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Original Article

New Lesions after MDT in PB and MB Leprosy: A Report of 28 Cases

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Abstract

Appearance of new skin and/or nerve lesions during or after fixed duration of multi drug therapy (MDT), both in multibacillary (MB) and paucibacillary (PB) leprosy, is not uncommon. It could be a lesion due to reaction (type 1 or type 2), relapse due to multiplication of persisting or drug resistant bacilli or reinfection due to re-entry of lepra bacilli from outside. It is relatively easier to recognize the lesions due to classical reaction, both clinically and histopathologically. However, the differentiation could be difficult in other situations, especially when many of the relapse cases may present with features of reaction at the onset. Similarly, sometimes in late reversal reaction in addition to development of classical acute inflammation of old lesions, many of the patients developed multiple fresh new lesions without any sign of inflammation.

We report a study of group of 28 relapsed leprosy cases, who developed new skin and/or nerve lesions at greatly varying time intervals (3 months to 22 years) after stopping MDT. Of these 28 patients, 11 were MB (1 LL,6 BL and 4 BB) and 17 were PB (12 BT, 4 TT and 1 Neuritic) at their first treatment. They reported to the Urban Leprosy Center (ULC) of Dr R M L Hospital during the period of 5 years (2002-2007). All patients came through self referral, 13 of them (46.4%) had received MDT outside our hospital (regular in 11 cases and irregular in 2 cases, as per the patient's statement), while the rest 15 had received full MDT regularly from our center (irregular in 1 case). All previously 11 MB cases developed new skin lesions of MB type (1 LL to LL, 3 BL to LL, 3 BL to BL, 1 BB to BL and 3 BB to BB). Of the 17 cases PB at their first treatment, 16 developed new lesions of PB type. Out of 4 TT cases, 1 had new lesions of TT, 1 BT and 2 LRR type lesions. Of the 12 BT cases at first presentation, 9 had BT, 1 secondary neuritic and 1 presented as LRR, while 1 BT case had new lesions of BL type. The one pure neuritic leprosy case presented as neuritic case only, after an interval of over 20 years. The post-MDT intervals of appearance of new lesions were 3-6 months in 5 cases (Group A), 8-30 months in 13 cases (Group B), from 3-10 years in 4 cases (Group C) and 15-22 years in 6 cases (Group D). All patients were successfully treated with a second course of MDT, as per the spectrum of the disease according to the number of fresh lesions.

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The likely cause of new lesions in group A (<6 months interval) could be either (1) mild type 1 reaction or (2) early relapse due to inadequate MDT. Similarly, the new lesions appearing in group B (0.5-3 years) could also represent mild type 1 reaction following improvement of CMI or a true early relapse. The possible causes of early relapse may be because of original misclassification or inadequate chemotherapy / irregular treatment or insufficient duration of therapy. In group C (3-10 years), the cause would most probably be late relapse, the possible causes of late relapse is either due to drug resistance and *M. leprae* persisters. When the time interval goes beyond 10 years (Group D), as in 6 of our cases, the possibility of reinfection can not be excluded besides causes of late relapse, since this period is usually considered equivalent to the maximum incubation period of lepra bacilli.

In lepromatous leprosy, where the specific CMI against *M. leprae* is highly compromised, there is always a possibility of reinfection as long as the source of infection persists in the community and in such cases immunotherapy would be highly beneficial for prevention of reinfection. The post MDT time interval, lepromin test or drug resistance study both *in vitro* and *in vivo* may provide some clue to the mechanism responsible. All doubtful cases of new lesions with clinical presentation of type 1 reaction were diagnosed as relapse, through the therapeutic trial with oral prednisolone for 4-6 weeks and other cases. All cases with new lesions were treated with a second course of MDT (MB or PB) as per classification of new lesions.

Key words: Lesions, Prednisolone, MDT, Leprosy

Introduction

In post RFT period, the skin lesions remain active to a variable period of time depending on the spectrum of the leprosy. However, appearance of new lesions after release from therapy (RFT), either cutaneous and / or neural, both in MB and PH leprosy, indicates a case with one of following situations : (1) relapse (2) reaction or (3) reinfection. Relapse is a common term, used very often, and it may sometimes be very difficult to differentiate between these three conditions, either clinically or with all laboratory parameters available at present. Relapse may sometime occur in the form of reaction (either late reversal reaction- LRR or ENL) when the lesions do not improve clinically with 4-6 weeks treatment with adequate dose of oral steroids.

Materials and Methods

The Urban Leprosy Center (ULC) attached to the Department of Dermatology of Dr RML Hospital receives patients from Delhi and the neighboring states like UP, Bihar, from where every year a large number of people migrate to Delhi for reasons of livelihood. The usual mode of reporting at our center by the patients is through self referral. In this retrospective study of a 5 years period (2002-2007), a cohort of 28 relapse cases reported with development of new skin lesions, after having taken MDT earlier, by varying time periods (from 6 months to 22 years). Of these 28 patients, 13 had taken their MDT outside our hospital and 15 from our ULC. The records of all later cases were retrieved from hospital archives while in the former group the details were recorded as per history elucidated by the patients and from the health records. The patients were examined on clinical, bacteriological and histopathological criteria for confirmation of diagnosis of relapse. The history was elicited from patients for exclusion of cases with any co-morbid conditions like acute illness, pregnancy which could have lead to reactional episodes. The drug resistance

studies *in vivo* and *in vitro* were not performed due to lack of facility at our center. All new lesions suspected due to LRR were given a course of oral prednisolone for 4-6 weeks. All those who did not show response to oral steroids were taken as relapse and included in this study and restarted with MDT.

Results

The details of the patients with respect to age, sex, leprosy types in the two stages of affliction, type and duration (with state of regularity) of MDT and the time interval after stoppage of MDT till appearance of new lesions, are given in Table 1.

Patient profile

In the 28 cases (23 males, 5 females), the mean age was 33.6 years (range 15-52 years), 11 patients had MB (1 LL, 6 BL and 4 BB type) and 17 had PB leprosy (4 TT, 12 BT and 1 pure neuritic type) at their first affliction with the disease.

Treatment history

Of the 28 cases, the MDT compliance was satisfactory in 24 cases with completion of minimum 6 pulses of PBMDT in 9 months, and 12 pulses of MBMDT in 18 months as per the applicable regimes. One case had received single dose treatment with rifampicin, of loxacin and minocycline (ROM) for the single lesion. In rest of the 3 cases (all MB) however, the treatment was not regular, as per the patients statements, although 2 had taken 12 pulses MBMDT and 1 patient took 11 pulses MBMDT, but with intervals of months in between the pulses, beyond the admissible period of WHO MDT regime to define regular treatment.

Time interval of appearance of new lesions after stoppage of MDT (Table 2)

The time intervals elapsed between stoppage of MDT and appearance of new lesions varied to a great extent. In our series of patients, these were 3-6 months in 5 cases (Group A), 8-30 months in 13 cases (Group B), from 3-8 years in 4 cases (Group C) and 15-22 years in 6 cases (Group D). However, to make a generalized statement of time frame, the reasonable time interval in the four groups could be <6 months, 0.5-3 years, 3-10 years and > 10 years in the Groups A, B, C and 0 respectively.

Type of new lesions (Table 3)

Of the 28 cases (11 MB and 17 PB at first treatment), all 11 MB cases developed new skin lesions of MB type (1 LL to LL, 3 BL toLL, 3 BL to BL, 1 BB to BL and 3 BB to BB). Out of 3 BL cases who relapsed with LL lesions, one of them presented with ENL reaction also.

Of the 17 cases diagnosed as PB at their first treatment, 16 developed new lesions of PB type. Out of 4 TT cases, 1 had new lesions of TT, 3 of BT (of which 2 presented as LRR) type lesions. Of the 12 BT cases at first presentation, 10 had BT (of which 1 presented as LRR), 1 as secondary neuritic case while 1 BT case had new lesions of BL type. All 3 cases presenting as LRR were administered oral prednisolone for a period of 4 weeks with no clinical improvement of the lesions. Therefore they were put under relapse cases and restarted on MDT. All relapsed BL-LL cases were diagnosed as relapse after slit skin smear examination with more than 2+ BI at any site than that after RFT.

The one pure neuritic leprosy case presented (as an active neuritic case only) after an interval of over 20 years with evidence of thickening of the nerve and increase in area of sensory loss in the skin and bilateral claw hands (discussed below).

Likely causes for new lesions development: An analysis of hypothetical possibilities (Table 4)

Based on analysis of the each individual case regarding type of initial leprosy, type

Table 1 : Details of patients, their treatment and outcome

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	0	P	Q	R	S	T	U
Group	Code	Age	Sex	1st L	Type	Time	MDT Ty	Place	Puls	Regularity	Intervel	2nd type	BI	New	Neur	Rxn	2nd MDT	Pulses	Outcome	Inference (Possible cause)	Comment on First MDT received
D	R-28	48	M	MB	LL	1985	MBMDT	Outside	36	Regular	22.00	LL	3	Yes	No	No	MBMDT	6	Clearance	Reinfection	Full course Inadequate (MBMDT 36 months)
	R-23	40	F	MB	BL	1985	MBMDT	RML	16	Reguler	22.00	LL	5	Yes	No	ENL	MBMDT	12	Clearance	Reinfection	Full course Inadequete (MBMDT 12 months)
	R-01	50	M	MB	BL	1960	MBMDT	RML	36	Reguler	21.00	LL	6	Yes	No	No	MBMDT	12	Clearance	Reinfection	Full course Inadequate (MBMDT 36 months)
	R-26	45	M	PB	Neuritic	1985	PBMDT	RML	16	Reguler	21.00	Neuritl	0	No	Yes	No	MBMDT	12	Clearance	Relapse (Persisters)	Full course Inadequate (PBMDT 16 months)
	R-15	49	M	PB	BT	1985	PBMDT	Outside	6	Reguler	18.00	BT	0	No	No	No	PBMDT	12	Clearance	Reinfection	Full course Inedequate (PBMDT 6 months)
	R-27	22	F	MB	BB	1992	MBMDT	Outside	24	Reguler	15.00	BL	3	Yes	No	No	MBMDT	12	Clearance	Reinfection	Full course Inedequate (MBMDT 24 months)
C	R-19	25	M	PB	BT	1996	PBMDT	RML	6	Reguler	8.00	BT	0	No	No	No	MBMDT	12	Clearance	Relapse (D R/ Misclessificetion)	Full course Inadequate (PBMDT 6 months)
	R-17	45	M	PB	BT	1985	PBMDT	Outside	6	Reguler	5.00	BL	3	Yes	No	No	MBMOT	20	Clearance	Relapse (D R/ Misclessificetion)	Full course Inadequate (PBMDT 6 months)
	R-25	34	M	PB	BT	2001	MBMDT	RML	12	Reguler	5.00	BT	0	Yes	Yes	No	MBMOT	12	Clearance	Relapse (Persisters	Full course Inadequete (MBMDT 12 months)
	R-21	15	F	PB	BT	1993	PBMDT	Outside	12	Reguler	3.00	BT	0	Yes	No	No	PBMOT	16	Clearance	Relepse (Persisters)	Full course Inedequete (PBMDT 12 months)
B	R-12	22	M	PB	BT	1992	PBMDT	RML	12	Reguler	2.50	BT	0	Yes	No	LRR	ROM	1	Clearance	Relapse (Persisters) (LRR)	Full course Inadequete (PBMDT 12 months)
	R-14	35	F	PB	TTs	2001	PBMDT	Outside	12	Regular	2.00	BT	0	No	No	LRR	PBMDT	1	Defeulted	Relapse (Persisters) (LRR)	Full course Inadequete (PBMDT 12 months)
	R-24	52	M	PB	TT	2003	MBMDT	RML	12	Reguler	2.00	BT	0	Yes	Yes	LRR	MBMDT	12	Clearance	Relapse (Persisters) (LRR)	Full course Inadequete (MBMDT 12 months)
	R-13	30	M	PB	BT	2000	PBMDT	Outside	12	Reguler	2.00	BT	0	Yes	No	No	PBMDT	6	Clearance	Relapse (Persisters)	Full course Inedequete (PBMDT 12 months)
	R-22	28	M	PB	BT	2001	PBMDT	Outside	6	Reguler	2.00	Neuritl	0	No	Yes	No	MBMDT	6	Clearance	Relapse (D R/ MisclessifIC8tion)	Full course Inedequate (PBMDT 6 months)
	R-05	31	M	MB	BL	1999	MBMDT	Outside	12	Irreguler	1.00	BL	2	Yes	No	No	MBMDT	1	Defeulted	Poor patient compilence	Poor patient compliance
	R-06	27	F	MB	BL	2000	MBMDT	Outside	24	Reguler	1.00	BL	1	Yes	No	No	MBMDT	12	Clearance	Relapse (Persisters)	Full course Inedequate (MBMDT 12 months)
	R-03	31	M	MB	BB	2002	MBMDT	Outside	12	Irreguler	1.00	BB	2	Yes	No	No	MBMDT	2	Defaulted	Poor patient compilence	Poor patient compliance
	R-10	19	M	PB	BT	2001	ROM	Outside	6	Reguler	1.00	BT	0	Yes	No	No	PBMDT	3	Defaulted	Relapse (Persisters)	Full course Inedequate (ROM 6 months)
	R-16	22	M	PB	BT	2003	PBMDT	RML	6	Reguler	0.83	BT	0	Yes	No	No	MBMDT	12	Clearance	Relapse (D R/ Misclessification)	Full course Inedequete (PBMOT 6 months)
	R-07	40	M	MB	BL->LL	2000	MBMDT	RML	11	Irreguler	0.75	LL	2	Yes	No	iNo	MBMDT	1	Defaulted	Poor patient compilence	Poor petient compilence
	R-20	18	M	PB	BT	2004	PBMDT	RML	6	Reguler	0.75	BT	2	Yes	No	No	MBMDT	12	Clearance	Relapse (D R/ Misclessification)	Full course Inedequete (PBMOT 6 months)
	R-08	37	M	MB	BB->BL	2001	MBMDT	RML	12	Reguler	0.67	BB	0	Yes	No	No	MBMDT	12	Clearance	Relapse (Persisters)	Full course Inedequete (MBMOT 12 months)
A	R-18	20	M	PB	BT	2003	PBMDT	RML	6	Reguler	0.50	BT	0	Yes	No	'No	MBMDT	7	Clearance	Relapse (D R/ Misclessification)	Full course Inedequete (PBMOT 6 months)
	R-02	22	M	MB	BB	2002	MBMDT	RML	12	Reguler	0.42	BB	1	Yes	Yes	No	MBMDT	12	Clearance	Relapse (Persisters)	Full course Inedequete (MBMOT 12 months)
	R-09	30	M	PB	TT	2002	PBMDT	RML	9	Reguler	0.42	BT	0	Yes	No	No	MBMDT	12	Clearance	Relapse (D R/ Misclessification)	Full course Inedequete (PBMOT 9 months)
	R-11	15	M	PB	TT	1997	PBMDT	RML	6	Reguler	0.42	TT	0	Yes	No	No	MBMDT	6	Clearance	Relapse (D R/ Misclassification)	Full course Inedequete (PBMDT 6 months)
	R-04	12	M	MB	BL	2002	MBMOT	Outside	12	Reguler	0.25	BL	1	Yes	No	No	MBMDT	12	Clearance	Immune Upgradation	Difficult to Analyze

GUIDE TO TABLE COLUMNS

A	Pt's Code No.	I	No. of Pulses teken	O	Neuritis
D	First Leprosy Type	K	Time interval (Years) after RFT	O	Reaction
E	First Leprosy Classification	L	Second Leprosy Classification (Histopath)	LRR	Late Reversal Reaction
F	Time at First Leprosy	M	Baetriological Index at Second Leprosy	D R	Drug Resistence
H	Place of First Treatmentl	N	New Lesions (Skin)		

Table 2 : Break-up of time periods between RFT and appearance of new lesions in our series of patients

Old leprosy type (No.)		Time period in our series of patients			
		3-6 months	8-30 months	3-8 yrs	15-22 yrs
		Reasonably generalized time frame			
		<6 months	0.5-3 years	3-10 years	> 10 years
LL	1				1
BL	6	1	3		2
BB	4	1	2		1
BT	12	1	6	4	1
IT	4	2	2		
Neuritic	1				1
Total	**28**	**5**	**13**	**4**	**6**

Table 3 : Classification of old and new leprosy lesions types

Old lesion classification		New lesions classification					
Type	**No.**	**LL**	**BL**	**BB**	**BT**	**TT**	**Neuritic**
LL	I	1					
BL	6	3	3				
BB	4		1	3			
BT	12		1		9+1*		1
IT	4				1+2*	1	
Neuritic	1						1
Total	**28**	**4**	**5**	**3**	**10+3***	**1**	**2**

*BT Cases who relapsed in the form of late reversal reaction (LRR)

Table 4 : Likely causes behind appearance of new lesions (hypothetical possibilities)

Old leprosy type (No.)		Inadequate (Irregular) treatment	Adequate regular treatment			
			Relapse (Persisters)	Re-infection	Relapse (Drug resistance/ misclassification)	Immune upgradation
LL	1			1		
BL	6	2	1	2		1
BB	4	I	3			
BT	12		6	1	5	
IT	4		2		2	
Neuritic	1		1			
Total	**28**	**3**	**13**	**4**	**7**	**1**

and adequacy of MDT received, type of new lesions at second affliction and the time interval between the two afflictions, we have tried to deduce the likely possible cause of new lesions appearing after first MDT treatment.

As mentioned in Table 1 and summarized in Table 4, among the 5 patients in Group A, 3 had taken adequate PBMDT and presented with new hypopigmented lesions within 6 months after RFT. The lesions did not show any reactional feature (like infiltration, erythema and tenderness). The cases were diagnosed as per histopathological evaluation of new lesions and put on MBMDT. In two of these cases (R-11 and R-18) new lesions cleared with 6-7 months of treatment and after 12 months in the third case (R-09). The other 2 cases in this group were of BB and BL at first affliction, taken adequate MBMDT, one had only new skin lesions (R-04) and the other (R-02) had neuritis (Rt. Ulnar nerve) in addition to skin lesions. The former was started with MBMDT and the later was given a course of oral steroids (Prednisolone 1 mg/kg as starting dose followed by gradual tapering) for 12 weeks in addition to MBMDT. This treatment led to subsidence of neural pain but without any change in the morphology of new skin lesions, the later cleared after 12 months of MDT treatment. The likely mechanism in R-02 could be relapse due to multiplication of persisters as the new lesions appeared after 6 months after RFT while in case number R-04, it could be immune upgradation as the lesions (without any reactional features) appeared barely 3 months following completion of first MBMDT as bacterial multiplication from persisters is unlikely within 3 months time. However, the patient was administered a second course of MBMDT to deal with the possible early relapse in view of smear positive status of the patient.

In Group B (presenting with new lesions after 8-30 months after RFT, the early relapse) out of 13 patients, 3 had taken inadequate treatment as per WHO definition of adequate MDT, so we have designated these new lesions occurring as a result of poor patient compliance (R-03, R-05 and R-07). Of other 10 patients, 3 had new lesions with reactional features (R-12, R-14 and R-24) and were given a course of oral steroids for 6 weeks during which the lesions did not show any signs of subsidence. These cases were treated as relapse presenting as late reversal reaction (LRR) and started on MBMDT. The lesions improved in 2 cases while the third (R-14) defaulted the treatment. Among 7 other cases in the Group B, 6 had new skin lesions while 1 had pure neuritic lesion (R-22) in the second affliction. In these 7 cases, we have identified two subgroups of 4 patients (R -13, R -06, R -10 and R -08) who responded to the similar MDT regime as that of first treatment. In this subgroup, the new lesions are likely to be due to multiplication of persister bacilli after first treatment. In the other subgroup of 3 patients (R-22, R-16 and R-20), the likely cause of new lesions is either drug resistance or misclassification at first treatment. This proposition is based on the fact that they had received PBMDT at the first treatment and subsequently developed new skin lesions which responded well to second course with MBMDT.

In Group C (patients presenting with new lesions 3-8 years after RFT, the late relapse) there are 4 cases of which 2 cases (R-21 and R-25) are likely to have new lesions due to persister bacilli multiplication after release from first treatment and responding to the same MDT regimen subsequently. The other two (R -17 and R -19) could possibly be cases of drug resistance or original misclassification. Both had received PBMDT at first treatment and later responded to MBMDT at second treatment. We would like

to mention about distinct possibility of drug resistance in case R-17, this patient received dapsone monotherapy for 2 years in 1985, subsequently got PBMDT for 6 pulses and again developed new skin lesions 5 years later.

In Group D (patients presenting with new lesions at 15-22 years after RFT), the likely cause for new lesions could be either multiplication of persisters or reinfection as this time interval is beyond the generally considered average incubation period (3-5 years) of *M. leprae*. The possibility of multiplication of persisters could not be excluded due to evidence of maximum incubation period beyond 30 years reported by some authors (Lewis et al 2008).

Discussion

We have made an attempt to review each case and tried to find out the possible cause for appearance of new lesions after stoppage of MDT. Based on our experience in this study, some suggestions have been put forward regarding management of patients under such situations.

Relapse in leprosy is defined as "re-occurrence of the disease at any time after the completion of a full course of MDT". Relapse is indicated by the appearance of new skin lesions and, in the case of an MB relapse, by evidence on a skin smear of an increase in BI of 2 or more units at any site. However, MB relapses should be investigated by using skin smears and histopathology (WHO 2006).

The different possible causes/modes of relapses in our series of patients can be listed broadly as follows:

1. A. Relapse after inadequate MDT

i. Misclassification of the case at first diagnosis.

ii. High initial BI cases where MDT is stopped after fixed 12 months duration.

iii. Poor patient compliance.

B. Relapse after adequate MDT

i. Multiplication of persister bacilli.

ii. Drug resistance

a. Primary: infection of patient by resistant lepra bacilli,

b. Secondary: acquisition of resistance by lepra bacilli as a result of inadequate treatment due to

i. Dapsone monotherapy (in earlier times) or

ii. Two drug therapy (Dapsone and Rifampicin) with lepra bacilli already resistant to one drug.

iii. Poor patient compliance.

2. Relapse in the form of late reversal reaction.

3. Relapse due to reinfection.

1. New lesions of relapse without features of reaction

The relapse in the form of new lesions without any reactional features is a possibility due to multiplication of persister viable bacilli remaining in the body for any length of time. The persister bacilli may result as matter of situations of (a) high initial BI case when MDT is stopped after a fixed duration (l or 2 years) under circumstances of patient still being smear positive with considerable bacterial load at RFT or (b) misclassification when a patient gets PBMDT instead of MBMDT. The last point of 'misclassification' gains importance that allocation of patients to PB or MB MDT group based on number of skin / nerve lesions could be subjected to error in absence in absence of slit-skin smear examination. Many PBMDT treated patients could become victims of under treatment as they could have been

allotted to MBMDT group had the smear examination report was available. The chances of relapse have been shown to be higher when MDT has stopped after a fixed duration of 1-2 years as compared to those who were continued with MDT till smear negativity (Girdhar et al 2000).

2. New lesions of relapse in the form of reactions

New lesions may present as type 1 (LRR) or type 2 (ENL) reactional lesions after a variable period of RFT with adequate MDT. The new lesions of leprosy reactions usually appear in a period of up to 6 months but may sometimes be noted 2-3 years later also. It is difficult to be certain that a relapse has occurred. PB relapses are difficult to differentiate from late reversal reaction. The usual practice of dealing with such lesions is to give a course of adequate dose of oral steroids for 4-6 weeks during which the lesions either resolve or show some signs of subsidence evident by decrease in infiltration/erythema. The steroids may be continued under such situation till complete subsidence of the lesions. However, if the lesions do not show any regression following oral steroids for 4-6 weeks period, the case should be considered as relapse presenting in the form of reaction and MBMDT must be restarted for another course and oral steroids continued till complete subsidence of reactional features in the lesions. The case R-23 who presented with ENL after an interval of 22 years after RFT was diagnosed as a case of relapse on the basis of high BI (5+).

3. New lesions of relapse due to reinfection

Reinfection with exogenous *M. leprae* is possible as long as the source of infection is persisting in the community. Theoretically, adequately treated (inactive) LL cases may continue to remain susceptible to develop new leprosy lesion due to reinfection, since they remain immuno-compromised (anergic) even after attaining complete inactive clinical and bacteriological status. In such types of cases, the use of anti-leprosy vaccines would be useful which can impart protection against reinfection for a period of 6-8 years after RFT as shown by protection level of around 60% after a period of 6 years after administration of 2 doses of Mw vaccine to household contacts of leprosy patients in field trials of Kanpur (Sharma et al 2005). Reinfection may be suspected when PB or MB leprosy develops after a period beyond maximum incubation period, 15-20 years, after RFT. One case (R-26) listed in the reinfection needs special mention. He presented (at second affliction) with bilateral claw hands and neuritis (thickening and tenderness) of Rt. and Lt. Ulnar nerves (only nerve lesions, no skin lesion). Interestingly, he had presented with the same neural lesions (as of second affliction) 21 years earlier also and received 16 pulses of PBMDT. At that time, he had complete recovery of both motor and sensory impairments and was fully functional from his temporary disabilities for about 20 years after MDT and physiotherapy. The likely cause of recurrence in this case of pure neuritic leprosy at the same site after such a long interval, can not be explained due to reinfection. More likely, it could be due to presence of dormant viable persister lepra bacilli remaining in the nerve for 20 years and again causing the manifest disease.

Conclusions and Suggestions

1. After RFT, the patient (and his family attendants) should be counseled to report early if they notice (a) any new skin lesions or a change in the appearance of existing lesions (b) any neural lesions manifested by neural pain or any fresh areas of sensory loss or extension of any existing area of sensory loss (c) motor weakness in hands or feet.

2. Serious consideration should be given to the issue of using uniform MDT (UMDT i.e. MBMDT to be used for both PB and MB leprosy patients which is under evaluation in clinical trials by WHO. UMDT will also take care of any possible error of wrong classification of patient before starting MDT on account of smear positivity under field conditions, since the skin smear facilities at peripheral level are minimal.
3. MDT should be continued in high BI cases (81 > 4+) till smear negativity or at least for 2 years.
4. Immunotherapy may be considered for highly bacilliferous patients during and after MDT.
5. All patients considered for a second course of MDT should be administered MBMDT in order to kill the possibly resistant lepra bacilli (as a result of first administration of PBMDT).

References

1. Girdhar BK, Girdhar A and Kumar A (2000). Relapses in multibacillary leprosy patients: effect of length of therapy. *Lepr Rev*. **71**: 144-153.
2. Lewis FL, Conologue T and Harrop E (2008). Leprosy (Barrett TL, Wells MJ, Libow LF et al, Eds), http://www.emedicine.com/derm/topic223.htm.
3. Sharma P, Mukherjee R, Talwar GP et al (2005). Immunoprophylactic effects of the anti-leprosy Mw vaccine in household contacts of leprosy patients: clinical field trials with a follow up of 8-10 years. *Lepr Rev*. **76**: 127-143.
4. World Health Organization (2006). Global strategy for further reducing leprosy burden and sustaining leprosy control activities (2006-2010): operational guidelines. WHO, Geneva, WHO/SEA/GLP/2006.2, pp 28.