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ORIGINAL RESEARCH

CURRENT LEPROSY SCENARIO IN POST ELIMINATION ERA IN A TERTIARY CARE HOSPITAL

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ABSTRACT:

Background:Leprosy is a chronic infectious disease primarily involving skin and peripheral nerves. A great challenge in disease control is the identification of people at risk of infection and development of disease. The initial skin lesions can be very discrete and asymptomatic, posing a significant challenge in interruption of transmission. Leprosy has been officially eliminated from India since December 2005. But, it is still a major public health problem in some parts of India where the prevalence far exceeds the elimination. Aims and Objectives: To study the clinical and epidemiologic profile of leprosy.

Materials and Methods: A retrospective observational study was conducted on patients attending leprosy clinic of a tertiary care hospital from January 2017 to December 2019. Data regarding demographic details, clinical features, complications and treatment given was analysed. Slit skin smear, electro-neuromyography and lesional biopsy were done, wherever needed.

Results: Out of 265 leprosy cases, Males 194 (72.2%) outnumbered Females 71(27.8%). Commonest age group affected was 20-29 with 55(20.8%) cases next common was 30-39 years with 54(20.4%) cases. BT Leprosy 108(41%) was the most common morphologic type followed by LL 74(28%). But Lepromatous spectrum was accounting for 52% (137) of cases. Reactions were present in 67(25%) cases with Type I accounting for 24(9%) and Type II for 43(16%).

Conclusion: High percentage of MB cases and Leprosy Reactions in new cases of Leprosy was a cause of concern. This study highlights the need for active surveillance in uncovering the hidden cases at the field level and treats them early, especially paediatric cases and those with MB disease. It also emphasizes on the need for an inclusive strategy in the Indian leprosy programme for reaching desired goal of leprosy eradication.

Keywords: ?.

INTRODUCTION:

Leprosy is a chronic infectious disease of insidious onset, caused by Mycobacterium leprae, characterized by involvement of skin, peripheral nerves and other structures. A great challenge to disease control is the early identification of people at risk of infection and development of disease. The initial skin lesions can be very discrete and asymptomatic, posing a significant challenge to interruption of transmission of M. leprae.

India has succeeded with the implementation of MDT in bringing the national prevalence down to "elimination as a public health problem" of less than 1/10,000 in December 2005, from 57.8/10,000 population in the year 1983 and even further down to 0.66/10,000 in 2016.[1]

Three countries with the highest burdens, India, Brazil and Indonesia accounted for 80.2% of the new caseload globally in 2017.[2] According to NLEP data (2016-17), In India, a total of 1,35,485 new cases were detected during the year 2016-17, as against 127,334 new cases were detected during the year 2015-16.[1]

Leprosy is still a major public health problem in some parts of India where the prevalence far exceeds the elimination level. By the end of March 2016, 551 districts (82.36%), out of the total 669 in districts, in India had a prevalence of <1/10,000 population which is the target of elimination as a public health problem. The number of districts with prevalence between 1 and 2/10,000 were 76, number of districts with prevalence between >2 and 5/10,000 were 39, and those between 5 and 10 were 2.[3]

Leprosy is considered important mainly because of its potential to cause permanent and progressive physical deformities with serious social and economic consequences. Leprosy can occur in all ages ranging from early infancy to very old age.[4]

WHO classified Leprosy(2017) as Paucibacillary (PB), in which 1 to 5 skin lesions are present without presence of bacilli on skin smear and Multibacillary (MB), more than 5 skin lesion or with nerve involvement(pure neuritic or any number or skin lesions and neural involvement) or with demonstrated presence of bacilli in a slit skin smear irrespective of number of skin lesions.[5] Ridley Jopling classified leprosy into five groups as Tuberculoid Leprosy (TT), Borderline Tuberculoid Leprosy (BT), Mid-borderline Leprosy(BB), Borderline Lepromatous Leprosy (BL) and Lepromatous Leprosy (LL)based on four parameters – clinical features, histological features, bacteriological features and immunological features.[6] Indian classification has pure neuritic leprosy additionally.[6] Indeterminate leprosy had been regarded as the incipient stage of leprosy that has not yet fully evolved to be classifiable in the spectrum.[6] Histoid leprosy is a variant of Lepromatous Leprosy.[7]

MATERIALS & METHODS:

A retrospective study conducted from January 2017 to December 2019 for a period of three years in the department of DVL, Gandhi Hospital, Secunderabad, a tertiary care Hospital. There were 265 cases all together. All cases diagnosed are registered in the leprosy clinic attached the Hospital. Informed consent was obtained from the patients. New and old leprosy cases were included in the study. Data regarding socio-demographic variables, age, sex, residence, occupation, clinical features and treatment was analysed. Complete cutaneous examination was performed. Diagnosis was made on basis of clinical features and histopathology. Slit skin smear and biopsy was done for all cases. ENMG and USG of nerves done whenever they are required. Patients were classified according to WHO classification as paucibacillary and multibacillary and Ridley Jopling classification as Tuberculoid Leprosy, borderline tuberculoid, mid-borderline, borderline leprosy and Lepromatous leprosy. In addition to it Pure Neuritic (PNL), Indeterminate Leprosy and Histoid Leprosy were included. Data was entered in Microsoft excel and analyzed.

RESULTS:

Total of 265 cases were recorded during the study period of three years from January 2017 to December 2019. In 2017 there were 92 cases, same number were recorded in the next year 2018 and 81 cases were recorded in 2019. Almost same numbers noted in all the three years. Most of the patients were males 194(72.2%), females were 71(27.8), male to female ratio is 2.7:1. Age ranged from 1 year child to 75 years old. Youngest being one year old female child who presented as Indeterminate Leprosy. Oldest in our study was 75 years as she presented as Lepromatous Leprosy.

Most of the cases were of low socio economic status 172(65%). There were 64(24%) cases in middle socio economic status and 29(11%) in upper middle socio economic status. Most affected age group is between 20 and 29 years with 55(20.8%) cases, next age group is 30 to 39 years with 54(20.4%) cases followed by 50 to 59 years age group with 41(15.8%) cases and 40 – 49 years with 40(15%) cases.

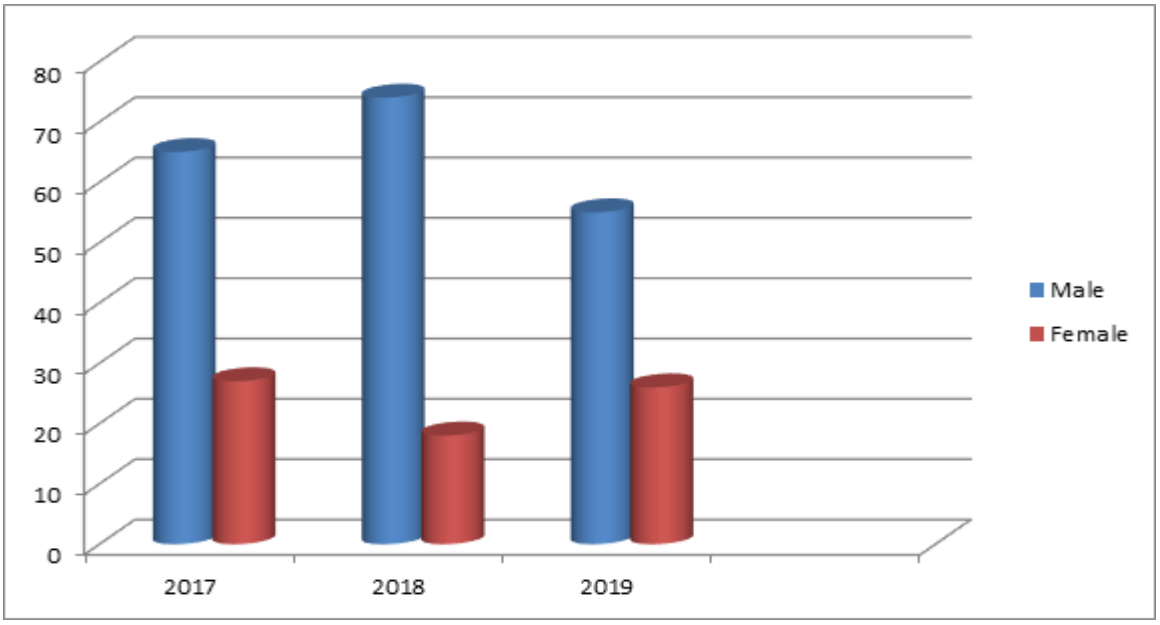
Most common clinical type was Borderline Tuberculoid with 108(41%) cases; next common clinical types were Lepromatous Leprosy with 74(28%) cases and borderline leprosy with 49(19%) cases. The other clinical types were Indeterminate 3(1%), Tuberculoid 6(2%), mid-borderline 4(1%). Pure neuritic leprosy 11(4%) and Histoid leprosy 10(4%) contributed remaining cases. The percent of cases are almost similar in all the three years.

Tuberculoid spectrum is more common in younger age, below 19 years. Out of 41(15% of total cases) cases detected in the age group below 19 years, 31(76%) were tuberculoid spectrum and Lepromatous Leprosy cases were 5(12%). After the age of 60 years Lepromatous leprosy is more common. Total 39(15% of total cases) cases were detected in the age group beyond 60 years. In those 15(39%) cases were Lepromatous leprosy, 9(23%) cases are borderline leprosy and 2(5%) cases were Histoid Leprosy.

Total number of paucibacillary cases was 117(44.2%) and multibacillary cases were 148(55.8%). The ratio of cases was similar during all the three years. There were total 67(25%) cases of reactions that mean one forth of cases presented with reactions. In that Type I reaction cases contributed 24(9% of total cases) and type II reaction contributed 43(16% of total cases) cases.

Table 1: Distribution of Sex

Years	Male	Female
2017	65 (70.65%)	27(29.35%)
2018	74(80%)	18(20%)
2019	55(67.9%)	26(32.1%)
Total	194(72.2%)	71(27.8%)



Graph 1: Showing Distribution of Sex

Table 2: Socio economic status of patients

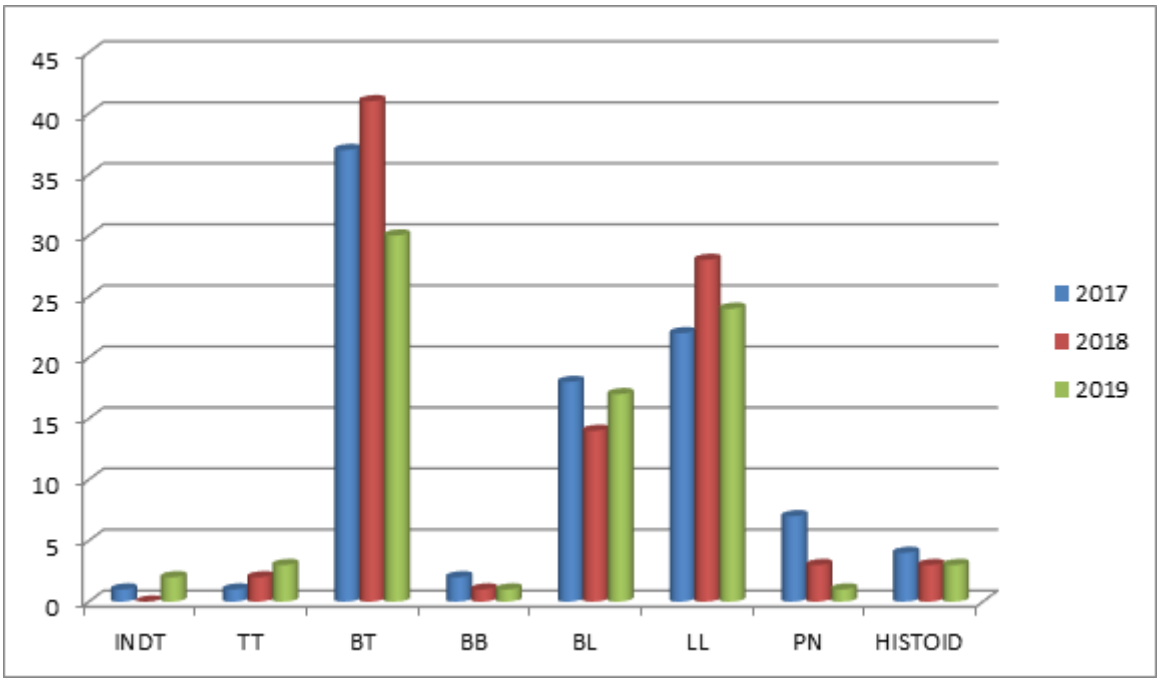
Socio economic status	Number of patients(percent)
Lower socio-economic status	172(65%)
Middle socio-economic status	64(24%)
Upper middle socio-economic status	29(11%)

Table 3: Number of patients with age group wise

Age group	No. Of patients
0-9	4(1.4%)
10-19	35(13.2%)
20-29	55(20.8%)
30-39	54(20.4%)
40-49	39(14.6%)
50-59	41(15.8%)
60-69	32(12%)
70-79	5(1.8%)
Total	265(100%)

Table 4: Clinical types - year wise

Type	2017	2018	2019	Total
Indeterminate	1	0	2	3(1%)
TT	1	2	3	6(2%)
BT	37	41	30	108(41%)
BB	2	1	1	4(1%)
BL	18	14	17	49(19%)
LL	22	28	24	74(28%)
Pure Nuritic	7	3	1	11(4%)
Histoid	4	3	3	10(4%)
	92	92	81	265(100%)



Graph 2: Showing Leprosy Clinical Types Year Wise

Table 5: Clinical types age group wise in 2017

Age group	IND	TT	BT	BB	BL	LL	PN	Histoid
0-9	1		1					
10-19		1	11	1		4	1	
20-29			7		5	1	2	
30-39			8		4	4	2	1
40-49			4		4	3		1
50-59			3	1	2	6		1
60-69			2		3	4	2	1
70-79			1					

Table 6: clinical types age group wise in 2018

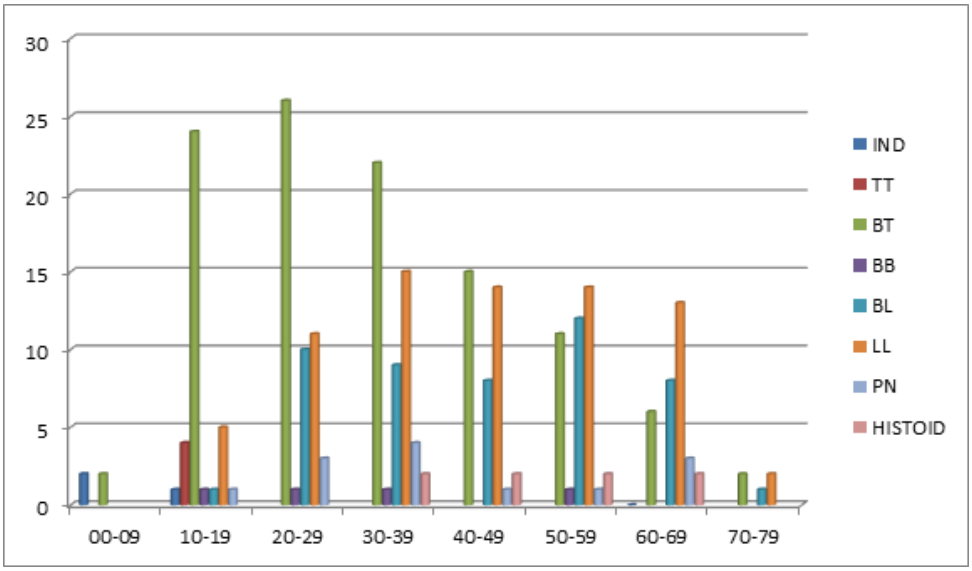
Age group	IND	TT	BT	BB	BL	LL	PN	Histoid
0-9			1					
10-19		2	4					
20-29			10		4	3		
30-39			10	1	1	6	1	1
40-49			9		1	4	1	1
50-59			2		6	6	1	
60-69			4		2	8		1
70-79			1			1		

Table 7: clinical types age group wise in 2019

Age group	IND	TT	BT	BB	BL	LL	PN	HISTOID
0-9	1							
10-19	1	2	9		1	1		
20-29		1	9	1	1	7	1	
30-39			4		4	5	1	
40-49			2		3	7		
50-59			6		4	2		1
60-69					3	1	1	
70-79					1	1		

Table 8: clinical types with age group wise three years together

Age group	IND	TT	BT	BB	BL	LL	PN	HISTOID	Total
0-9	2		2						4(1.5%)
10-19	1	4	24	1	1	5	1		37(14%)
20-29		2	26	1	10	11	3		53(20%)
30-39			22	1	9	15	4	2	53(20%)
40-49			15		8	14	1	2	40(15%)
50-59			11	1	12	14	1	2	41(15.5%)
60-69			6		8	13	3	2	32(12.1%)
70-79			2		1	2			5(1.9%)
	3	6	108	4	49	74	13	8	265



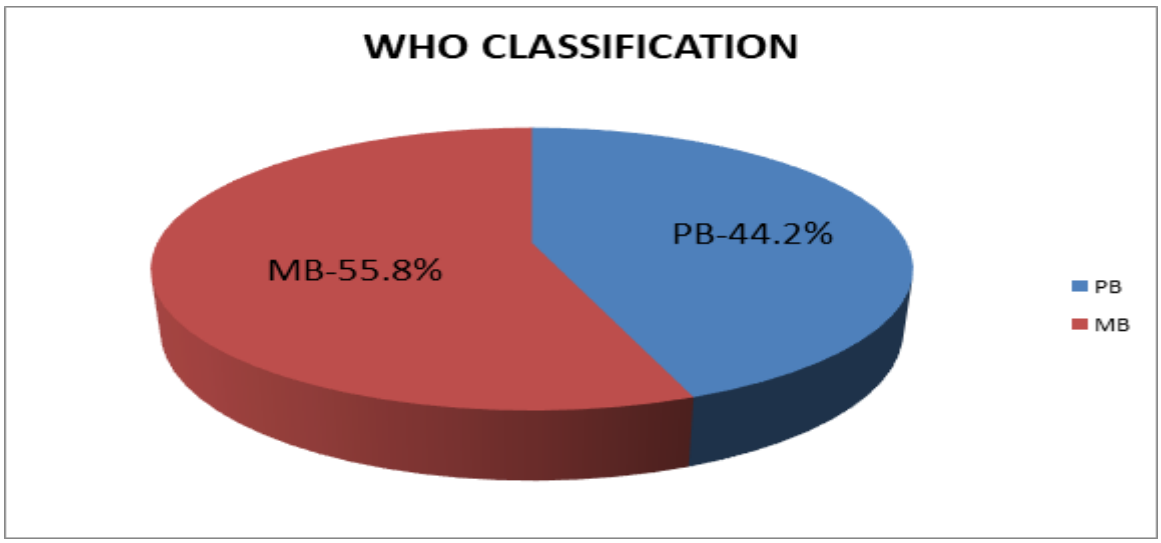
Graph 3: showing clinical types age group wise

Table 9: reaction patterns

Reaction type	Number of cases with percentage
Type I reaction	24(36%)
Type II reaction	43(64%)
Total cases	67(100%)

Table 10: WHO Classification Wise Distribution

Year	PB	MB
2017	39(42.4%)	53(57.6%)
2018	43(46.7%)	49(53.3%)
2019	35(43.2%)	46(56.8%)
Total	117(44.2%)	148(55.8%)



Graph 4: Showing WHO Classification

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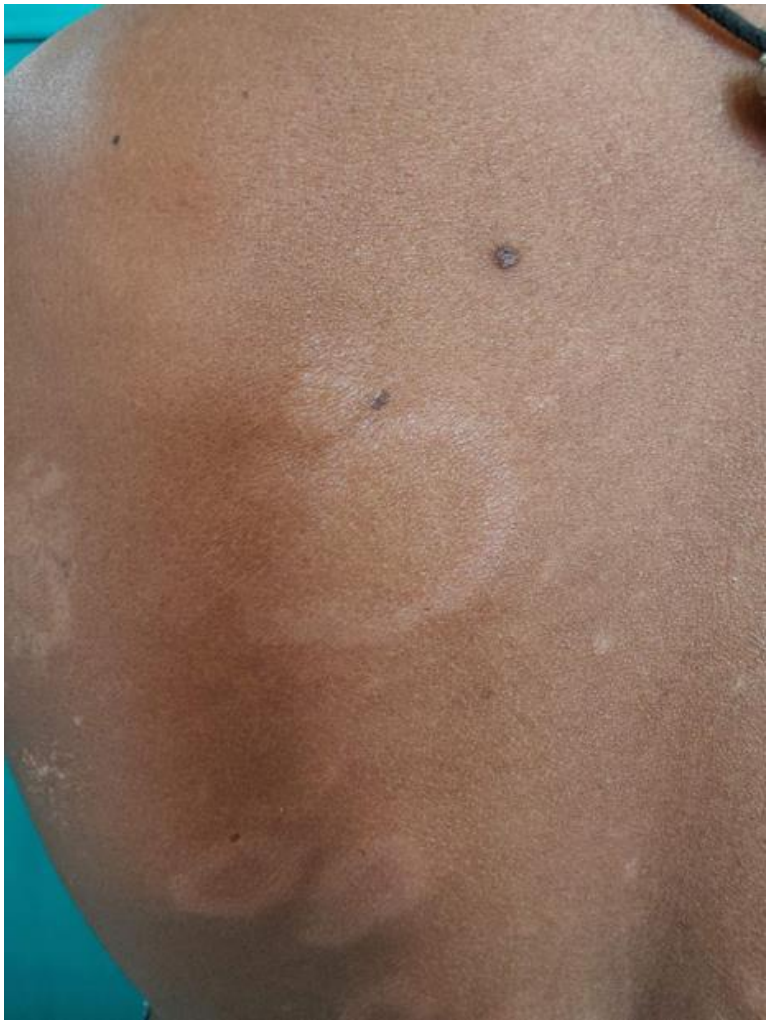

Figure 1: Showing BT lesions

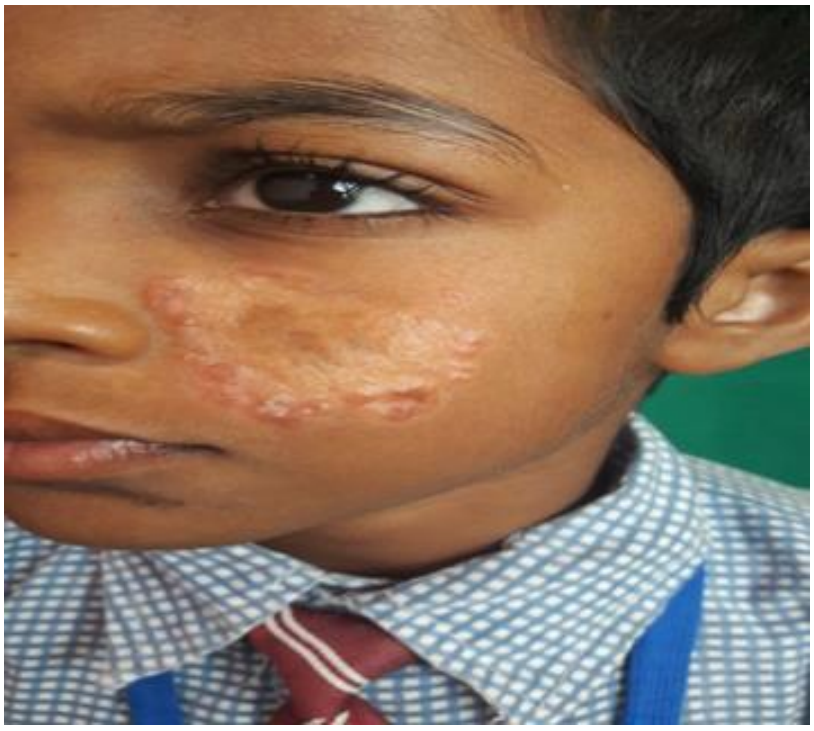

Figure 2: BT Plaque Over the Face in a Child

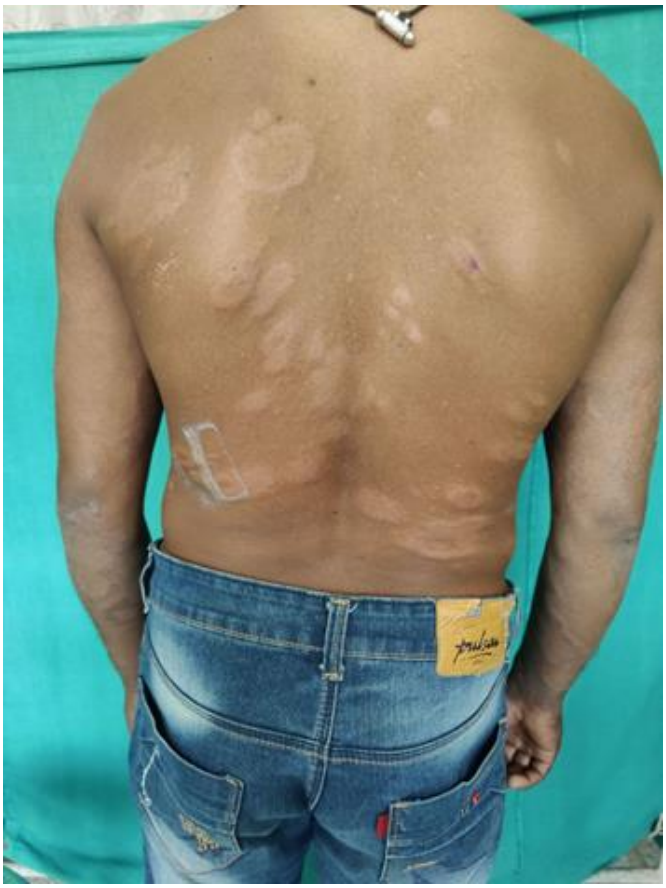

Figure 3:BT downgraded to BL – can see few BB lesions

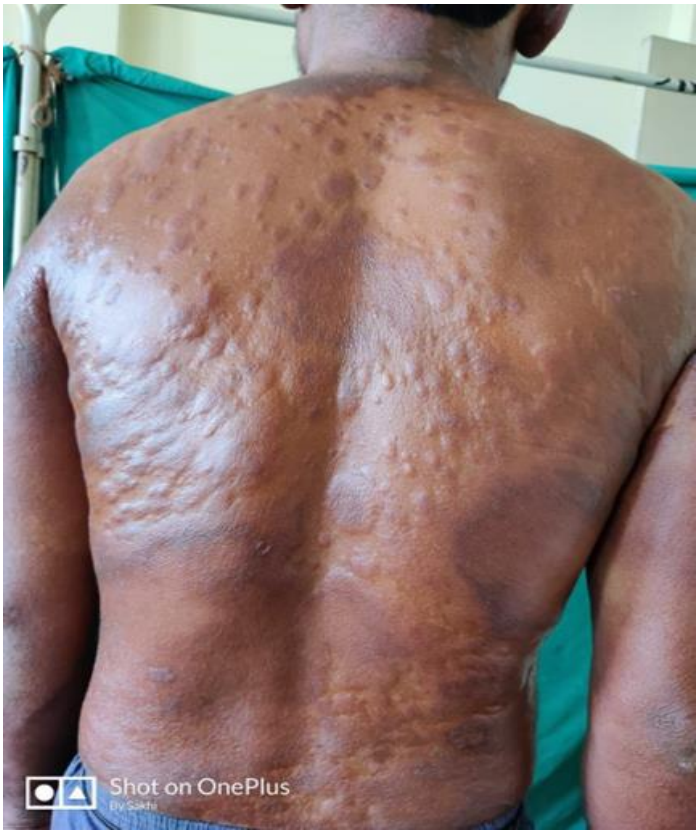

Figure 4: A case of BL

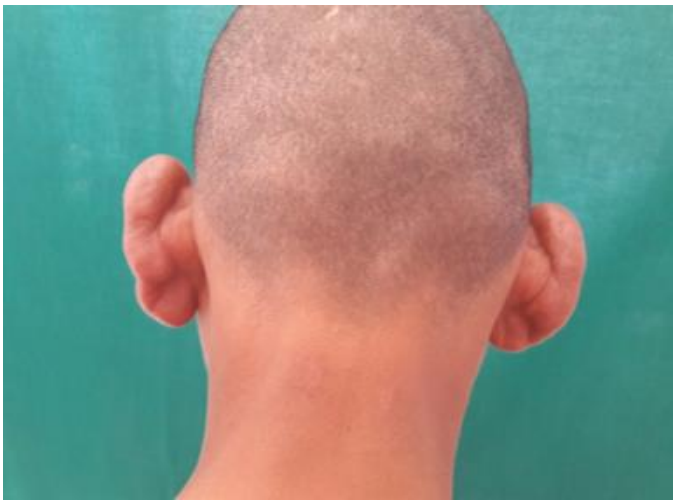

Figure 5:Ear Lobe Infiltration in LL

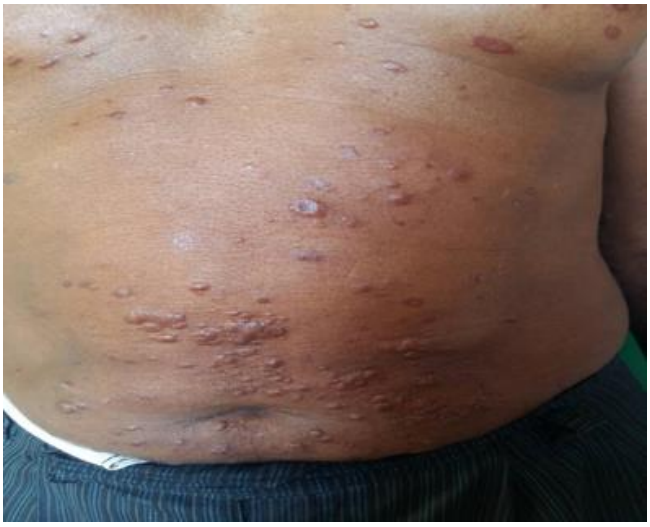

Figure 6: Histiod leprosy

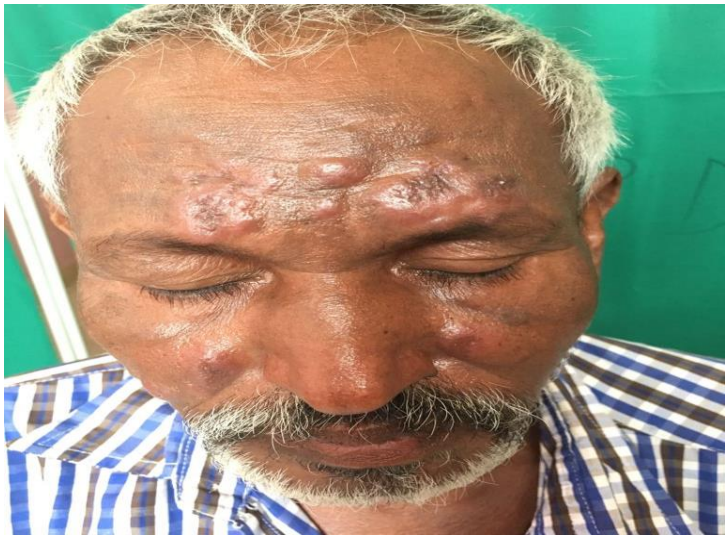

Figure 7: LL with type II reaction

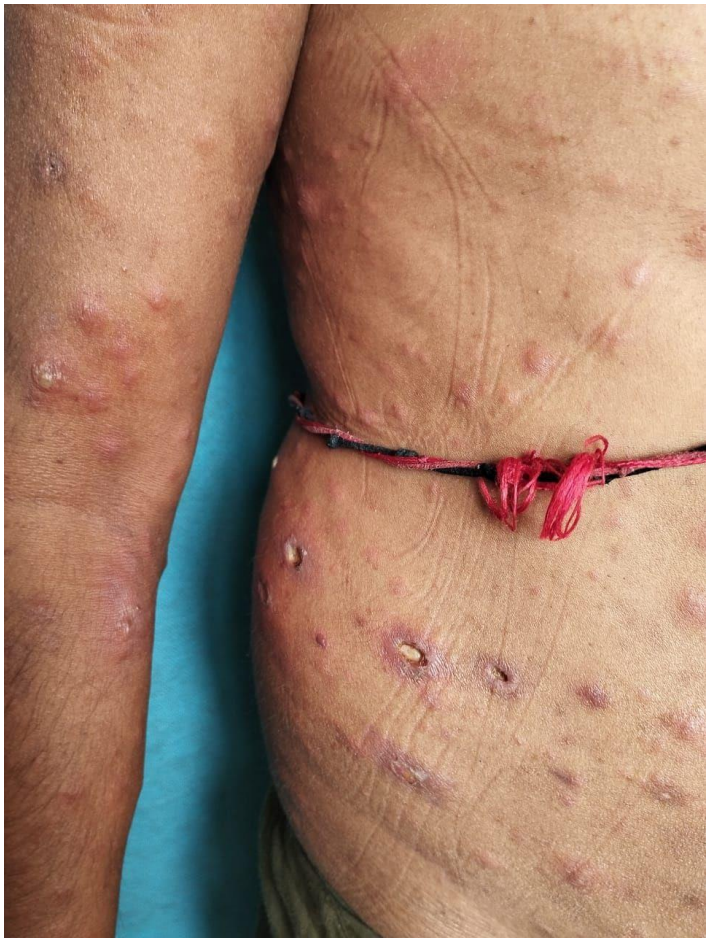

Figure 8: Type II Reaction with ENL Necroticans

DISCUSSION:

Leprosy is still a public health problem in India. India still contributes 60% of new cases reported globally each year and is among the 22 "global priority countries" that contribute 95% of world leprosy cases. In the year 2007, new cases detected in India were 137,685, and nine years later in 2016, the number remained almost the same at 135,485.[1]

Leprosy produces a spectrum of clinical features varying from single hypo-pigmented patch to multiple infiltrated papules, nodules and plaques. It also can present as indeterminate leprosy with faint hypo-pigmented lesion/lesions, especially in children where it is difficult to diagnose thereby causing delay in treatment. It may also present as pure neuritic leprosy where only one nerve or multiple nerves are involved and presenting to a neurologist rather than a dermatologist, causing delay in diagnosis and treatment thereby causing deformities and disabilities. Sometimes patients may directly present with reactions, erythematous plaques and nerve enlargement, tenderness and palsies in type I reaction and erythematous painful, tender nodules with fever, joint pains, nerve pain and tenderness and eye pain with iridocyclitis in type II reaction.

In our study, total number of cases during three year study period was 265, in that males outnumbered females by 194(72.2%) to 71(27.8%). This is similar to the study by Thyvalappil et al where males accounted for 70.68% compared to 29.32% females.[8] Study

done by Chhabra et al also in concordance with our study.[9] The reason is generally considered to be the risk of exposure by their mobility.

Most affected age group was 20 to 29 years with 55(20.8%) cases and 30 to 39 years with 54(20.4%) cases, together contributing 41.2% of cases. It is similar to the studies of Chhabra et al (49.3%) and N.Jindal et al (47.8%).[9,10] This indicates that the economically active population is the segment most affected by leprosy, which may exert a negative impact on the economy of the state, since this segment of the population may go on to develop disabilities, leprosy reactions that would remove them from productive activity and generate high social costs.

In our study, Lepromatous spectrum is more common in the age group beyond 60 years of age. Total 39(15% of total cases) cases were detected in the age group beyond 60 years. In those 15(39%) cases were Lepromatous leprosy and 9(23%) cases are borderline leprosy and 2(5%) cases were Histoid Leprosy. This also explains total laxity in leprosy control programs where early detection is missing so cases are presenting at late age to a tertiary care centre.

In our study, borderline tuberculoid leprosy was most common clinical presentation with 41% (108 cases). It is similar to the studies of - N Chhabra et al 56.3% (n = 478) and SS Khatu et al 54.1%(59) where BT was most common clinical presentation.[4,9] Even though BT was most common clinical type, Lepromatous spectrum was predominant spectrum accounting for 52%(137) of cases, unlike SS Khatu et al and N Chhabra et al studies where BT was presenting with more than 50% of cases.[4,9] But our study was in concordance with the studies of Vrutika H Shah et al 54% and Deepika Uikey et al 55%.[12,13] This spectral shift is because of complacence of lower level of health personnel. Early case detection is missing so cases are coming to tertiary care at a late stage of the disease.

One quarter of cases were presented with reactions either type I (9%) or type II (16%)which was similar to Relhan et al 22.1% and Deepika Uikey et al, 20.6%.(13,14) But other studies showed little higher percent of reactions. N Jindal et al 31.28% Singal et al 34.9%, R Guptha et al 34.91% and Namrata Chhabra 37.5%.[9-11,15] There was more number of type II reaction cases when compared to type I reaction cases.

Multibacillary cases (148-56%) were more common among the new cases attending our OPD in comparison with the paucibacillary cases (117-44%).

Deformities and physical disabilities are the principal problem in leprosy, the percentage of patients with physical disabilities being an indicator of the impact of the disease.

This suggests continued need for referral hospitals for their management and also population-based overall assessment whether actual numbers with deformities have increased or it is peculiar to a tertiary care hospital where the cases with problems may be coming.

CONCLUSION:

Study of clinical profile of leprosy, at our centre, revealed in high proportion of the Lepromatous spectral cases. Incidence of childhood leprosy is less compared to national average. High percentage of MB cases, Leprosy reactions and grade 2 deformities in new cases of Leprosy was a cause of concern. This study highlights the need for active surveillance in uncovering the hidden cases at the field level and treats them early, so to

prevent the deformities and disabilities, especially paediatric cases and those with MB disease.

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