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Original Research Article

A retrospective study on newly diagnosed Hansen's disease and its spectrum in a tertiary care hospital

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ABSTRACT

Background: Leprosy, a well known ancient disease caused by the pathogen *Mycobacterium leprae*. Leprosy became curable with the introduction of multi drug therapy (MDT). But the burden of the disease still continues to make an impact in the present society. India is one of the major contributors to the global leprosy case load even after elimination. The main aim of this study was to assess the clinical pattern of newly diagnosed leprosy patients and to emphasize the need of timely intervention.
Methods: This was a hospital based retrospective observational study. The medical records of all the newly diagnosed leprosy patients during the period of January 2022 to December 2022 were collected and various clinical and demographic factors were analyzed.
Results: Total 139 newly diagnosed leprosy cases were reported. The most common age group affected was 45-60 years. Males were predominantly affected than females. 128 cases were multibacillary leprosy and 11 were paucibacillary. Borderline tuberculoid (48.2%) was the most common spectrum noted. About 19.4% patients presented with lepra reactions and 25.17% patients presented with deformities.
Conclusions: Newly diagnosed leprosy cases show that leprosy is active in the society. Active case detection by household contact survey and timely referral &treatment initiation and follow up by the field staff of health facility will prevent disability and stigma.

Keywords: Leprosy, *M. leprae*, Active case detection, Health services, Multi drug therapy

INTRODUCTION

Leprosy or Hansen's disease is caused by *M. leprae*, a slowly growing acid fast bacillus. It is a chronic granulomatous infection mainly transmitted through droplet infection.[1,2] Recently *M. lepromatosis* is found to be associated with Lucio's leprosy or Latapi's leprosy which is a unique type of leprosy. Most commonly affects peripheral nerves and skin, but can also affect eyes, muscles, bones, genitalia and internal organs resulting in permanent disability and social stigma. India was declared leprosy eliminated as a public health problem in 2005, by achieving a prevalence rate of less than 1 per 10,000. In 2020 WHO launched the new Global Leprosy strategy 2021-2030 "towards zero leprosy". Long term vision is to reach zero infection and disease, zero disability and zero stigma and discrimination. The global targets for 2030 are 70 percent reduction in annual new cases, 90 percent reduction in severe grade 2 disability and 90 percent reduction of new child cases.[3] The National Leprosy Eradication Program reported 65,164 new cases in the year 2020-21 and a prevalence of 0.4 per 10,000. In Andhra Pradesh estimated new cases were 1811 in 2020-21. India contributes to 58% of leprosy cases globally.[4] Due to COVID 19 pandemic active case detection was disrupted and many missed the treatment. Development of drug resistant strains also led to rise of leprosy cases. Hence Hansen's disease still continues to pose many challenges to public and health care workers. This study was conducted to know the burden of new

cases of Hansen's disease even after elimination and the changing trend in the course of disease, to highlight the need of health education, active community participation and timely intervention.

METHODS

This was a retrospective observational study conducted in a tertiary care hospital in Andhra Pradesh. The records of all newly diagnosed cases of Hansen's disease registered in DVL OPD over a period of one year from January 2022 to December 2022 were analyzed in this study. Patients who were on or completed multidrug therapy and those who were in relapse were not included in the study. The following data was collected and analyzed according to age, gender, occupation, education, socioeconomic status, clinical diagnosis, reactional episodes and deformities. Slit skin smears were done in all patients. Skin biopsy, nerve conduction studies, radiological investigations were done wherever necessary for confirmation of diagnosis and its severity. Diagnosis was made on the basis of clinical features and laboratory investigations. The data was tabulated in master charts, analyzed and discussed.

RESULTS

A total of 139 new cases of Hansen's disease were registered during the period of one year. Maximum number of patients (43 patients) belonged to the age group of 46-60 years, which accounts for 30.9% followed by 31-45 years. Out of 139 patients, males were 84 in number and females 55. The male:female ratio was 1.52:1. Children less than 15 years of age were 11 (7.9%) in number with male:female ratio of 1.2:1.

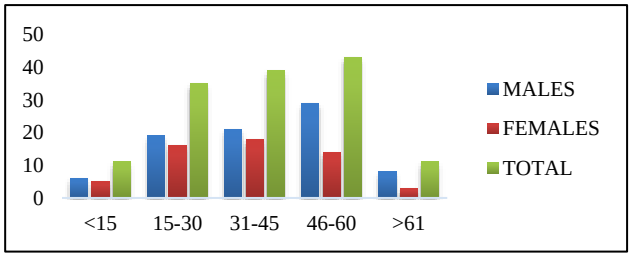

Figure 1: Age wise distribution of newly diagnosed leprosy patients.

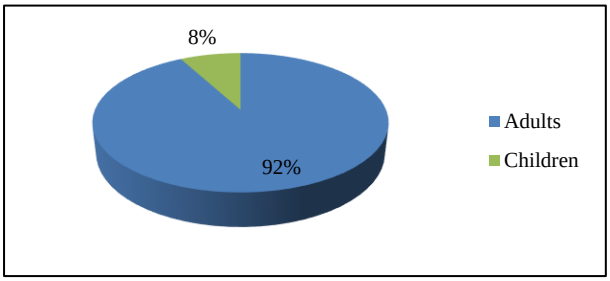

Figure 2: Distribution of leprosy patients according to adults and children.

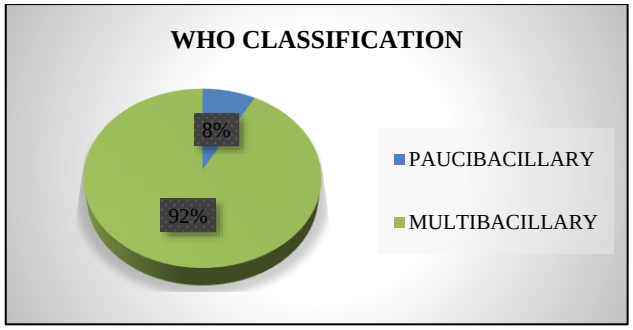

Figure 3: Classification of leprosy according to WHO.

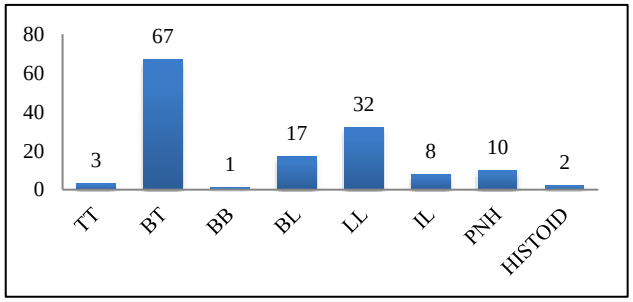

Figure 4: Spectrum of newly diagnosed leprosy cases.

Figure 5: Hypoesthetic hypopigmented patch in borderline tuberculoid patient.

Totally 128 (92.0%) patients were multibacillary cases and 11 (7.9%) were paucibacillary leprosy. Borderline Tuberculoid leprosy was the commonest spectrum noted accounting for 67(48.2%) patients, followed by lepromatous leprosy in 32 (23.0%) patients. Other spectrums noted were borderline lepromatous in 17 (12.2%) patients, indeterminate leprosy in 8 (5.7%) patients and tuberculoid in 3 (2.1%) patients. In our study 10 (7.1%) patients had pure neuritic Hansen's and 2 (1.4%) patients presented with histoid Hansen's.

A total of 27 (19.4%) patients presented with reactions of which type 2 reactions were seen in 14 patients and type 1 in 13 patients. 35 (25.17%) patients presented with grade 2 deformities of which the most common deformity noted was trophic ulcer in 27 patients, followed by claw hand in 7 patients, madarosis in 6 patients, foot drop in 3 patients and leonine facies in 3 patients. Out of 139 patients 5 leprosy patients presented with HIV coinfection.

Figure 6: (a) Borderline tuberculoid patient in type 1 reaction; (b) lepromatous leprosy patient in type 2 reaction.

Figure 7: (a) Trophic ulcer on foot; (b) total claw hand deformity in a lepromatous leprosy patient.

DISCUSSION

Leprosy is one of the chronic infectious diseases known to mankind since ancient times, caused by *M. leprae*, a slow growing obligate intracellular organism. The cardinal features are hypoesthetic hypopigmented patches, peripheral nerve thickening and slit skin smear showing acid fast bacilli. The disease still continues to be a social stigma due to its long incubation period and chronic sequelae of disabilities and deformities, both physically and psychologically. Post elimination, India reported 1,14,451 new cases globally in the year 2019-2020 and 65,164 in 2020-21.

In our study 139 newly diagnosed leprosy patients visited during the time period of one year (2022). The age group varied from 7 to 75 years with the maximum number of patients presenting in the age group of 45-60 years followed by 31-45 years. This was in contrast to other studies where the peak incidence was from 31-40 years.[5,6] In our study 11 children were affected. Children were the most vulnerable population because of improper nutrition, low immunity, easy transmission of disease in schools and household due to close contact. This indicated disease was actively transmitting in the community.[7,8] Male:female ratio was 1.52:1. Similar male preponderance was also shown in other studies by Gupta et al 2019, Vashisht et al 2021. This can be attributed to the higher mobility and health seeking behavior of males.[9] Multibacillary cases outnumbered paucibacillary cases. Other studies done by Patil et al 2016, Vashisht et al and Adil et al showed similar results. The multibacillary cases were the main cause for severity of infection, chronic course of the disease and reactional episodes leading to deformities.[9,10] This predominance of multibacillary cases reflects people's ignorance and negligence towards the disease during early stage and unawareness about its sequelae. More number of rural population was affected which signifies overcrowding, lack of knowledge and inaccessibility to health care facility.

The most common clinical spectrum noted in our study was borderline tuberculoid which correlated with other studies by Gupta et al 2019 and Kumar et al 2020, followed by lepromatous leprosy and borderline lepromatous leprosy. Study done by Adil et al in 2018 also showed similar results. With the introduction of multidrug regimen borderline cases had been increased. More number of lepromatous leprosy patients showed the poor socioeconomic status of the people and lack of early health seeking behaviour.

Lepra reactions were seen in 27 patients, which accounted for 19.4% of the newly diagnosed cases in our study. This was quite high when compared to other studies by Adit et al and Kumar et al reported only 12.9% and 15% respectively. Type 2 reaction slightly exceeded type 1 reaction which corresponded with other studies. Type 1 reaction was most often an upgrading or reversal reaction due to regain of immunity and sometimes a downgrading reaction and a major cause of nerve damage and disability. Type 2 reaction or erythema nodosum leprosum is a immune complex mediated reaction commonly associated with lepromatous leprosy.[10] High number of leprosy reactions in our study can be explained by the presence of more borderline tuberculoid and lepromatous leprosy cases and the patients seeking health

care facility only when they have severe reactional episodes hindering their daily activity.[11] Reactional episodes should be treated as early as possible to avoid permanent disabilities.

Patients who presented with grade 2 deformities at the time of first presentation itself were 35. This might be due to patients presenting lately with reactional episodes and huge number of multibacillary cases. According to new Global Leprosy strategy 2021-2030 the target was to achieve 90% reduction of grade 2 disability rate. This indicates the need for health awareness in the society, strengthening the health care at primary level for early case detection and prompt treatment, also active case detection and follow up at field level.

Limitations

The drawbacks of this study were it was retrospective, observational, hospital-based, and descriptive in design, the study may not accurately reflected the characteristics of the general population, and chances of duplicate registration of outpatient attendance.

CONCLUSION

After the COVID 19 pandemic, active leprosy case detection was disrupted and health services reaching the patients had been inadequate. Immunity has been severely compromised and many subclinical infections came into light and presented with severe disease during the pandemic. Due to decreased immunity many patients presented with lepra reactions. Adding to this, patients could not seek health facility timely. All these factors along with poor socioeconomic status, lack of awareness and illiteracy makes leprosy as a huge public health concern. This study indicated that leprosy is still in a rising trend and the need for active prevention measures.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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