



CLINICO-EPIDEMIOLOGICAL STUDY OF LEPROSY IN TERTIARY CARE INSTITUTE IN CHHATTISGARH.

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ABSTRACT **INTRODUCTION** – Leprosy is a chronic bacterial infection. India has achieved an elimination target of less than one case per ten thousand population in December 2005. Even after elimination leprosy is remaining a major health issue in a few states like Chhattisgarh and union territories like Dadra and Nagar haveli.

AIMS AND OBJECTIVE – To study the clinico-epidemiological pattern of leprosy in a tertiary care institute at Chhattisgarh.

MATERIAL AND METHOD- A retrospective descriptive study was performed at LSLAM medical college, Raigarh, Chhattisgarh. All the cases of leprosy attending skin OPD from January 2020 to December 2020 were recruited for the study. Data was collected in MS excel sheet and analyzed using SPSS software version 20.

RESULT – A total of 92 patients were diagnosed as leprosy. 4 (4.35%) patients were children less than 14 years of age. 67 patients were male and 25 were female with male to female ratio was 2.68:1. Commonest age group of presentation was 21 to 40 years. The most common type of leprosy was Borderline Tuberculoid Hansen Disease (BTBD) (43.48%). 64 patients (69.57%) were diagnosed as multibacillary (MB) leprosy. The most common nerve found thickened was ulnar nerve. 30 patients (32.60%) presented with lepra reaction at the time of diagnosis. Out of 30 Lepra reaction cases, 21 (70%) were diagnosed as type 1 lepra reaction and the rest 9 (30%) cases were diagnosed as type 2 lepra reaction cases. 59 patients (64.13%) presented with peripheral nerve involvement at the time of diagnosis. 23 (25%) patients were having grade 2 disability at the time of diagnosis.

CONCLUSION – Even after achieving the target of elimination leprosy remains a major health problem especially in endemic states of India like Chhattisgarh.

KEYWORDS : Leprosy, TTHD, BTBD, BBHD, BLHD, LLHD, Pure Neuritic Leprosy

INTRODUCTION

Leprosy is a chronic bacterial infection caused by slow-growing acid-fast bacilli mycobacterium leprae.[1]

Leprosy is likely to be transmitted by droplets from the nose and mouth during close contact. The incubation period of the disease may range from 1 year to more than 20 years with an average incubation period of 5 years. [1] Lepra bacilli primarily affect the skin, mucosa of the upper respiratory tract, peripheral nerves, and eye where body temperature is lower than core body temperature which is favourable for the growth of lepra bacilli. Skin involvement results in single to multiple hypopigmented, hypoaesthetic macule, patch, papule, poorly defined nodules even diffuse infiltration which can involve any part of the body. Mucosal involvement of the nose leads to nasal stuffiness, discharge, nasal mucosal thickening or atrophy, loss of sensation, anosmia and in later stages destruction of nasal cartilage lead to drooping of the nose. Oral mucosal involvement leads to nodules, ulceration even perforation. Laryngeal involvement presents as nodules, ulceration and fibrosis leading to hoarseness of voice. Eye involvement is either due to direct ocular involvement or due to 5th and 7th cranial nerve involvement leading to madarosis, conjunctivitis, episcleritis, keratitis, corneal ulceration leading to blindness.[2]

Leprosy is classified according to Ridley and Jopling classification into 5 classes which are- Tuberculoid Hansen Disease (TTHD), Borderline Tuberculoid Hansen Disease (BTBD), Borderline Borderline Hansen Disease (BBHD), Borderline Lepromatous

Disease (BLHD) And Lepromatous Hansen Disease (LLHD).[3] In the current WHO classification leprosy is divided into Paucibacillary case (PB) and Multibacillary case (MB).[4]

Pediatric involvement (<14 years of age) is an important indicator of active transmission of leprosy in the community. Children are more prone to develop grade 2 disability if not treated early. So it is important to diagnose and treat early to prevent deformity and disability. [5]

Leprosy continues to be a global health problem. As per the updated data published by WHO in 2019, new cases detected in India was 120334 which accounts for 60.35% of new cases of global priority countries.[6]

According to WHO at the end of 2018 global prevalence of leprosy was 0.24 per 10,000 population and for South-East Asia 0.58 per 10,000

population. The global new case detection rate was 2.74 per one lakh population and for South-East Asia it was 7.49 per one lakh population. So South East Asia including India lags behind the world for both higher prevalence and high new case detection rate [6].

India now accounts for 57% of global leprosy cases (weekly epidemiological report by WHO 2020). Prevalence rate in India is 0.57 per 10,000 population (March 2020). [7]

The new case detection rate is higher than the national average in Chhattisgarh, Jharkhand, Bihar and Orissa.[5]

The Global Leprosy Strategy 2016–2020, “Accelerating towards a leprosy-free world”, was launched on 20 April 2016 with a vision towards a leprosy-free world. [8]

So we intended to study the present scenario of leprosy in a tertiary care centre in an endemic state like Chhattisgarh.



Figure 1 : Patient with Lepromatous Leprosy

MATERIAL AND METHOD –

This study was conducted in LSLAM Medical College Raigarh, Chhattisgarh.

After approval of the institutional ethical committee previous record of diagnosed cases of leprosy patients was obtained. The study was conducted on cases diagnosed between January 2020 to December 2020.

A retrospective descriptive study was conducted in the department of dermatology in LSLAM Medical College Raigarh, Chhattisgarh. all the cases of leprosy attending the skin OPD between January 2020 to December 2020 were recruited for the study. Information regarding name, age, sex, residence, diagnosis according to Ridley Jopling classification and current WHO classification, number of skin lesions, peripheral nerve involvement, lepra reaction and type and presence or absence of deformity and type of deformity and WHO disability grade was recorded and compiled in MS excel format.[3,4]

Statistical analysis was done using SPSS software version 20.

RESULTS –

A total of 92 patient of leprosy were recruited for the study.

Out of 92 patients, 67(72.8%) were male and 25(27.2%) were female. The male to female ratio was 2.7:1. The average age for male was 36.55 ± 15.53 years and for females was 31.92 ± 14.55 years and for both male and females was 35.29 ± 15.33 years. Age range from 7 years to 72 years. The most common age group of patients was 21 to 30 years (29.34 %). The least common age group was less than 10 years (2.17%).(Table 1) 48 patients (52.18%) were from the rural area. The most common type of leprosy according to Ridley and Jopling classification was BTHD (43.48%). 64 patients (69.57%) were diagnosed as MB cases of leprosy. Nearly one-third of patients (32.60%) presented with lepra reaction at the time of diagnosis. Family history was elicited in only 2 patients (2.17%). One-fourth of patients (25%) presented with grade 2 disability. (table 2)

The occupation of the study population is described in table 3.

A total of 736 peripheral nerves were examined for nerve thickening out of that 155 (21.06%) nerves were found to be thickened. (Table 4)

59 patients (64.13%) had peripheral nerve thickening.(table 5)

Table 1 : Age distribution of leprosy patient

	Male	Female	Total
Number of Patients	67(72.8%)	25(27.2%)	92(100%)
Age (years)	36.55 ± 15.53	31.92 ± 14.55	35.29 ± 15.33
Age distribution			
< 10 year	2 (2.17%)	Nil	2 (2.17%)
11 to 20 year	6 (6.52%)	5 (5.43%)	11(11.96%)
21 to 30 year	18(19.56%)	9 (9.78%)	27(29.34 %)
31 to 40 year	14(15.21%)	5(5.43%)	19 (20.65%)
41 to 50year	12(13.04%)	2 (2.17%)	14 (15.21%)
51 to 60 year	7 (7.60%)	2 (2.17%)	9 (9.78%)
61 to 70 year	6 (6.52%)	1 (1.08%)	7(7.60%)
> 70 year	2(2.17%)	1(1.08%)	3 (3.26%)
Children < 14 years	3(3.26%)	1 (1.09%)	4 (4.35%)

14 (15.22%) patients presented without any skin lesion, 43 (46.74%) were having 1 to 5 lesions and the rest 35 (38.04%) were having more than 5 skin lesions. (Table 6) 23 (25%) patients presented with grade 2 disability. The most common disability was trophic ulcer over leg (8.70%).(Table 7)

Table 2 : Clinical and epidemiological features

	Male	Female	Total
Geographical distribution			
Urban	33 (35.86%)	11 (11.95%)	44 (47.82%)
Rural	34 (36.95%)	14 (15.21%)	48 (52.18%)
Type of leprosy			
TTHD	6 (6.52%)	3 (3.26%)	9 (9.78%)
BTHD	30 (32.61%)	10 (10.87%)	40 (43.48%)
BBHD	0	0	0
BLHD	9(9.78%)	2 (2.17%)	11 (11.96%)
LLHD	11 (11.96%)	7 (7.60%)	18 (19.56%)
Pure Neuritic Leprosy	11 (11.96%)	3(3.26%)	14 (15.22%)

Current WHO classification			
PB	22 (23.91%)	6 (6.52%)	28(30.43%)
MB	45 (48.92%)	19 (20.65%)	64 (69.57%)
LEPRA REACTION			
TYPE 1	18(19.56%)	3 (3.26%)	21 (22.82%)
TYPE 2	8 (8.70%)	1 (1.08%)	9 (9.78 %)
Total	26 (28.26%)	4(4.35%)	30(32.60%)
Family history	2(2.17%)	Nil	2(2.17%)

Table 3: Occupation of study population

Occupation	Total patient (%)
FARMER	20 (21.73%)
HOUSE WIFE	20 (21.73%)
LABOUR	15 (16.30%)
Self employed	8 (8.70%)
STUDENT	22 (23.91%)
UNEMPLOYED	7 (7.61%)
Total	92 (100%)

Table 4: Finding of peripheral nerve examination

Nerve examined	Thickened nerve	Normal nerve
Right ulnar nerve	32 (4.35%)	61 (8.28%)
Left ulnar nerve	33 (4.48%)	58 (7.88%)
Right superficial radial nerve	11 (1.49%)	81 (11.01%)
Left superficial radial nerve	12 (1.63%)	80 (10.87%)
Right common peroneal nerve	21 (2.85%)	71 (9.65%)
Left common peroneal nerve	19 (2.58%)	73 (9.92%)
Right posterior tibial nerve	15 (2.04%)	77 (10.46%)
Left posterior tibial nerve	12 (1.63%)	80 (10.87%)
Total	155 (21.06%)	581 (78.94%)

Table 5: peripheral nerve involvement

	Number of patient	Percent study population
Patient with peripheral nerve thickening	59	64.13%
Patient without peripheral nerve thickening	33	35.87%

Table 6: Distribution according to skin lesions

Number of skin lesion	Total patient (Percent)
No skin lesion	14 (15.22%)
1 to 5 skin lesion	43 (46.74%)
More than 5 skin lesion	35 (38.04%)

Table 7: WHO Grade 2 disability.

Type of disability	Total patient
Claw hand	3 (3.26%)
Foot drop	4 (4.35%)
Trophic ulcer over leg	8 (8.70%)
Tropic ulcer over foot	3 (3.26%)
Loss of eye brows	3 (3.26%)
Premature senility	1 (1.09%)
Sunken nose deformity	1 (1.09%)
Total	23 (25%)

DISCUSSION –

India has achieved a global elimination target (<1 case per 10,000 population) of leprosy in December 2005. [5] However, leprosy remains a major public health problem in India leading to deformity and disability. Leprosy cases are declining in India but at a slower pace. Between January 2020 to September 2020 total of 50505 cases were detected in India of which 2914 (5.77%) were children. The prevalence rate was 0.40. [7] The states of Bihar, Maharashtra, Uttar Pradesh, Odisha, Chhattisgarh, Madhya Pradesh, West Bengal, Jharkhand contributed 76 percent of the new leprosy cases.[9]

Out of 36 states/UTs, 34 states and UTs achieved elimination. One State (Chhattisgarh) and one U.T. (Dadra & Nagar Haveli) are yet to achieve elimination. Five more states/UTs wherein elimination was achieved earlier, namely Odisha, Bihar, Chandigarh, Goa, and Lakshadweep have reported with PR>1/10,000 population, as of 31st March 2017.[5]

India is among 23 WHO global priority countries for leprosy. These countries account for most of the global burden of leprosy.[6]

In our study, 4 out of 92 (4.35%) patients were children less than 14 years. 3 pediatric patients were male and 1 was female.

The male to female ratio among children was 3:1. There are various studies by Pradhan et al, Mahajan et al, Rao et al, Horo et al, Singal et al, Dogra et al, Jindal et al, Tiwary et al and Tegta et al on childhood leprosy reporting child rates ranging from 2.3% to 18.2% and also male preponderance.[10,11,12,13,14,15,16,17,18]

In our study 46 (50%) patients belonged to the age group 21 to 40 years. Other studies conducted by Mahajan et al, Arif et al and Sirisha et al also had similar findings.[19,20,21]

The male to female ratio was 2.7:1. Male preponderance was also noted by, Jindal et al, Tegta et al, Mahajan et al, Salodkar et al and Vashisht et al.[16,18,19,22,23]

A family history of leprosy was observed in only 2 (2.17%) patients. A study by Mahajan et al reported a family history of 2.43%.[19] Jindal et al and Salodkar et al reported a higher rate of family history of 9.2% and 9.5% respectively.[16,22]

In our study, nearly one third (32.60%) patients presented with lepra reactions. Mahajan et al reported 19.62% cases, Sirisha et al reported 20.36% cases, Salodkar et al reported 11%, and Vashisht et al reported 46.5% with lepra reaction.[16,21,22,23]

We found 64 (69.57%) patients as MB cases. Tegta et al reported 85.5% and Vashisht et al reported 87.3% cases as MB cases.[18,23]

A most common type of leprosy according to Ridley and Jopling classification was BTHD (43.48%) in our study. Jindal et al[16], Mahajan et al[19], and Sirisha et al[22] also found BTHD as the commonest type.[16,19,22] While Arif et al found BLHD as the most common type of leprosy.[20]

64.13% of patients presented with one or more peripheral nerve thickening. The most common nerve found thickened was ulnar nerve. Mahajan et al[19] reported 90.57% cases, Sirisha et al[21] reported 38.33% cases and Vashisht et al[23] reported 97.7% with peripheral nerve involvement.[19,21,23] Sirisha et al and Vashisht et al also reported the ulnar nerve as the most common nerve thickened.[21,23]

The disease may lead to changes in structure and function of some parts of the body known as impairment. A visible impairment is known as deformity. Impairment may be primary-like specific and paralytic deformity or secondary like anesthetic deformities. Deformity eventually leads to disability and handicaps. WHO Disability Grading is scaled to grade disability.[24] Scale range from 0 to 2. For hand and feet, Grade 0 represents no anesthesia, visible deformity or damage, Grade 1 represents no visible deformity or damages only anaesthesia present and Grade 2 represents visible deformity or damage present. For eyes, Grade 0 represents no eye problem or visual loss, Grade 1 represents Eye problems present, but vision not severely affected and Grade 2 represents Severe visual impairment (vision: Worse than 6/60; inability to count fingers at 6 m) also corneal anaesthesia, lagophthalmos, and iridocyclitis. The deformity is more common in chronic cases, MB cases, cases with more peripheral nerve trunk involvement, and with neuritis cases. [25] We found 23 cases (25%) with grade 2 disabilities (Table 6). The most common deformity found in our study was a trophic ulcer over the leg (8.70%). Vashisht et al reported 23% of cases with grade 2 disability.[23]

CONCLUSION –

Leprosy remains a major public health problem in India even in a post-elimination era. India needs an aggressive strategy to eradicate leprosy. Early diagnosis and treatment of leprosy and lepra reaction are essential to prevent permanent deformity and disability.

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