

## A Case Study of Leprosy in Shree Birendra Hospital

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### Introduction

Leprosy is a chronic mycobacterial infection affecting the peripheral nervous system, the skin and certain other tissues with a variable clinical presentation, inflammatory episodes, and secondary changes due to nerve damage. The spectrum of disease is a range of clinical histological and bacteriological response determined by the immune status of the host. The distribution of cases across the spectrum of the leprosy shows the highest prevalence in the borderline spectrum of disease. One of the most important feature of borderline leprosy is the frequency of nerve damage. A reaction in leprosy is an active inflammatory episode superimposed on the normal course of the disease. Due to immunological instability in the borderline spectrum there is a tendency to down grade towards lepromatous pole or upgrade towards the tuberculoid pole in association with type 1 reaction. A type 2 reaction a common complication in polar or subpolar lepromatous leprosy is less common in borderline lepromatous leprosy. Secondary changes resulting from nerve damage consists of dryness of skin, cracks and fissures, injuries, burns, secondary infection, resorption of digits, plantar ulceration and others.

### Materials / Methods

This study was conducted in the Department of Dermatology and Venereology, Birendra Hospital. This study included indoor and outdoor patients. Serving personnel from Army and family as well as exservicemen and family were included. A total of 26 patients of leprosy were examined from Bhadra 2056 to shrawan 2057. A group of 10 patients were having reactional episodes while a group of 15 patients had trophic changes. One case of defaulter, two pure neuritic cases and one indeterminate case were seen and not included in the study.

On the basis of detailed history and thorough examination a clinical diagnosis of leprosy was established. The Hb estimation, total and differential count, ESR, Urine examination were then carried out. Slit skin smear for AFB and skin biopsy as required were the other investigations carried.

### Objectives

- (1) To study clinical, histological, immunological and biochemical changes in Leprosy and in reactional episodes.
- (2) To study various trophic changes in Leprosy and in reaction.

### Observation

The age and sex distribution of 26 patients of Leprosy included in the study is given in the table-I.

Age in years	No of Males	No of Females
21-30	10	1
31-40	3	1
41-50	2	0
51-60	4	2
61-70	1	1
71-80	1	0
Total	21	5

The younger patient is 23 years old and the oldest is 75 years old. The highest frequency of reaction was in the age group 21 to 30 years. The youngest patient with trophic changes was 29 years and the oldest 75 years. The highest frequency of trophic changes was in the age group of 40 to 60 years. One out of ten patients in reaction (10%) and 3 out of 15 patients with trophic changes (15%) were females. The occurrence of reaction in relation to MDT is given in the table-II.

Duration in months	No of patients	
	Type-I	Type-II
0-6 Months	6	0
7-12 Months	0	2
13-24 Months	1	1
<b>Total</b>	<b>7</b>	<b>3</b>

The highest number of occurrence of type-I reaction was within 6 months of onset of Therapy. The highest frequency of occurrence of type-II reaction 7 to 12 months after starting therapy. One of the patient was in reaction when first examined while another developed first reactional episode 22 months after starting therapy. 7 patients had type-I reaction while 3 patients had type-II reaction. Clinical manifestations during reaction is shown in table-III

**Table-III clinical manifestation during reactional episode**

	1	2	3	4	5	6	7	8	9	10
<b>Disease Spectrum</b>	<i>BT</i>	<i>BI</i>	<i>LL</i>	<i>BT</i>	<i>BT</i>	<i>BT</i>	<i>BT</i>	<i>BT</i>	<i>BL</i>	<i>BL</i>
<b>Type of reaction</b>	<i>I</i>	<i>II</i>	<i>II</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>II</i>	<i>I</i>
<b>Exacerbation/ Increase in number of skin Lesion</b>	+	-	-	+	+	+	+	+	-	+
<b>ENL lesion</b>	-	+	+	-	-	-	-	-	+	-
<b>Constitutional Symptoms</b>	-	+	+	-	-	-	-	-	+	-
<b>Neuritis</b>	+	+	+	+	+	+	+	-	+	-
<b>Periostitis/ Joint Pain</b>	-	+	+	-	-	-	-	-	-	-
<b>Lymphadenitis</b>	-	+	-	-	-	-	-	-	-	-
<b>Orchitis</b>	-	+	-	-	-	-	-	-	-	-

7 out of 10 patients (70%) in reaction were in BT spectrum, 1 (10%) was in LL and 2 (20%) were in BL spectrum. There was either an exacerbation of old lesions or an increase in number of lesions in 7 patients with type-I reaction.

There was evidence of neuritis with nerve tenderness and appearance of increase in neurological deficit in 6 patients out of 7 patients with type-I reaction. Crops of ENL lesions were observed in 2 patients with type-II reaction. One patient with BL developed steroid dependent type-II reaction and required thalidomide. Fever / malaise were observed in all 3 patients. There was evidence of neuritis in all 3 patients in type-II reaction. Periosteal pain was observed in 2 patients and joint pain was observed in 2 patients. There was evidence of testicular atrophy in 1 patient. Hb estimation, TC, DC, ESR and uric acid examination were normal in patients with type-I reaction. There was a fall in haemoglobin level in 2 patients in type-II reaction. ESR was raised in 2 patients and serum calcium was slightly diminished in 1 patient.

Histopathological examination was done as required. Epithelioid cell granuloma with moderate number of lymphocytes and giant cells were present in BT leprosy. Hyperkeratosis with encroachment of epidermis by lymphocytes there by resembling clinically and histologically TT (Tuberculoid leprosy) was observed at one site while biopsy from another site of the same patient showed subepidermal

zone with epithelioid cell granuloma in dermis typical of BT leprosy. Macrophage granuloma with foamy cells were present in BL leprosy in type I reaction .

A neutrophilic infiltrate with a few foamy cell and a few lymphocyte were observed in 3 patients of BL and LL with type-II reaction. There was evidence of vasculitis in one patient.

Table 4 shows time period between the onset of disease and occurrence of trophic changes. The highest incidence of trophic changes were observed 4-6 years after the onset of disease.

Time period in years from onset of Disease	Number of patients with trophic change			
	BT	BB	BL	LL
0-3 Years	3	0	0	0
4-6 Years	2	0	5	2
7-12 Years	0	0	1	2
Total	5	0	6	4

Table-V summaries the spectrum of disease and the trophic changes observed in 15 patients included in the study.

**Spectrum of disease and trophic changes**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Spectrum	BT	BT	BT	BL	BT	BL	LL	BT	BT	LL	BL	LL	BT	BL	BL
Age	29	54	39	39	36	54	59	57	59	69	25	56	65	75	73
Sex	M	M	M	M	M	F	F	M	M	F	M	M	M	M	M
Dryness	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Crack/Fissures	-	+	+	-	+	-	-	-	+	-	+	+	+	+	+
Sensory Loss	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Burns	-	-	-	-	-	+	+	-	-	-	+	+	-	-	-
Planter Ulcer	-	-	-	-	-	+	+	+	-	-	+	+	-	-	-
Resorption of Disease	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Claw Hand	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-
Wrist Drop	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Foot Drop	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-

7 patients with trophic changes were in the BT spectrum, 5 patients in the BL spectrum and 3 patients in the LL spectrum. Dryness of skin over hands and feet was observed in 14 patients. Fissure and cracks in 8 patients, sensory loss in all patients, burns in 4 patients, planter ulcers in 5 patients and resorption of digits in one patient.

The site of occurrence of planter ulcers is given in table-VI. A total of 5 patients had plantar ulcers. The most common site of ulcers was over the head of 1st metatarsal followed by base of 5th metatarsal.

**Table-VI**

Site	Number of Patients
1 <sup>st</sup> Metatarsal Head	4
Base of 5th Metatarsal	1



## Discussion

In the present study of 26 patients of Leprosy the age distribution shows that the patients with trophic changes are significantly older than the patients in reaction. The highest frequency of patients in reaction was in 21-30 years age group while the highest frequency of patients with trophic changes was in 41-50 years group. The number of female patients are significantly lower than the number of males. This is consistent with the observation of Srinivasan and Dharmendra that trophic changes are uncommon in children and young adults. The onset of reaction in relation to therapy ranged from 3 weeks to 12 months. The highest frequency of occurrence of type-I reaction was within 6 months of starting therapy and type-II reaction 7 to 12 months after starting therapy. 70% of patients in type-I reaction were in the BT spectrum and 30% were in Lepromatous spectrum. There was exacerbation of skin lesions and an increase in number of lesions in 90% of patients in type-I reaction. In 10% of patients however there was evidence of neuritis without any change in skin lesion. In one case of type-I reaction, the lesion on the face became grossly oedematous. Neuritis was associated with peripheral nerve tenderness or increase in neurologic deficit. In all patients with type-II reaction, evanescent, erythematous, dome shaped ENL lesions were present. One case developed steroid dependent ENL and was treated with thalidomide. Fever, malaise, joint pain, periosteal pain were present in all ENL cases. The routine urine and hematological examination did not reveal any abnormality in patients with type-I reaction. The ESR was raised in all type-II reaction. A fall in the Hb level occurred in all cases with type-II reaction. Leucocytosis was not observed in any of the cases.

One patient of BL in type-II reaction had neutrophilic infiltrates in the dermis extending to subcutaneous tissue. The time interval between onset of disease to the occurrence of trophic changes ranged from 4 months to 8 years in 15 patients, the highest frequency being in 4 to 6 years interval. The interval between onset of disease to appearance of trophic changes was greater in BL cases as compared to BT cases. This is consistent with the observation of Brycesson and Pfalzgraff that nerve involvement begins early and progresses rapidly near the tubercuoid pole. 40% of patients with trophic changes were in the bordering tubercuoid spectrum, 60% patients in the BL and LL spectrum. BB case were not seen as these cases are highly unstable.

## Conclusion

Reactional episodes tend to occur in relation to duration of therapy. Type I reaction occur most frequently within 6 months of starting therapy. Type II reaction occur most frequently 7 to 12 months after starting therapy. Clinical findings correlate well with histopathological findings according to the spectrum of leprosy and type of reaction. Trophic changes occur earlier in BT than in BL. Plantar ulcers tend to occur most frequently over 2<sup>nd</sup> metatarsal head. Paralytic clawing is associated with resorption of digits.

## References

1. Jopling Wh and Mc Dougall AC: *Hand book of Leprosy* 4<sup>th</sup> Ed. Heinemann professional Publishing 1988:83-90
2. Brycesson ADM and Pfalzgraff RE: *Leprosy* 3<sup>rd</sup> Ed. Churchill Livingstone. 1990: 137-139
3. Srinivasan H and Dharmendra: *Deformities in Leprosy*. In: Dharmendra, *Leprosy*. Kothari Medical Publishing House. 1978; 198-200
4. Thyangaraj RM and yawalkar S J: *Leprosy for Medical Practitioners and Paramedical workers* 4<sup>th</sup> Ed, Ciba Geigy. 1989:20
5. Lienhardt C and Fine PEM : *Type I Reaction ,neuritis and debility in leprosy,what is the current epidemiological situation?.Leprosy Review*. 1994;65:9-33.