Papers

Leprosy – a study of reactions in Sri Lanka

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Introduction

Leprosy reactions are an important cause of morbidity for the patients and a therapeutic challenge for the clinician[1,2]. Traditionally two types of reactions are described. Type 1 reactions, occurs throughout the spectrum of leprosy except at its polar extremes. Type 2 reactions (Erythema Nodosum Leprosum (ENL) reactions are restricted to Multi Bacillary (MB) leprosy. Type 1 reactions are said to occur early in the therapy and the type 2 reactions occur late[3]. No study of the reactions in leprosy has been reported from Sri Lanka.

It was therefore decided to do a retrospective analysis of the incidence, type, time of onset, clinical features, duration and sequele of leprosy reactions in patients treated at the central leprosy clinic (CLC), Colombo.

Methods

The records of all new patients attending the CLC during the calendar years of 1994 and 1995 were studied to note those patients who had developed lepra reactions. The age and sex of the patients, the type of leprosy, the duration of treatment prior to the development of the reaction, the duration of the reaction, the sequale of the reactions, recurrences and the final outcome of the treatment of leprosy and any disabilities were noted. All patients were treated with the multi-drug therapy of the WHO[4]. All patients had been followed up for a minimum period of one year.

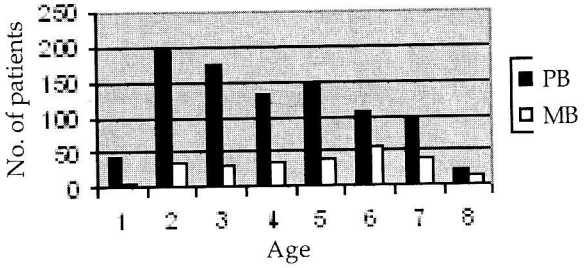
The type of leprosy was determined using clinical criteria and slit skin smear examinations. The types of reactions were ascertained mainly clinically but in some cases were confirmed by histopathology.

Results

There were a total of 1180 new patients at the CLC during the 2-year study period:

919 were pauci bacillary (PB) and 261 were Multibacillay (MB). The age range is from 4½ years to 81. Their age distribution is shown in table I. 529 patients (58%) with PB were below 40 years of age and 150 MB (58%) were above 40 years of age. There were 780 males (66%) and 400 females (34%).

Table 1. Age distribution of both PB and MB



There were 78 (6.6%) reactions among 1180 patients. The distribution of reaction by the type of leprosy is shown in table 2:

Table 2

Leprosy type	*Number of leprosy patients*	Number of reactions			*% of Reaction*
		Type 1	*Type 2*	*Mixed*	
TT	703	15	-	-	2.13
BT	216	13	-	-	6.01
BB	57	7	1	1	15.78
BL	122	23	4	3	24.6
LL	82	3	6	2	13.4

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Out of 78 reactions, 61 had type 1 (78% of all reactions), 11 (14.1%) were type 2 and 6 (7.6%) patients showed features of both type 1 and type 2 reactions simultaneously. There were only 28 (3.04%) reactions among PB (919) and rest of the 50 (19.16%) reactions were among MB (261) patients.

Reactions and Age – the distribution of reaction by age is shown in table 3.

Table 3

Type of reaction \ Age	0-10	10-20	20-30	30-40	40-50	50-60	60-70	>70
Type 1 PB	0	4	7	7	5	3	1	1
MB	2	3	6	4	1	9	6	2
Type 2	0	1	4	1	-	4	-	-
Type 3	0	2	1	1	-	1	1	-

Reactions vs sex

Of the 78 reactions studied 54 were males and 21 were females, a male to female ratio of 2.7:1. Among those with type 1 reaction 44 were males and 17 were females, a male to female ratio of 2.6:1. Of the 11 with ENL, 9 were males and 2 were females, a male to female ratio of 4.5:1. Out of 6 mixed reactions 4 were males and 2 were females, a male to female ratio of 2:1.

Timing of reaction

This was the period in which reaction occurred relative to the onset of multi drug therapy (MDT) – that is before, during or after MDT. Occurrence of reactions at time of onset is shown in table 4.

Table 4. Occurrence of reactional episodes by time of onset among 78 patients

Period	Type 1 in MB	Type 2 in MB	Type 3 in MB	Mixed type in MB
At registration	6	1	-	2
0-1 weeks	1	1	-	-
1-4 weeks	7	3	-	2
1-3 months	3	11	2	-
3-6 months	9	14	4	2
6-12 months	2	2	2	-
>12		1	3	-

Out of 78 reactions studied 9 (11.5%) had occurred before commencing treatment. Two reactions both type 1 occurred within the first week of therapy. Most reactions (94.8) occurred during the first 6 months of treatment. However the onset of four type 2 reactions did occur even after 12 months of therapy.

Duration of therapy for reactions – duration of therapy for reactions with regards to type of reactions is shown in table 5.

Table 5

Type of reaction / Duration of treatment	Type 1		Type 2	Mixed
	PB	MB	No of patient	No of patient
No information	7	4	3	2
Les than 1 month	4	4	-	-
1-3 months	7	9	5	2
3-6 months	9	12	-	1
>6 months	1	4	3	1

There were 8 patients with type 1 reaction who needed 1 to 4 weeks of therapy for reaction, 16 needed therapy for 1 to 3 months, 21 needed therapy for 3 to 6 months and 5 needed therapy for more than 6 months. Most patients with both type 2 and mixed reactions also needed MDT and other supportive therapy like systemic steroid only for a period less than 6 months.

Recurrence

Out of 28 PB patients with type 1 reaction, 7 patients had recurrences 2 to 8 months after the initial reaction. 7 out of 33 MB patients with type 1 reaction had recurrences and those occurred within 3 to 24 months of first reaction. 2 out of 11 patients with type 2 reactions also had recurrent episodes of type 2 reaction. One of them had 2 episodes of recurrent ENL.

Out of 6 patients with mixed reactional pattern three had recurrent episodes of reaction. One presented with the reaction had recurrence 1 month after initial episode. Out of the 3, 1 developed the recurrent episode 9 months after the initial episode: another patient had frequent relapses with greater auricular nerve abscess formation.

Sequale

Sequale in patients with type 1 reaction –

8 out of 28 PB patients with type 1 reactions developed sequale. Those are leg ulcer in 1 patient, ulnar claw in 4, foot drop in 1, wrist drop in 1 and facial nerve damage in 1 patient. 9 out of 33 MB patients with type 1 reactions developed sequalae. They were a wrist drop in one patient and ulnar claw hands in another 4, all of whom improved with physiotherapy and systemic steroids. Foot drop was seen in 4 patients and 2 of these required surgical corrective procedures later. Facial nerve palsy, and leg ulcers were the sequele noted.

Sequale among patients in type 2 reaction –

Among the 11 patients developing ENL reactions, non healing leg ulcers were seen in 2 patients, one of whom needed a toe amputation. Permanent loss of sensation was observed in usually the feet in 7 of the patients. Lagophthalmus was observed in 1 patient.

Sequale among patients in mixed reactional pattern –

Two patients developed nerve abscesses, which subsequently responded to steroids systemically.

Discussion

In line with other studies[1,5] our study also showed more number of PB (919) when compared to MB (261) patients and more male patients 780 compared to 400 females[1,4,5,6]. Age analysis of our patients also showed PB more among younger patients when compared to MB (table 1).

In this study 78 (6.6%) out of 1180 patients registered during study period in central leprosy clinic either presented or developed reactions during MDT.

Our study shows type 1 reaction was more common in BL – that is 19% (23 out of 122) with only 6.01% (13 out of 216) BT developed type 1 reactions. Becx-Bleumink et al[7] showed 21% BT and 43.6% of BL developed reactions during a 2 year follow up. This study shows ENL in 2.7% of BL and 11.1% of LL patients when compared to our study 3.7 % and 7.31% respectively. This study shows that the incidences of reactions are much higher than in our study. The lower incidence of reactions in our study may be due to the retrospective nature of our study. In our study 78% type 1 reactions and 14.1% type 2 reactions are different to figures in the ALERT study[7] where type 1 reaction were 59% of all reactions and 40.5% reactions were type 2. However other studies[2,5]

showed lower incidences of ENL than type 1 reactions.

Though their have been few reports of simultaneous type 1 and type 2 reactions in a patient with LL or a combined RR and ENL reaction in occasional case reports[3,7,8]. Type 1 reactions followed by type 2 reactions have been reported in 13 patients[9]. The simultaneous occurrence of type 1 and type 2 reactions have received little attention. We report 6 patients with this in this study. Our study shows type 1 reactions (78%) is much more common than type 2 reactions (14.1%) and mixed reactions (7.6%) are the least common type. But the number of mixed reactions are nearly half the number of ENL indicate that it also take an important place in Lepra reactions. They were all in the lepromatous end of the spectrum of leprosy.

There was a preponderance of males among those who developed all kind reactions including mixed reaction. Similar preponderance was seen in various other studies[5].

Of the reactional episodes 39 needed treatment only for a period less than 3 months, 24 needed for 3-6 months, 9 were on therapy for 6-12 months and 15 needed treatment for more than one year. Though some studies[2] have observed that BL patients needed a longer period of treatment with prednisolone for control of the reaction, our experience is that 60% reaction in BL needed therapy for less than 6 months and only 40% needed therapy for more than 6 months.

Analysis of both groups showed that of a total of 92 reactions 26 had frequent recurrences. The frequency of recurrent reactional episodes is comparable to some studies[5].

A substantial proportion of patients developed sequale in all groups. The majority was related to nerve involvement as in claw hands, foot drops and trophic ulcers occurring in damaged nerve distributions. Most of these sequale had good recovery with prednisolone, and the use of splints and physiotherapy.

Conclusion

PB leprosy is much more common than MB. More patients with MB developed reactions than PB. Reactions are more common in males as the leprosy is itself. Three types of lepra reactions can be identified. Those are type 1, type 2 and mixed reactions. Mixed reactions occur more commonly in sub polar LL (LLs) or BL patients. The occurrence of a simultaneous type 1 and type 2 reactions are not frequently reported. The frequency of reactional episodes, their timing with regard to the onset of treatment, the duration of therapy for cure of the reaction and the frequency of recurrences in a Sri Lankan cohort of patients is reported.

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