Dermatology



# CLINICO EPIDEMIOLOGICAL STUDY OF HANSENS DISEASE (LEPROSY) IN PATIENTS ATTENDING GOVERNMENT GENERAL HOSPITAL, KADAPA.

Dr. Nare Lakshmi Sirisha	MD D. V. L., Assistant professor, department of D. V. L., Government medical college, Kadapa.
Dr. Sowjanya Sangem*	MD D. V. L., CAS, Department of D. V. L., Government medical college, Kadapa. *Corresponding Author
Dr A Suresh Kumar	Post graduate, Department of D. V. L., Government Medical College, Kadapa.
Dr Nimmala Pavani	Post graduate, Department of D. V. L., Government medical college, Kadapa.
Dr Sandesh Kumar	Post graduate. Department of D. V. L., Government Medical College, Kadapa.

C Post graduate, Department of D. V. L., Government Medical College, Kadapa.

**ABSTRACT** Background: Leprosy (also known as Hansen's disease) is a chronic granulomatous infection caused by Mycobacterium Leprae(M.leprae). Incubation period varies from few months to several years (3 months to 10 years). Mode of transmission is via droplets. The disease mainly affects the skin, peripheral nerves, mucosa of upper respiratory tract.

Aims and Objectives: To study clinical and epidemiological characteristics of the leprosy patients attending Government General Hospital, Kadapa, Andhra Pradesh, India.

**Materials and Methods:** This is a hospital based prospective study carried out over a period of 1 year, from May 2018 to April 2019. consecutive 167 leprosy patients attended the outpatient department of DVL, Government General Hospital, Kadapa, Andhra Pradesh, India were enrolled in this study. The study population was divided into 7 groups. This include age group of less than 10 years:11 to 20 years;21 to 30 years:31 to 40 years:41 to 50 years;51 to 60 years; more than 60 years. Data was analyzed to study clinical and epidemiological characteristics of leprosy disease.

**Results:** There were 106 males and 61 females in a total of 167 study population. A total of 46(27.55%) were aged between 31 to 40 years. Among 167 patients ,145(86.82%) patients has multibacillary form of leprosy. Pure neuritic leprosy was seen 7(4.19%) patients; histoid leprosy seen in 4(2.39%) patients.

Conclusion: Leprosy may be down but is not yet out. Continuous efforts are required to prevent this disease from making a resurgence.

**KEYWORDS**: Leprosy (Hansen disease), Mycobacterium leprae, ulnar nerve

# INTRODUCTION

Leprosy (also known as Hansen's disease) is a chronic granulomatous infection caused by Mycobacterium leprae (M.lepare).M.leprae prefers a growth temperature of less than 37°C. This is the main reason for M.leprae affecting the skin, nasal mucosa and peripheral nerves. Main mode of transmission of infection is via respiratory tract. After the infection disease takes longer time to manifest. This varies from few months to several years. (3 months to 10 years). The spectrum of disease depends on the individual's immunity and the intervention of therapy. During the long course of activity of the disease, in several patients there are acute bouts of exacerbation characterized by sudden increase in the activity of the disease, called as lepra reactions. Type 1 reaction occurs in borderline spectrum commonly and Type 2 reaction occurs in lepromatous spectrum with or without treatment. Despite the discovery of causative agent more than a century ago, the disease pathogenesis is not clearly understood. India achieved the elimination of targets of leprosy of less than 1 case per 10000 population, but leprosy continues to be a cause of significant health concern.

# MATERIALS AND METHODS:

This is a hospital based prospective study done in the outpatient department of Dermatology, venerology and Leprology, Government General Hospital, Kadapa, Andhra Pradesh, India over a period of one year from May 2018 to April 2019.consecutive 167 leprosy patients attended the outpatient department of DVL were enrolled in this study. Patient's age, sex, socioeconomic status and personal cleanliness were noted. A detailed general, systemic and cutaneous examination along with relevant investigations were carried out to confirm the diagnosis. The study population was divided into 7 groups. This include age group of less than 10 years:11 to 20 years;21 to 30 years:31 to 40 years:41 to 50 years;51 to 60 years; more than 60 years. The clinical and epidemiological parameters like patients age, sex, socioeconomic status, type of leprosy, type of lepra reaction, type of deformity, history of contact with a case of leprosy were noted.

The findings are recorded for analysis and interpretation of data.

### **RESULTS:**

I'able 1: Age and sex wise distribution of study population(n=167)			
Age group	Males	Females	Total
<10 years	1(0.59%)	1(0.59%)	2(1.197%)
11 to 20 years	23(13.77%)	14(8.39%)	37(22.16%)
21 to 30 years	25(14.97%)	15(8.98%)	40(23.95%)
31 to 40 years	28(16.77%)	18(10.78%)	46(27.55%)
41 to 50 years	14(8.39%)	6(3.59%)	20(11.98%)
51 to 60 years	12(7.19%)	6(3.59%)	18(10.78%)
>60 years	3(1.8%)	1(0.59%)	4(2.39%)
Total	106(63.47%)	61(36.53%)	167(100%)

A total of 167 patients with leprosy disease were enrolled in the study. There was a significant predominance of males(n=106)(63.47%) with a male to female ratio of 1.74:1.The maximum number of patients (n=46)(27.55%) were in the age group of 31 to 40 years, followed by 40 (23.95%)patients belong to 21 to 30 years group; 37(22.16%) patients were in 11 to 20 years age group;20 (11.18%)patients in 41 to 50 years age group;18(10.78%) patients in 51 to 60 years age group;4(2.39%) patients in >60 years age group and 2(1.97%) patients belong to <10 years. Among 167 patients 35.33% (n=590 of patients gave history of contact with a case of leprosy

# Table 2. Various clinical patterns of leprosy in study population(n=167)

Clinical variant	Males	Females	Total
TT	6(3.59%)	4(2.4%)	10(5.99%)
BT	35(20.96%)	24(14.37%)	59(35.35%)
BB	89(4.79%)	6(3.59%)	14(8.38%)
BL	26(15.57%)	15(8.98%)	41(24.55%)
LL	23(13.77%)	9(5.39%)	32(19.16%)

Submitted : 23<sup>rd</sup> July, 2019

Accepted : 04<sup>th</sup> September, 2019

Publication : 01<sup>st</sup> December, 2019

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INDIAN JOURNAL OF APPLIED RESEARCH

Others	8(4.79%)	3(1.8%)	11(6.59%)
Total	106(63.47%)	61(36.53%)	100(100%)

Border line Tuberculoid(BT) was the commonest form of leprosy accounting for 59(35.33%) patients followed by Borderline Lepromatous (BL) leprosy seen in 41 (24.55%) patients; lepromatous leprosy(LL)(photo1) seen in 32(19.16%) mid borderline(BB) leprosy (photo2) in 14(8.38%) and Tuberculoid (TT) leprosy seen in 10 patients(5.99%). Other variants noted in our study were histoid leprosy constituting 2.39%(n=4) and pure neuritic leprosy in 4.29%(n=7) of patients. Type 1 lepra reaction was observed in 6.59%(n=11) of borderline spectrum of patients and Type 2 lepra reaction in 13.77% (n=23) of patients with lepromatous leprosy.



### Photo 1: Lepromatous leprosy



#### Photo 2: Mid border line leprosy

# Table 3: Peripheral nerve involvement seen in 38.33%(n=64) of patients

Type of peripheral nerve	Number of patients
Ulnar nerve	32(19.16%)
Lateral popliteal nerve	12(18.76%)
Median nerve	8(3.96%)
Radial nerve	2(1.19%)
Posterior tibial nerve	8(3.96%)
Greater auricular nerve	2(1.19%)

Single nerve involvement was noted in 22(13.17%) patients and multiple nerve involvement in 42(25.15%) patients. The most common nerve involved in our study was ulnar nerve(photo3) noted in 32(19.16%) patients followed by lateral popliteal nerve in 12(18.76%), median nerve in 8(3.12%) patients, posterior tibial nerve in 8(3.96%) patients.



#### Photo 3: Ulnar claw hand

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# Table 4: WHO disability grading in the study population

Grade	Males	Females	Total
Grade 1	9(14.6%0	6(9.38%)	15(24.43%)
Grade 2	4(6.25%)	2(3.13%)	6(9.37%)
Grade 3	32(50%)	11(17.19%)	43(67.18%)
Total	45(70.31%)	19(29.69%)	64(100%)

Total of 64 patients were presented with peripheral nerve involvement. Out of 64 patient 43 (67.18%) patients were presented with grade 2 disability followed by 15 (24.43%) patients with grade 0 disability and 6(9.37%) patients with grade 1 disability.

#### **DISCUSSION:**

The study population included 167 patients with a with male to female ratio of 1.74:1. This higher incidence among males in our study might be attributed to increased accessibility to healthcare.[1,2]Maximum number of patients (n=46) (27.55%) were in the 31 -40 years age group followed by 40(23.95%) patients were in 21-30years age group. These results were in accordance with other studies. [3,4,5]

Leprosy in the patients of less than 20 years were the same proportion (23.35%) as reported by other studies. [3,6,7]

Borderline tuberculoid (BT) leprosy was the commonest form of leprosy noted in our study constituting 59(35.33%) patients followed by Borderline lepromatous (BL) in 41(24.55%) patients, Lepromatous (LL) leprosy in 32(19.16%) patients. This result differs from the study done by *Adil Met al.* [3]

A total of 145(86.82%) patients out of 167 patients has multibacillary leprosy according to WHO classification. This finding corresponds to the other studies.[8,9,10]In a study done at leprosy clinic of National Medical College ,Kolkata, India ,reported multibacillary leprosy in 60.2% of patients.[11] In other studies reported multibacillary leprosy was noted in 79.7%;67%;60.2% of patients.[3,11,12] However some studies reported lower percentage of multibacillary leprosy cases.[7,13]

The proportion of multi bacillary cases was the main source of infection and such patients are more prone to get reactions and consequently deformities. [13,14]

Lepra reaction were noted in 20.36% of patients(n=34) with type 2 reaction being much more common than type 1 reaction. In other studies, lepra reactions were reported in 12.9% of patients; 11.1% of patients. [3,15] Some patients have shown higher percentage of patients with lepra reaction. [10,13,16]

Peripheral nerve involvement was noted in 38.33%(n=64) of study population the most common being ulnar nerve involvement in 50% (n=32) of patients followed by lateral popliteal nerve involvement in 18.76%(n=12) of patients. Ulnar nerve involvement was noted in 65.22% of patients followed by lateral popliteal nerve involvement in 43.5% of patients.[17] Single nerve involvement was noted in 34.37% of patients and multiple nerve involvement noted in 65.63% of patients. This is in accordance with other study.[17]

In our study 67.18%(n=43) of patients developed WHO grade 2 disability at the time of examination. Patil AA et al reported grade 2 disability in 71% of patients at the time of examination.[12]In a study done at Bommasamudram taluk of Chittoor district, Andhra Pradesh, India, visible deformities were observed in 66.66% of males and 30% of females.[18]In a study done in Punjab ,58.65% of Hansen's disease patients had grade 2 disability.[19]

About 35.33% of patients gave history of contact with a leprosy case in our study. In a study done in Northern area of Teresina, Brazil 38.3% of patients gave history of contact with leprosy patients.[20]

# **CONCLUSION:**

Leprosy may be down but is not yet out. Continuous efforts are required to prevent this disease from making a resurgence. Data can be useful in planning of health care policies. It might also help to assess the changing trends of leprosy disease.

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