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Trends in Lepra Reactions a Study from a Tertiary Care Centre

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Abstract:
BACKGROUND*- Lepra reactions are known immunological phenomenon associated with Hansen's disease.*
AIM*- To determine the trend of lepra reaction in leprosy, with or without treatment,and associated complications in patients with lepra reactions, visiting tertiary care hospital, North India in last 5 years and their better management.*
MATERIAL AND METHOD*-This was a retrospective,record based study conducted in patients registered in the department of dermatology,venereology and leprosy, tertiary care centre, in north India from May 2014-April 2019.*
RESULTS*- Of the 3788 cases, multibacillary cases were 86.5%.The commonest morphological type was borderline borderline in (52.03%),followed by tuberculoid (20%), borderline lepromatous (12.72%) lepromatous (8.34%) borderline tuberculoid (6.91%).Skin smears were positive for acid fast bacilli in 32.5% .Total 24.01% presented in reaction. Type 1 reaction was noted in 10.21% while patient who presented in type 2 reaction were 13.8%.Patient who developed reaction before the start of multibacillary therapy (MDT) were 68.1%.Those who developed a reaction within 6 months and after 6 months of treatment were 28.4% and 3.5% respectively.*
CONCLUSION *– Reactions in leprosy are common complication in leprosy patients. Multibacillary treatment regime are significantly associated with thereaction. Early detection in cases with risk factors followed by appropriate treatment could prevent the morbidity of leprosy patient.*
Keywords*: lepra reactions, type 1 reaction, type 2 reaction, multibacillary, leprosy*

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I. Introduction

Leprosy is a chronic disease caused by *Mycobacterium leprae*, infectious in some cases, and affecting the peripheral nervous system, the skin , and certain other tissues.[1]Lepra reaction is an immune –mediated reaction in leprosy patients clinicallycharacterized by by an acute episodic exacerbations and remission of symptoms and signs,with or without treatment of leprosy and it is directly related to the disease. The reactions affect skin and nerves resulting in physical disability of the patients.

Type 1 reactions are characterized by increased inflammation of the pre-existing lesions,neuritis,neural dysfunction etc[2]and these are the major cause of nerve impairment.[3]The cutaneous manifestations ofType 2 reactions include,tender papules and nodules which healwith post inflammatory hyperpigmentation.Apart from multidrug therapy they could be aggravated by stress, pregnancy,other infections etc[4,5].These reactions can occur before, during or after completion of the multidrug therapy (MDT).[6]

Physical disabilities caused by leprosy reactions result from nerve damage during immunological processes.The high frequency of neuritis leads to significant morbidity .The most important stratergies to prevent disability are early diagnosis and treatment of bot leprosy and its reactions and the provision of education to the patients.[7]

II. Aim Of Study

To determine the trend of lepra reaction in leprosy patients,with or without treatment , visiting tertiary care hospital in north India in last 5 years and their better management.

III. Material And Method

This is a retrospective ,record based study conducted in all patients presenting with the clinical manifestations of leprosy with lepra reaction or RFT cases with lepra reaction,attending Outpatient department of Dermatology Venereology and Leprosy of RIMS Ranchi registered in leprosy clinic of the hospital from MAY 2014-APRIL 2019

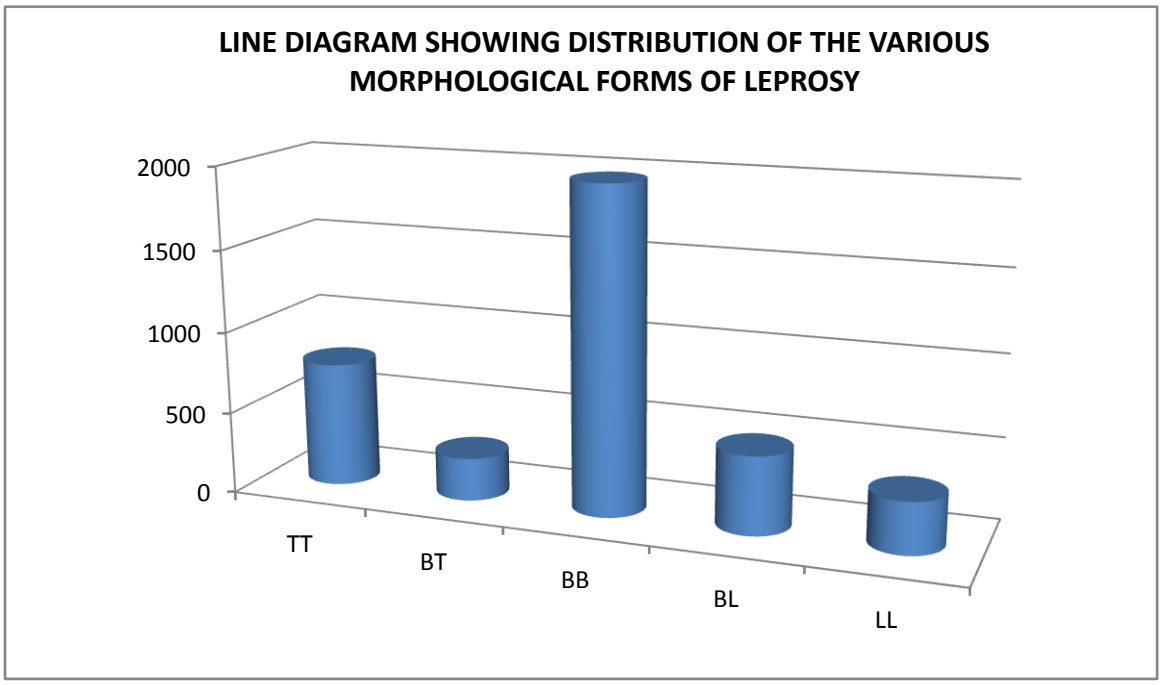
A detailed history ,clinical examination in daylight, of systemic and cutaneous lesions,skin scraping and examinations for AFB were done.Routine investigation were also done.The patients with incomplete medical records were excluded from the study. We used the classification of Ridley Jopling to categorise the patients into the following – tuberculoid(TT), borderline tuberculoid (BT), mid borderline (BB), borderline lepromatous(BL), lepromatous(LL).[8]Line diagram and percentage calculation was done by Microsoft Excel Office.

IV. Results

A total of 3788 cases were studied. Multibacillary leprosy was the most clinical type seen in 86.5%.the commonest morphological type was mid borderline in 1972 (52.03%) followed by tubeculoid 759 (20),borderline lepromatous 478 (12.72 %),lepromatous 317 (8.34 %),borderline tuberculoid 262 (6.91 %).Slit skin smear were positive for acid fast bacilli in 32.5% of patients.

910 patients (24.02 %) presented in reaction. Type 1 reaction was noted in 387 (10.21 %) and type 2 reaction in 523 (13.8%). Patients who developed reaction before the start of multibacillary therapy(MDT) were 619(68.1%) and with 6 months and after 6 months of initiation of treatment were 259 (28.4%) and 32 (3.5%) respectively.

Of the 387 patients with type 1 reaction, 131 (33.9%) had only cutaneous lesions, 211 (54.7%) had only neuritis while 45 (11.3%) had involvement of both skin and peripheral nerves.Amongst 523 patients who developed type 2 reaction,340 (65%) developed nodular lesions and 183 (35%) developed neuritisand ulcerative skin lesion. Out of 183 patients 48 (26.22%) developed ulcerative lesions, whereas 15 patients(8.19%) presented with bullous lesions.On slit smear examinations multiple solid staining AFB seen in the fluid of the bullae.



TYPE I REACTION:

Fig: Exaggerated inflammation of pre-existing lesions.

Fig: Nerve abscess seen in type I reaction

Fig: Thickened Great auricular nerve

TYPE II REACTION (Erythema nodosum leprosum):

Fig: Multiple erythematous,tender nodules called erythema nodosum leprosum

Fig: Erythema multiforme like lesions of type II reaction(a very rare presentation)

Fig: Patient in type II reaction having bullous lesions over erythematous base over the forearms and tender, erythematous nodules on the face, arms and forearms.Solid stained AFB seen in the fluid of the bullae.

Fig: Patient with type II reaction having Erythema necroticans ulcerans showing grayish-black central necrotic areas on erythematous nodules which ulcerate and acral oedema.

V. Discussion

Lepra reaction are the major cause of nerve damage due to immunological mechanism leading to severe disability.Type 1 reactions are considered to be one of the main cause of most deformities and physical disabilities.[6,9]

Type 1 reaction are mainly seen in the non polar forms of leprosy and occurs mainly in the borderline forms but can be seen in a small number of treated sub polar lepromatous forms as well.[10]The percentage of MB cases (88.5%) in our study was higher than the PB cases (11.5%).This frequency is similar to Tiwary et al who reported 80.57% in MB cases in his study.[11]In contrast ,Mohite et al reported 53.6% MB cases in their study.[12]

Type 1 reaction was most frequently associated with BT leprosy 38.26%.Similarly Chhabra et al found the prevalence of Type 1 reaction to be the highest in BT patients65.9%.[13]

In this study Type 2 reaction were seen in 18.9% ,of these 65%of patients had LL and 15 %had BL leprosy.These findings were similar to those of Pocaterra et al who reporte that Type 2 reactions were seen in 50% of LL and 5-10% of BL patients.[14]

It is well known in literature that the risk of development of type 1 and Type 2 reaction is highest in the first year of treatment.[15,16,17] In this study, patients who developed reaction before the start of multibacillary therapy(MDT) were 620 (68.1%) and with 6 months and after 6 months of initiation of treatment were 258 (28.4%) and 32 (3.5%) respectively.

Table 1. Year wise distribution of reactions in leprosy:

Sr no.	Years	Total no.of leprosy cases		Total no. of reactions	Total no.of RFT cases	Total reactions	
		TT,BT,BB, BL,LL	TYPE I	TYPE II		TYPE I	TYPE II
1.	MAY14-APRIL 15	876	90	125	264	2	23
2.	MAY15-APRIL16	780	85	113	198	0	14
3.	MAY 16-APRIL 17	766	81	101	156	1	12
4.	MAY17-APRIL 18	689	64	96	178	0	8
5.	MAY 18 APRIL 19	677	62	88	143	0	6

Table 2.lepra reaction with recurrence year wise:

SR NO.	YEARS	TYPE I REACTION			TYPE II REACTION		
		1ST TIME	RECURRENT	TOTAL	1ST TIME	RECURRENT	TOTAL
1.	MAY14-APRIL 15	35	98	133	47	124	171
2.	MAY15-APRIL16	28	86	114	34	118	152
3.	MAY16-APRIL 17	23	82	105	32	112	144
4.	MAY 17 APRIL 18	16	72	88	28	97	125
5.	MAY 18 APRIL19	9	43	52	15	84	99

Table3. Reactions with other complications year wise data

Sr.no.	Reaction with other complications	Type I reaction					Type II reaction				
		MAY 14-APR 15	MAY 15-APR 16	MAY 16-APR 17	MAY 17-APR 18	MAY 18-APR 19	MAY 14-APR 15	MAY 15-APR 16	MAY 16-APR 17	MAY 17-APR 18	MAY 18-APR 19
1	STEROID SIDE EFFECTS	0	0	0	0	0	23	20	18	27	28
2	FOOT DROP	47	40	35	32	56	38	35	29	18	16
3.	WRIST DROP	34	35	26	30	20	11	14	17	9	4
4.	FACIAL PALSY	18	9	15	21	8	9	11	15	6	5
5.	EYE PROBLEM	15	19	16	20	11	35	31	28	18	15
6.	ORCHITIS	6	8	5	4	2	10	8	17	14	9
7.	HAND AND FEET OEDEMA	28	34	45	32	28	24	16	12	8	4

fig: Eye and facial complications in lepra reaction.

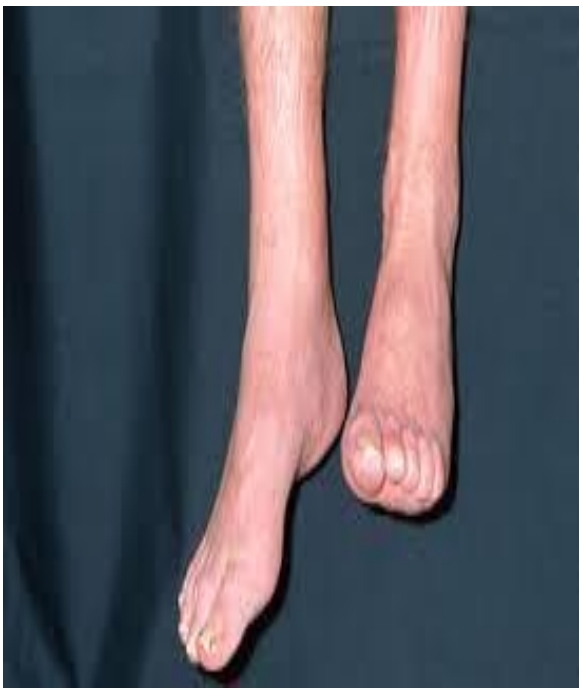


Fig: Foot drop

Fig: Wrist drop

Steroids are the mainstay of treatment of lepra reaction. Our patients were treated with oral steroid (40 mg)oral prednisolone and was aimed at reducing it to zero over a period of 6 month period similar to the schedule reported by Walker et al.[17]

It is also well known that the duration of oral prednisolone rather than the dose is more important in controlling type 1 reaction.[18.]Also majority of the patients with type 2 reactions require multiple and prolonged course of treatment.[14] The average duration of treatment of type 2 reaction 14.89 months (±12.87) was longer that for type 1 reaction 10.28 months (±5.22).

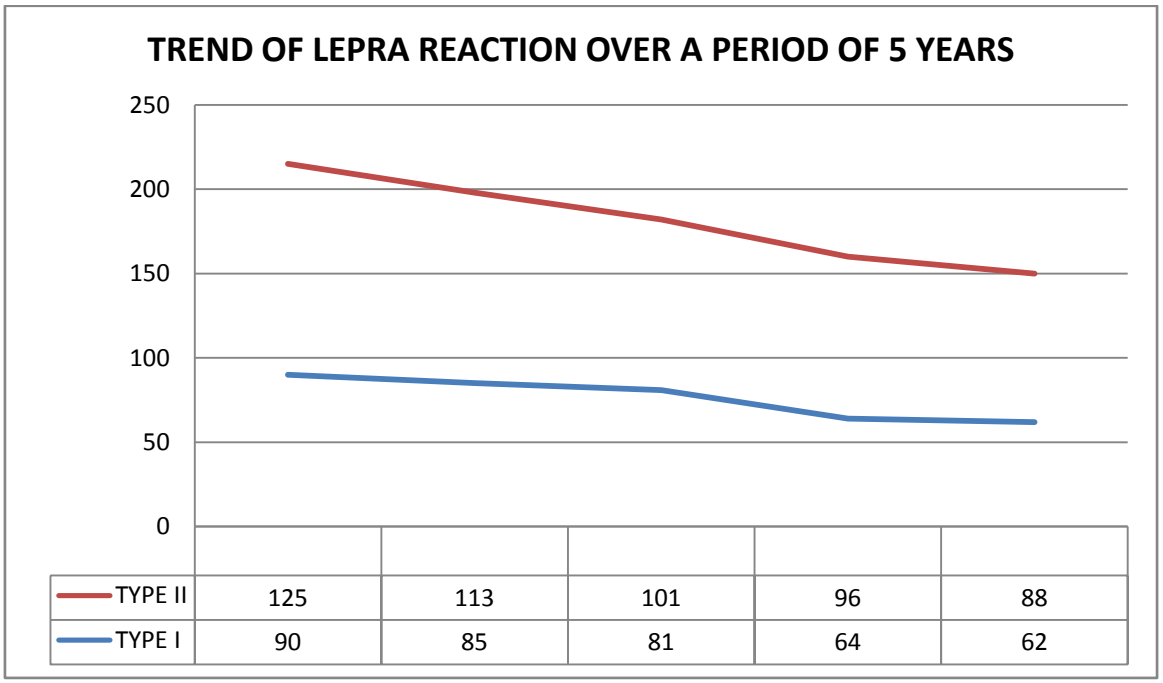


Fig- On observation,over a period of 5 years showed that along with the decrease in the observed number of leprosy cases presenting in the opd.

VI. Conclusion

In this,5 years of study showed that along with the decrease in the observed number of leprosy cases presenting in the opd ,the number of cases with lepra reactions have also declined. There is a decreasing trend of leprosy and lepra reaction,but with abnormal presentation.The overall prevalence of lepra reactions is higher than the overall percentage of prevalence in India as reported by IAL in 2003.Type 1 reactions were most commonly seen in BB>BL and was not found in LLs& LLp type of leprosy.Whereas, type 2 reaction was most commonly seen in LLs>BL>LLp and was not seen in BT &TTs type of leprosy.It is essential to identify these reactional states and treat them early in order to prevent disability, decrease the stigma associated with the deformities and decrease infectivity thereby decreasing the transmission of disease.

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