study, we have retrospectively collected data of all cases of Hansen disease in lepromatous spectrum registered in the past 5 years and have analysed epidemiologically and clinically.

**AIM:**

To analyse the incidence, clinical patterns and variants of Lepromatous spectrum of Hansen's disease cases registered in Tertiary care centre.

**OBJECTIVES:**

To describe the epidemiological trend of Lepromatous Spectrum of Hansen's Disease and its clinical variants.

**Inclusion Criteria:**

1. All Age group of patients newly diagnosed with Lepromatous spectrum of disease,
2. Clinically diagnosed Lepromatous spectrum of disease (Borderline Leprosy, Lepromatous Leprosy)
3. Biopsy Proven Lepromatous spectrum of Hansen's

disease

4. Microbiologically proven cases bacteriological index more than 3+ in slit skin smear

**Exclusion Criteria:**

1. Patients with Tuberculoid Leprosy
2. Patients with Indeterminate Leprosy
3. Old treated leprosy patients

**METHODOLOGY**

A Retrospective observational Institutional study involving Lepromatous spectrum of Hansen's disease cases registered in leprosy clinic in last 5 years (2017-2021). Patient age and gender, demographic details, duration of disease, clinical presentations (skin nodules, earlobe infiltration, multiple hypopigmented, erythematous, coppery skin lesions, nerve thickening and tenderness, trophic ulcers, glove and stocking anaesthesia, deformities), investigation details like slit skin smear, biopsy reports, treatment data was extracted from the Leprosy case register and data analysis was done.

**Data Analysis**

The collected data were analysed with IBM SPSS Statistics for Windows, Version 23.0. (Armonk, NY: IBM Corp). To describe about the data descriptive statistics frequency analysis, percentage analysis were used for categorical variables and the mean & S.D were used for continuous variables.

**RESULTS**

-Ninetytwo leprosy patients (BL-44, LL-36, Histoid-10, Pure

neuritic-2) reported during the period of 2017 to 2021[ 5 years]. Out of 92 patients,72 were males &20 were females. Highest incidence (28.3%) noted between the age of 41 to 50 years in this study. Hypopigmented patches and glove & stocking anaesthesia seen in 59.8% cases, skin nodules seen in 45.7%, earlobe infiltration seen in 21.7%, epistaxis & saddle nose deformity seen in 4.3%, gynaecomastia seen in 2.2%, trophic ulcer seen in 26.1% at the time of presentation, only nerve involvement without skin lesion present in 1.1% of cases. All these patients showed positive acid fast bacilli in slit skin smear including pure neuritic type of Hansen disease, NCS of pure neuritic type of leprosy showed both sensory and motor axonal neuropathy. Histopathological results showed thin epidermis, presence of grenz zone, diffuse granuloma consist of foamy macrophages. In histoid leprosy spindle cells present in storiform pattern with grenz zone& in pure neuritic type presence of foamy macrophages was seen in one patient and foamy macrophages along with acid fast bacilli in other patient.

YEAR	FREQUENCY	PERCENT
2017	26	20.2
2018	31	24
2019	36	27.9
2020	16	12.4
2021	20	4

Cases	Frequency	Percent
1. BL	69	47.8
2. Histoid leprosy	15	10.9
3. LL	43	39.1
4. Pure neuritic BL	2	2.2
Total	129	100.0

Gender	Frequency	Percent
Female	26	21.7
Male	103	78.3
Total	129	100.0

OCCUPATION	FREQUENCY	PERCENTAGE
DRIVER	7	5.5
LABOURER	27	21
HOUSE WIVES	14	10.9
FARMER	9	7
SANITARY WORKER	4	2
BUSINESS MAN	2	1.6
MECHANIC	3	2.4
SOFTWARE ENGINEER	2	1.6
MASON	4	3.2
ELECTRICIAN	4	3.2
OFFICE STAFF	2	1.6
VENDORS	4	3.2
CONVICT	1	0.8
MIGRANT	6	4.7
UNEMPLOYED	8	6.2
OTHERS	31	25.03

Hypopigmented Patches	Frequency	Percent
No	44	34.2
Present	85	65.8
Total	129	100.0

Skin Nodules	Frequency	Percent
No	73	56.6
Present	56	65.8
Total	129	100.0

Earlobe Infiltration	Frequency	Percent
No	92	56.6
Present	37	43.4
Total	129	100.

Epistaxis	Frequency	Percent
No	113	87.6
Present	16	12.4
Total	129	100.0

Saddle Nose	Frequency	Percent
No	125	96/9
Present	4	3.1
Total	129	100.0

Gynecomastia	Frequency	Percent
No	119	92.2
Present	10	3.1
Total	129	100.0

Glove And Stocking Anaesthesia	Frequency	Percent
No	89	69
Present	40	31
Total	129	100.0

Trophic Ulcer	Frequency	Percent
No	81	62.8
Present	48	37.5
Total	129	100.0

**DISCUSSION**

Leprosy is a disease known since biblical times. The stigma revolving around the disease is due to the sequelae and disabilities. Though the burden has reduced through increased awareness, it is important to identify a case of Hansen disease, screen whenever in doubt as the complications of the disease as well as the spread of the disease in the community can be prevented by appropriate management and care. Hence leprosy should not be neglected as a rare or eradicated disease.

Out of 480 patients diagnosed with Hansen disease between 2017-2021, 129 belonged to lepromatous spectrum. The study being conducted in Tertiary institution, A greater number of cases was referred from primary and secondary health institutions and patients with ulcer, deformities, anaesthesia are referred from other departments to rule out Hansen disease. Borderline tuberculoid and tuberculoid leprosy often presents with the typical hypopigmented and hypoaesthetic patch which are easily noticed by patients and identified by field workers and treated by primary health care institution. The increased number of cases of lepromatous spectrum may be due to a occurrence of skin lesions with long duration of symptomless course with normal sensation which is often ignored and neglected by the patient.

2018 and 2019 had maximum number of cases approximately 31 and 35 new cases of lepromatous leprosy being reported respectively. The fall in the following years might be due to the difficulty in reaching the health care centre during pandemic. Majority of the Patients were aged between 30 to 55 years, pointing towards migratory workers, working population who are more prone to community spread of the disease.

There was higher incidence (103) in male, similar to studies done by Thakkar and Patel, Adil *et al.*, Shah *et al* and Patil and Sherkhane. [5,6,7,8]. As most of the male patients are outdoor workers in whom signs of Hansen disease hinders the day to day activities and owing to the fact that males are more accessible to health services, leading to increased number of cases being reported in males more than females.

Occupation of the patient was considered as an important parameter in our study. As risk of acquiring the infection and transmitting infection is more in occupation which involves communication with people, migrant population.

As anticipated, labourers, autodrivers were most commonly affected. Housewives were affected in surprising increased numbers may be due to increased duration of contact, exposure to vendors, delay in diagnosis.

Against the fact that leprosy is common in low socioeconomic status, Businessman and software engineers were also affected.

Being a tertiary care centre, large number of cases were referred from various states and districts .cases from Chennai, Thiruvallur constituted to about 50%

5 cases out of 129 cases had history of Hansen disease in family members. In contradiction to the literature ,fathers were greatly affected than mothers. 5 patients out of 129 cases had concurrent tuberculosis infection and were on ATT drugs. 2 patients had HIV co infection and were on anti retroviral therapy.

1 patient had syphilis co infection . Among the lepromatous spectrum, Borderline lepromatous leprosy is the most common type (47.8%) noticed followed by lepromatous leprosy(39.1%) which is in concordance with Adil et al and Shah et al[7,8]. Increased cases of Borderline leprosy signifies that a greater proportion of patients have downgraded from tuberculoid spectrum due to lack of awareness and treatment. This rise can be easily prevented if cases of Tuberculoid spectrum of Hansen are detected early and treated effectively.

Compared to Adil et al. (1.78%) [7], our study showed increased incidence of Histoid leprosy which can be due to renaissance of newer mutations or due to inadequate treatment. 15 out of 129 patients presented with Histoid Hansen which is 11. % 11 cases presented as denovo histoid and 4 cases were downgraded from lepromatous spectrum may be due to inadequate treatment.

2.2% (2 patients) presented with no cutaneous manifestations , diagnosed as a case of pure neuritic Hansen disease with the aid of nerve biopsy showing foamy macrophages in one patient, foamy macrophages with Acid fast bacilli in other patient in addition nerve conduction studies showed both sensory and motor neuropathy which is in concordance with Shah et al(2.75%)[8] In contrast to the literature, Acid fast bacilli (4+,5+) demonstrated in slit skin smear done in both the patients detected with pure neuritic type of Hansen disease. Though pure neuritic Hansen is often recognised as a variant of Tuberculoid hansen, Here we report two cases of Pure neuritic Hansen with slit skin smear positive in Lepromatous spectrum. This is a rare finding which is first to be reported to the best of our knowledge .

Most common cutaneous manifestations observed in the study was hypopigmented patches (65.8%) followed by skin nodules (43.4%) .As we are in the era of eradication of leprosy, we encounter increased cases with atypical presentations which disguise the presence of lepromatous leprosy. It also signifies that the absence of hypopigmented patches ,skin nodules does not rule out Hansen disease and highlights the importance to search for other manifestations and atypical manifestations of lepromatous spectrum

Though Ear lobe infiltration is one of the pathognomonic feature of leprosy , it was present in only in 37 patients (43.4%) . Rest 56.6 % patients of Lepromatous leprosy presented without ear lobe infiltration, signifies the varied presentation of lepromatous spectrum. Hence even in the absence of ear infiltration ,leprosy should not be excluded.

Disfiguring sequelae of leprosy, saddle nose and gynaecomastia was extremely rare which can be attributed to timely diagnosis and treatment.

The cardinal symptoms of leprosy, epistaxis and pedal edema was present only in 16 patients.

Though Erythema nodosum leprosum type of reaction is frequently encountered in lepromatous spectrum. In our study, the incidence of type 1 reaction was more than type 2 at the time of presentation indicating that most of the patients have degraded from tuberculoid to lepromatous spectrum.

Ulnar and common peroneal nerve were involved with grade 2 thickening in all cases followed by radial cutaneous nerve, posterior tibial nerve, greater auricular nerve.

Bilateral mobile claw hand was the most common deformity witnessed. Apart from claw hands, claw toes and resorption were present. Wartenberg sign was present in 9 patients which is an earliest indicator of ulnar nerve involvement.

Glove and stocking anaesthesia was present in 31% most of cases with glove and stocking anaesthesia are being referred from other departments like surgery, diabetology, neurology where they are being treated for peripheral neuropathy of other causes. These patients are referred only when they are refractory to the conventional treatment.

Glove and stocking anaesthesia being manifested in 31 % patients, it is no more an associated feature or late feature of Hansen disease but an essential sign of Hansen disease. As Glove and stocking anaesthesia is the first step of the disfiguring ladder of complication leading to trophic ulcer, resorption and morbidity associated with the disease, identifying it as a cause of Hansen disease and treating it as early as possible can mitigate the irreversible complications of the disease.

Sensory and motor neuropathy was noted in nerve conduction study in 21 patients mainly showing decreased sensory nerve amplitude potential in ulnar and common peroneal nerve.

Trophic ulcer being one of the disabling aspect of Hansen disease was present only in 37.21% which is comparatively lower than the Thakkar and Patel & Patil and Sherkhane [5,6], even in the increased presence of glove and stocking anaesthesia signifying the adequate knowledge on the case of insensitive foot and proper use of appropriate footwear. Trophic ulcer was commonly seen in foot followed by hand.

In spite of field survey, Door to door delivery of drugs ,24 patients defaulted from treatment due to lack of awareness and stigmata associated with Leprosy.

Multidrug therapy containing 3 drugs has led to bacteriological, clinical cure in most of the patients when given for adequate number of time. Here, 6 patients presented with relapse may be due to resistance, persists, non-compliance and reactivation. Hereby emphasizing the need for testing for resistance.

**CONCLUSION:**

This study was being done with intention to compile all the typical and atypical presentations of lepromatous leprosy presented in the past 5 years which also includes covid pandemic era.

This is first of its kind analysis which has elaborated in detail the history , risk factors, presentation, deformities, relapse of the deliberating lepromatous spectrum of disease.

Lepromatous leprosy is the most infections form of the stigmatized Hansen disease. In the era of eradication, patients present with both typical and atypical presentations of Lepromatous leprosy adds to its chronic disabling course, Deformities making it difficult to diagnosis and treatment. Yet treating a case of lepromatous leprosy is of greatest importance as it can reduce the spread of the disease and curtails the infection from spreading.

The clinical presentation of lepromatous spectrum being quiescent one is often missed or misdiagnosed in the early stages, to only present with deformities and trophic ulcers. The spike in rate of relapse and reinfection signifies the need for inclusion of newer drugs in the treatment of leprosy.

Hence identifying a Lepromatous leprosy is no longer only a dermatologist possession, possible only by the combined collaborative efforts of all the specialities in having watchful eye for not only the typical but also the atypical signs of lepromatous leprosy.



**Figure 1.** Showing skin coloured nodules in patient with lepromatous leprosy



**Figure 2.** showing Hypopigmented patches in borderline lepromatous leprosy .



**Figure 3.** Showing classical inverted saucer shaped lesions in a case patient with mid borderline leprosy.



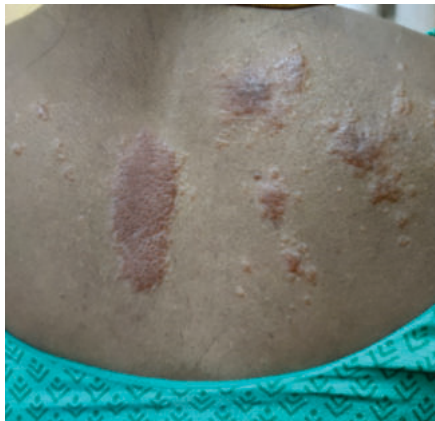
**Figure 4:**Showing Ear lobe infiltration in patients with Lepromatous Leprosy.



**Figure 5:**showing skin nodules in patients with lepromatous leprosy.



**Figure 6:**showing saddle nose in a case of lepromatous leprosy.



**Figure 7:**showing Reddish brown papules and plaques in a case of Histoid Hansen.



**Figure 8.** Showing gynaecomastia in a patient with Lepromatous Leprosy.



**Figure 9.** showing Gynaecothelia in a patient with lepromatous leprosy.



**Figure 10.** showing Trophic ulcer in a lepromatous leprosy patient.

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