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Original Research Article

Clinico-epidemiological study of leprosy from a North Indian tertiary care hospital

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ABSTRACT

Background: Leprosy was eliminated as a public health problem in India in 2005. Yet, more than 60% of all new cases of leprosy are reported from India.
Methods: A retrospective analysis of the records of patients attending the leprosy clinic of the Dermatology Out Patient Department was done for a period of one year from May 2017 to April 2018. The data was analysed for clinical and epidemiological characteristics of the patients.
Results: A total of 225 patients visited the leprosy clinic during the study period. Almost half of all patients (47.1%) were aged between 21-40 years. Among the patients were 32 children (14.2%) below 16 years. There were 60 patients (26.6%) suffering from paucibacillary disease and 158 patients (70.2%) had multibacillary disease. Seven patients (3.2%) presented with other forms of leprosy like historic leprosy and pure neuritic leprosy. Borderline lepromatous leprosy was found to be the commonest subtype seen in 86 patients (38.2%). There were 152 males (67.6%) and 73 females (32.4%). The male female ratio was 2.08:1. A total of 118 patients (52.4%) were from rural background and 107 (47.6%) hailed from urban areas. Multibacillary disease was seen in 83.6% of the total females compared to 63.8% of males.
Conclusions: Leprosy may be down but is not yet out. The high proportion of children diagnosed with leprosy is a warning regarding the active transmission of the disease in the community. Continued efforts are required to prevent the disease from making a resurgence.

Keywords: Leprosy, Hansen's disease

INTRODUCTION

Leprosy, a chronic disease caused by the acid fast bacillus *Mycobacterium leprae*, is known to mankind since ancient times. Despite discovery of the causative agent more than a century ago, the disease pathogenesis is not completely understood. India achieved the elimination targets of leprosy of less than 1 case per 10,000 population in the December 2005, but leprosy continues to be a cause of significant public health concern. More than 60% of all new patients of leprosy detected in the world were Indians.[1] Current estimates show that the prevalence rate of leprosy in India is 0.66 cases per 10,000 population in 2016.[2] The state of Chhattisgarh and the union territory of Dadra and Nagar Haveli are yet to achieve elimination.

METHODS

A retrospective record based study was conducted in the leprosy clinic of the dermatology outpatient department of Jawaharlal Nehru Medical College, Aligarh Muslim

University, Aligarh, Uttar Pradesh, India. The records of all patients visiting the leprosy clinic for a duration of one year from May 2017 to April 2018 were retrieved. The patients were diagnosed on the basis of clinical signs and symptoms and the diagnosis was confirmed by slit skin smear and skin histopathology in all cases. Records of the patients were analyzed for the following clinical and epidemiological parameters: age, sex, rural/urban background, type of leprosy, treatment given (pucibacillary/multibacillary), presentation with lepra reaction and number of defaulters. The data so collected was tabulated and analysed using Statistical Package for Social Sciences version 16.

RESULTS

A total of 225 patients attended the leprosy clinic during the study period. The mean age of the patients was 33 years with a range of 6 years to 70 years. The maximum number of patients (60 patients) were in the 31-40 years age group. They accounted for 26.7% of all patients (Table 1). This was followed by 46 patients (20.4%) in the 21-30 year age group and 45 patients (20.0%) in 11-20 year age group. 3 patients (1.3%) were less than 10 years old and 7 patients (3.1%) were aged more than 60 years. There were a total of 32 patients (14.2%) below 16 years of age. 19 of these 32 paediatric patients (59.4%) had multibacillary disease. Out of a total of 220 patients, 152 patients (67.6%) were males and 72 patients (32.7%) were females (Table 2).

Table 1: Distribution of patients according to age.

Age group (years)	Number	Percentage (%)
<10	3	1.3
11-20	45	20.0
21-30	46	20.4
31-40	60	26.7
41-50	42	18.7
51-60	22	9.8
>60	7	3.1
Total	225	100.0

Table 2: Distribution of patients according to sex.

Type of leprosy	Males		Females		Total	
	No.	**%**	**No.**	**%**	**No.**	**%**
TT	9	4.0	3	1.3	12	5.3
BT	40	17.7	8	3.6	48	21.3
BB	6	2.7	3	1.3	9	4.0
BL	49	21.8	37	16.4	86	38.2
LL	42	18.7	21	9.3	63	28.0
Oth	6	2.7	1	0.5	7	3.2
Total	152	67.6	73	32.4	225	100.0

A total of 165 (73.4%) patients were treated for multibacillary disease and 60 (26.6%) patients undertook treatment for paucibacillary disease. Borderline tuberculoid leprosy was much more common than tuberculoid leprosy. There were 48 patients (21.3%) diagnosed as borderline tuberculoid leprosy and only 12 patients (5.3%) diagnosed as tuberculoid leprosy. 49 males had paucibacillary disease accounting for 32.2% of all male patients. A total of 11 female patients had paucibacillary disease accounting for 15.1% of all females.

Borderline lepromatous lerposy was the commonest form of multibacillary leprosy accounting for 86 patients (38.2%). Lepromatous leprosy was seen in 63 patients (28.0%). Mid-borderline cases constituted only 9 cases (4.0%). Multibacillary disease was seen in 83.6% of the total females compared to 97 males (63.8%). We also had 4 patients with histoid leprosy and 3 patients with polyneuritic leprosy. All four historic leprosy patients were males while 2 males and one female had pure neuritic leprosy. All these patients also received multibacillary treatment.

Table 3: Distribution of patients according to residence.

Type of leprosy	Rural		Urban		Total	
	No.	**%**	**No.**	**%**	**No.**	**%**
TT	5	2.2	7	3.1	12	5.3
BT	16	7.1	32	14.2	48	21.3
BB	6	2.7	3	1.3	9	4.0
BL	53	23.6	33	14.6	86	38.2
LL	35	15.5	28	12.5	63	28.0
Oth	3	1.3	4	1.9	7	3.2
Total	118	52.4	107	47.6	225	100.0

There were a total of 118 patients (52.4%) from rural background and 107 patients (47.6%) from urban and semi-urban areas. In Table 3, 21 patients (17.8%) from rural areas and 39 patients (36.4%) from urban areas had paucibacillary disease. Multibacillary disease was seen in 94 patients (79.7%) from rural areas and 64 patients (59.8%) from urban areas.

A total of 7 patients (3.1%) presented to us with type 1 reaction and 22 patients (9.8%) presented with type 2 reaction at the first visit. 5 patients (2.2%) defaulted on their treatment and did not complete their treatment.

DISCUSSION

Leprosy, or Hansens's disease is a chronic disease that primarily involves the skin and peripheral nerves. It has a variety of clinical presentations, depending on the cell mediated immunity of the host. It has been classified by the World Health Organization as Paucibacillary disease and Multibacillary disease depending on the number of lesions. Ridley Jopling classification of leprosy divides the disease in 5 groups- Tuberculoid (TT), Borderline Tuberculoid (BT), Borderline (BB), Borderline lepromatous (BL) and Lepromatous (LL). The Indian

classification includes an additional pure neuritic variant. The diagnosis of leprosy is clinical, but slit skin smear and histopathology are means to aid in diagnosis.

Our study comprised of 225 patients. The mean age of our patients was 33 years with the youngest being 6 years and oldest being 70 years. Most of the patients in the study were between 11 years to 50 years. The greatest number of patients were in the range of 31-40 years of age. The incidence of leprosy is said to rise between 10-20 years and peaks between 20-35 years of age.[3] Other studies also corroborate with this finding.[4,5] Leprosy in children (16 years or younger) was of the same proportion as observed by other studies.[4,6,7] 59.4% children had multibacillary disease. Similar results were shown by Mukherjee et al, who found 61.3% children with MB disease.[8] However, other studies have shown that paucibacillary disease is more common in children.[9] This disparity can be due to the delay in seeking medical care due to poor socio-economic status and lack of awareness. The male: female ratio in our study was 2.08:1. This is in accordance to other recent studies from India showing almost the same results for gender predilection.[4,8] Although leprosy has been associated with male predisposition from the sulfone era, the much increased incidence among males in our study might be attributed to their greater mobility and increased accessibility to health care.[10,11] The number of patients from rural areas slightly outnumbered people from urban areas. A study from western Indian state of Maharashtra found that the number of prevalence and number of new cases was more from the urban areas. This disparity of findings can best be explained by the huge proportion of rural patients that our hospital attracts from all over western Uttar Pradesh, an indicator of the non availability of good medical care facilities in rural areas.

A little less than three fourths (73.3%) of patients in our study had multibacillary disease. This corresponds to the percentage of MB cases in our state as well as other studies.[8,12,13] However, some studies have reported a slightly lower percentage of multibacillary cases.[7,14] The proportion of leprosy cases with multibacillary disease is reflective of patients that are a major source of infection and such patients are also susceptible to reactions and consequently, deformities.[14,15] The greater proportion of multibacillary leprosy cases also indicate the inability of health services to diagnose an early case of leprosy. Also, patients tend to hide their lesions due to the attached stigma. The greater number of multibacillary cases in our study is probably due to these reasons, as our hospital caters to the most underprivileged section of the society in the economically backward Indian state of Uttar Pradesh. A total of 63.5% patients were in the borderline category (includes bordeline tuberculoid, borderline lepromatous and mid borderline disease) while 28.0% had lepromatous leprosy and only 5.3% presented to us with tuberculoid leprosy. Borderline cases have become more common after the introduction of multi drug therapy as opposed to the polar forms of the disease being more commonly seen in the dapsone era.[10,16-18] The low percentage of polar tuberculoid leprosy in our study is similar to observations by Jindal et al, who had 5.52% cases of tuberculoid leprosy.[19] We found that a higher percentage of female patients had multibacillary disease than the male patients. This is in contrast to observations of other studies that report multibacillary form of leprosy to be more common in males.[8] Arora et al found that the number of males and females with lepromatous leprosy was almost equal, but the number of borderline lepromatous and mid borderline cases was more common in females.[13] The increased number of females with multibacillary disease in our study might be explained on the poor socio-economic status of females, leading to delay in seeking medical care. Urban patients in our study had a lower percentage of patients with multibacillary disease compared to patients from rural areas. Mohite et al also found that multibacillary disease was more commonly diagnosed if the patient hailed from rural area.[20] This is possibly due to inaccessibility of the rural population to medical facilities.

Lepra reactions were seen in 12.9% patients with type 2 reaction being much more common than type 1 reaction. Similar observations have been made by Salodkar et al, who observed reactions in 11.1% cases with type 2 reaction being four times more in frequency than type 1 reaction.[21] This implies that many patients ignore their disease and seek medical care only when they develop reactions. Other studies have shown an even higher percentage of patients presenting with lepra reactions.[13,14,22] It is worth noting that we documented patients for reactions only at the first visit of the patient. This data does not include patients who developed reactions after treatment was initiated. The number of defaulters in our study was 2.2%. Good counselling of the patient is necessary to maintain patient adherence to treatment.

As our study was conducted in a tertiary care hospital, it certainly is not representative of the situation on the field. Still, it gives a general picture about the current trends of leprosy in the region. The large percentage of patients with multibacillary cases, particularly females and rural population signifies that leprosy awareness and programmes aimed at elimination needs to be more vigorously implemented targeting these sections.

There has not been a decline in the occurrence of new leprosy cases in the last decade despite several measures. Thus, effective, sustained and whole hearted measures such as awareness about the disease, facilities for investigations and unhindered provision of therapy are needed. The occurrence of disease in children is a cause of concern and signifies active disease transmission. Newer strategies to target susceptible groups need to be devised to achieve complete eradication of this menace from the society.

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