

# Lepra Reactions: A Retrospective Clinical Study

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**Abstract:** Introduction: Lepra reactions are common immunologically mediated phenomena in the course of Hansen's disease. They are characterized by inflammation affecting skin, nerves, mucous membranes and/ other sites. Lepra reactions are of 2 types - Type 1 and Type 2. Aims: To study the clinical patterns of Lepra reactions at a tertiary care hospital of Assam during the period of 1 year from September 2018 - August 2019. Materials and Methods: This is a Retrospective, hospital based study in patients of Hansen's disease with Lepra reactions attending a tertiary care hospital of Assam. Results : A total of 87 patients with Hansen's disease attended the OPD during the study period, out of which 38 (43.6%) patients presented with lepra reactions. 71% were males (n=27) and 29% were females (n=11). Most patients presented in their 3rd decade. Type 2 lepra reactions (n= 21; 55%) were more than Type1 (n=17; 45%). Majority of patients (n=25; 66%) developed lepra reactions after initiation of MDT therapy, while (n=13; 34%) developed lepra reactions before initiation of MDT therapy. Type1 lepra reactions were more commonly seen with BT leprosy. Patients presented mostly with tender erythematous skin lesions along with neuritis, while only a few presented with neuritis only. Type 2 was more common with LL leprosy and most patients presented with ENL lesions while 2 patients had ENN lesions. WHO grades of deformity was seen in 73% patients. Conclusion: Lepra reactions constitute a significant proportion among hansen's disease patient. Type 2 lepra reactions were more common than type 1 lepra reaction. Lepra reactions should be treated promptly and adequately due to the risk of developing deformities and disabilities.

**Keywords:** Lepra Reactions

## 1. Introduction

Leprosy is a chronic infectious granulomatous disease caused by Mycobacterium leprae having broad spectrum of manifestations ranging from Tuberculoid (TT) pole to lepromatous pole.

LEPRA REACTIONS - Immunologically mediated phenomena, characterised by acute/subacute inflammation affecting skin, nerves, mucous membranes or other sites, which interrupt the usual course of disease and can lead to disability and deformity. <sup>1</sup>Type 1 reaction (T1R) occurs with shift in patient's leprosy spectrum as there is sudden alteration of cell-mediated immunity. It usually occurs in borderline spectrum of leprosy except very rarely in lepromatous leprosy.<sup>2</sup> it occurs as sudden appearance of inflamed, new lesions and/or new nerve affection which may or may not occur with nerve impairment. <sup>1</sup>Type 2 reaction, also known as ENL, is an immune complex syndrome that cause inflammation of skin, nerves and other organs and cause malaise generally. It is most commonly observed in LL, sometimes in BL. <sup>1</sup> ENL occurs mostly in patients with high bacillary index. <sup>3</sup>Type 1 reactions are commoner than type 2 reactions.<sup>4</sup>

## 2. Aims

To study the clinical patterns of Lepra reactions at a tertiary care hospital of Assam during the period of 1 year from September 2018-August 2019.

## 3. Materials and Methods

This was a retrospective; hospital based observational study in all the patients of Hansen's disease who presented with lepra reactions during the study period from September 2018-August 2019. Data regarding the demographic profile, SSS for AFB, clinical features, MDT therapy, deformity and other complications were all reviewed and included in the

study treatment and complications were reviewed and recorded on a study proforma. Exclusion criteria were those patients with incomplete medical records. To classify the patients in various spectrum of leprosy, Ridley-Jopling classification was used which were Tuberculoid (TT), Borderline tuberculoid (BT), Borderline borderline (BB), Borderline lepromatous (BL) and lepromatous (LL) types.<sup>5</sup>

## 4. Results

A total of 87 patients with Hansen's disease attended the OPD during the study period, out of which 38 (43.6%) patients presented with lepra reactions. All the patients were from Assam. Tea garden labourers constituted majority of the study group, while others were farmers, students, job holders and housewives. Most patients presented in the range of 18-50 years of age, while 5 patients were less than 18 years of age, the youngest being 11 years.<sup>8</sup> 8 patients were more than 50 years, the oldest being 80 years of age. It was observed that 71% were males (n=27) and 29% were females (n=11). Males constituted majority of type2 reactions (n=11) and type1 reactions (n=16).

Type 2 lepra reaction (n=21; 55%) was noted to be more than Type1 lepra reaction (n=17; 45%) in this study. Type1 lepra reactions were more commonly seen in the BT leprosy spectrum while Type 2 lepra reactions were mostly noted in the LL spectrum.

SSS for AFB was positive in 22 patients, while it was negative in 16 patients. Out of the 22 patients who were slit skin smear positive, 3 patients had developed type 1 reaction while the rest 19 patients had developed type 2 reactions. It indicates that patients' spectrum towards lepromatous pole has developed more type 2 reactions. Out of the 16 patients who were slit skin smear negative, 14 patients developed type 1 reactions and only 2 patients developed type 1 reaction.

Majority of patients (n=25; 66%) had developed lepra reactions after the initiation of MDT therapy. Out of these 25 patients, 10 patients had already completed MDT therapy and the rest 15 patients were on treatment with MDT. 13 patients (34%) developed lepra reactions before initiation of MDT therapy.

Out of the 21 patients who presented with type 2 lepra reactions, 19 patients presented with ENL (Erythema Nodosum Leprosum) lesions while only 2 patients had ENN (Erythema Nodosum Necroticans) lesions.

WHO grades of deformity was seen in 73% patients. The deformities noted were claw hand and trophic ulcer.

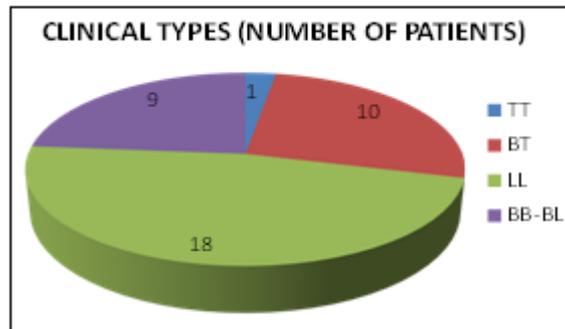


Figure 1: Pie chart showing distribution of the different spectrum of Leprosy.

Table 2: Table showing distribution of variables

Variables		No. of Cases	Type 1 R	Type 2 R
Age	<18 years	5	2	3
	18-50 years	25	12	13
	>50 years	8	3	5
Gender	Males	27	10	17
	Females	11	7	4
SSS for AFB	Positive	22	3	19
	Negative	16	14	2
Deformity	Present	28	13	15
	Absent	10	7	3
MDT	ON MDT/Past History OF MDT	25	7	18
	Not Yet Started	13	10	3
Clinical Types	TT	1	1	0
	BT	10	10	0
	LL	18	0	18
	BB-BL	9	6	3

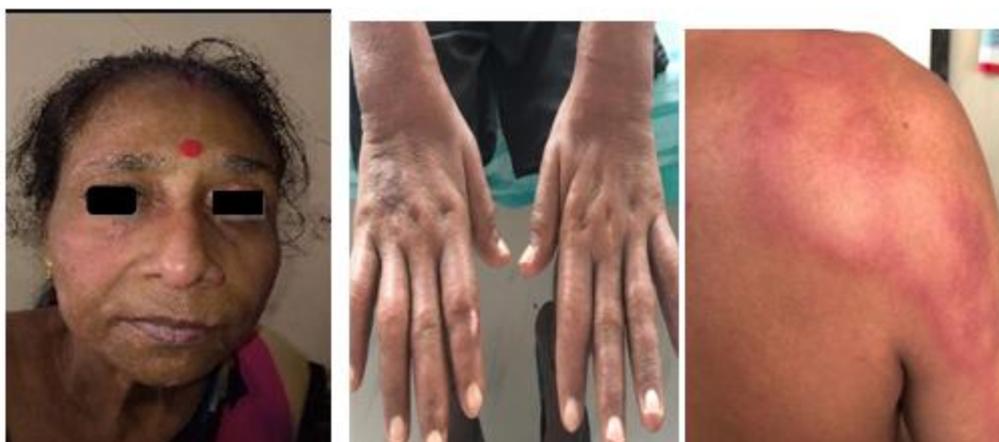


Figure 2: Clinical photographs

- a) Lady presenting with type 1 lepra reaction, showing erythematous, edematous plaques over Rt cheek
- b) Young boy presented with swollen fingers, feature of type 1 lepra reaction
- c) Swollen erythematous plaque noted over the Rt back of shoulder, suggestive of Type 1 lepra reaction



**Figure 3:** Clinical photographs

- Male patient presenting with type 2 lepra reaction, showing multiple eruptions over back
- Young boy with multiple, erythematous nodular eruptions, evanescent in nature, suggesting type 2 lepra reaction
- Middle aged male patient presenting with ENN lesions (erythema nodosum necroticans)

## 5. Discussion

Lepra reactions can lead to severe disability as a result of nerve damage due to immunological mechanisms.<sup>6</sup>

Most cases of deformities and physical disabilities occurs as a result of type 1 lepra reactions.<sup>7,8</sup>

Type 1 reactions were mostly noted in the borderline forms of leprosy, however can also occur in a small number of treated sub polar lepromatous forms also.<sup>9</sup>

In this study, the prevalence of lepra reactions was noted in 43.6% of patients. This is more or less similar to study done by Emy A. Thomas et al<sup>6</sup>, where the prevalence rate was 44.8%. Suchonwanit et al.<sup>4</sup> reported a prevalence of 56.5% lepra reactions in their study.

Type 1 reaction was most commonly seen with BT leprosy (26.3%) in this study Emy A. Thomas et al also found that type 1 lepra reaction was mostly seen in BT leprosy (33.96%).<sup>6</sup> Similarly Chhabra et al found the prevalence of type reaction to be highest in BT leprosy patients (65.9%).<sup>10</sup>

Type 2 lepra reaction (n=21; 55%) was noted to be more than Type 1 reaction (n=17; 45%) in this study. However, in a study done by Emy A. Thomas et al, it was found that type 2 reactions was seen only in 12.3 % of patients.<sup>6</sup> In this study, out of the 21 patients who presented with type 2 lepra reactions, 18 patients were in the LL group, while only 3 patients were in the BB-BL group. In a study done by Emy A. Thomas et al, of patients who presented with type 2 reactions, 65% were in LL group and 15% were in BB group<sup>6</sup>. In another study by Pocaterra et al, type 2 reaction were seen in 50% of LL patients and 5-10% of BL patients.<sup>11</sup>

27 patients (71.05%) were male in this study and 11 patients (28.94%) were females. This is similar to a study done by Emy A Thomas et al who reported that 79.7% were males.<sup>6</sup> In another study by Suchonweit et al, females

dominated the study group.<sup>4</sup> In a study done at Bangladesh, type 1 reactions to be 1.7 times more frequent in males.<sup>12</sup>

The mean age of presentation was 44.36 years in this study which is almost similar to a study done by Emy A. Thomas et al, where the mean age of presentation was found to be 45 years.<sup>6</sup> In another study by Suchonweit et al, the mean age of presentation was 32.46 years.<sup>4</sup>

In this study, it was found that the risk factors for developing lepra reactions included Male gender, on MDT therapy, a positive slit skin smear for AFB, while in a study by Emy A. Thomas et al<sup>6</sup>, the risk factors included Males gender, those on MDT therapy. Female gender, positive bacteriological index and MB treatment regime were found to be the risk factor in a study by Suchonweit et al. In another study by Bhushan Kumar et al female gender, multibacillary leprosy and widespread disease were found as risk factors for development of type 1 reactions, while lepromatous leprosy, female gender and high bacterial index were found as risk factors for the development of type 2 reactions.<sup>13</sup>

In this study the incidence of deformity was noted in 73% of patients. The deformities seen were claw hand, trophic ulcers. In a study by Emy A. Thomas et al, WHO Grade 1 deformity was seen in 39.3% and WHO grade 2 deformity was found in 73.4% of patients.<sup>6</sup> In another study by Chhabra et al, 37.9 % had WHO grade 2 deformity. They noted that 23.3 % had claw hand and 7.5% patients had trophic ulcers.<sup>10</sup>

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