Journal of Pharmaceutical and Biological Research

Journal Home Page: www.pharmaresearchlibrary.com/jpbr

Research Article Open Access

A Review on Leprosy Multi Drug Therapy and Eradication Program

K. Yitzhak*, P. Venugopalaiah, M. Gobinath.

Ratnam Institute of Pharmacy, Pidathapolur, Muthukur (M), Nellore, Andhra Pradesh, India-524346.

A B S T R A C T

In 1985, the prevalence rate of leprosy in the country was 39 per 10,000. In 2002, the prevalence rate of leprosy in the country was 39 per 10,000. In 2002, the prevalence has come down to 4.2 per 10,000. Elimination is defined as the status when the prevalence falls below 1.0 per 10,000. In most patients, the presence of dead bacilli in the skin and other tissues seems to be pathogenically insignificant and the dead organisms are gradually cleared away by the body's phagocytic system. Multi Drug Therapy is a major advance in the control of Leprosy to reduce the incidence of drug resistance and Duration of therapy In 1971 Multi-drug therapy (MDT) was introduced.

Keywords: MDT, Leprosy, Phagocytic, Dead Bacilli.

A R T I C L E I N F O

CONTENTS

1. Introduction 308
2. Advantages. 309
3. Disadvantages. 309
4. Conclusion 310
5. References 310

Article History: Received 20 October 2015, **Accepted** 25 November 2015, **Available Online** 21 December 2015

***Corresponding Author**
K. Yitzhak
Ratnam Institute of Pharmacy,
Pidathapolur, Muthukur (M),
Nellore, A. P, India-524346.
Manuscript ID: JPBR2572

PAPER-QR CODE

Citation: K. Yitzhak, *et al.* A Review on Leprosy Multi Drug Therapy and Eradication Program. *J. Pharm. Bio. Res.*, 2015, 3(2): 308-310.

Copyright© 2015 K. Yitzhak, *et al.* This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

1. Introduction

Leprosy is an ancient disease that has been experienced around the world in diverse settings and has commonly been associated with poverty, nearly 3-Decades ago, nearly in 1985; Leprosy was a disease is most prevalent in more than 122 countries, whereas in 2013, only 16 countries reported more than 1000 cases annually. Early detection of cases, multidrug therapy (MDT) was registered by the national leprosy programme. The treatment of leprosy has been changed since the days of the chaulmoogra oil. In the New era management of leprosy was started with the synthesis of Dapsone in 1908's. The newer drugs like amino glycosides, dyes, macrolides, rifamycins, enzyme inhibitors, quinolones and immuno-modulators were also included in the treatment of leprosy. To reduce the

incidence of drug resistance and Duration of therapy In 1971 Multi-drug therapy (MDT) was introduced. If the drugs were given as fixed dose combinations, the patient compliance will be better. Though effective drugs are available, one of the problems to the management of leprosy has been that some clinicians have advocated the use of fixed dose combinations in leprosy management. With the discovery of sulphonamides, a new era began of antibiotic therapy and leprosy got its benefit. Promin was the first sulphone shown to be effective on *M leprae* in 1943 and this discovery initiated successful chemotherapy of leprosy.

A fixed dose combination (FDC):

The WHO recommended 2 years for treatment with MDT for multibacillary patients and 6-month therapy for paucibacillary patients. Drug refers to the combination of drugs in a single pharmaceutical formulation. When different drugs are given separately to obtain increased therapeutic range. It should not be confused with the Fixed Duration Therapy.

2. Advantages

Convenience with improved patient compliance:

Separate intake of the individual components of the combination would be too much to ask of the patient with mutilated hands who would be unable to take the tablets out of the blister packs. Especially when two or more drugs are given at a constant dose on a long-term basis. The fewer the tablets that the patient has to take the more reliably, especially in the elderly patients who as a group tend to receive more drugs because they have multiple pathology.

Enhanced effect:

Combining Isoniazid with Prothionamide and Dapsone ensures that single treatment cannot occur; causing a delay in the incidence of drug resistance and clinical improvement treatment has to be with all or none of the drugs.

Minimisation of unwanted effects*:* Drug can be reduced and drug synergism can be demonstrated. Because the drugs are given in a fixed dose combination

3. Disadvantages

In a fixed dose combination the dose of one drug cannot be decreased without lowering the dose of the other constituent drugs in the preparation. Individualization of therapy becomes s difficult. For example, it is impossible to be administer, in a appropriate dosage for children, since Rifampicin and Isoniazid arepresent in Rimactazid. In a ratio which, Rimactazid is not suitable for paediatric use. The same would apply for Isoprodian and Isoprodian-RMP. Dapsone can decrease the anti-inflammatory effect of Clofazimine. Co-administration of clofazimine with Isoniazid may decrease the skin con-centration of clofazimine, where as Concomittant administration of Clofazimine with Rifampicin may decrease the absorption of Rifampicin. In the case of drug resistance, it would be difficult to determine to which drug the resistance was developed in-patient. The viability of *M. leprae* in the skin and peripheral nerves even after 2 years MDT in multibacillary patients has been reported.

Fixed dose combinations tried in the management of leprosy

Dapsomine:

This may be expected to make compliance better in multidrug leprosy as it contains Dapsone 100 mg + Clofazimine 100 mg. However, in patients in whom clofazimine is used to treat Type II reactions, a high dose of dapsone could be antagonistic.

Cotrifazide:

During 1988, 80 to 90% of patients treated with this combination showed clinical cure within a two month period. This contains Rifampicin I 15 mg + Cotrimoxazole 320 mg +Isoniazid 80 mg.

Hydnosulfone:

it is a fixed dose combination of hydnocarpus extract with dapsone, it was administered as an injection, but compliance was poor as it was extremely painful. Over the last decade other fixed dose combinations Combination of Rifampicin 150 mg + Isoniazid 87.5 mg + Dapsone 50 mg + Otloxacin 150 mg has been quite effective. It is suggested that Ol'loxacin a fluorinated quinolone drug, can even replace Prothionamide.

Isoprodian:

This contains Isoniazid Prothionamide + Dapsone. The role of Isoniazid is questionable because it is claimed to be ineffective, if not harmful, in leprosy. Isoprodian + Rifampicin has also been tried in few centres. The addition of Rifampicin is synergistic with Isoniazid.

The schedule of multi drug therapy (MDT) for adults is as follows: In 1985, the prevalence rate of leprosy in the country was 39 per 10,000. In 2002, the prevalence rate of leprosy in the country was 39 per 10,000. In 2002, the prevalence has come down to 4.2 per 10,000. Elimination is defined as the status when the prevalence falls below 1.0 per 10,000. In India, many of the states have a prevalence of 2.5 to 3.5 per 10,000. In these states, elimination could be achieved by the year 2005, the target date fixed by the Government. In 6 states, prevalence is well above 4. These states are – Jharkhand (13), Bihar (11), Chattisgarh (11), Orissa (9), Uttar Pradesh (5), West Bengal (4). It will take a longer time to achieve elimination in these states.

Table 1: Duration of therapy

Drug	Supervised dose	Frequency	Unsupervised dose	Frequency
MB Leprosy				
Rifampicin	600 mg	Once a month	----	
Clofazimine	300 mg	Once a month	50 mg	Daily
Dapsone	100 mg	Once a month	100 mg	Daily
PB Leprosy				

Rifampicin	600 mg	Once a month	--	--
Dapsone	100 mg	Once a month	100 mg	Daily

MB leprosy - 12 monthly pulses in 18 months.
PB leprosy - 6 monthly pulses in 9 months.
MB - multibacillary; PB – Paucibacillary

4. Conclusion

We must not forget that we still have not broken the riddle of the lepra bacillus. Though the lepra bacillus was the first microbe to be identified, it has posed a challenge to researchers. We cannot afford to fan the fantasies of pharmaceutical industries or the fancies of the clinician.

5. References

[1] Job CK, Jayakumar J, Aschoff M, Mathati MM. Viability of Mycobacterium leprae in skin and peripheral nerves and persistence of nerve destruction in multibacillary patients after 2 years of multidrug therapy. bu. JI. UP/: 1996;64(1) :44-50.

[2] Alverenga A, Lequizamori D, Ballestrom Wv. On the necessity of alternative therapies for the treatment of leprosy. Int.Jl Lepr.1993, lnt.Lepr: Congr. Abstr, CH 59, p14A.

[3] Schettini APM, Ribas J, Bessa PF, et al. Leprosy and AIDS in. the Amazon Basin. Int. Jl. Lepr: 1996; 64(2): 171 -173.

[4] Lechat M F Discussion on Eliminating Leprosy as a PublicHealth Problem. World Health-Forum, 1996; 17(2): 139-142.

[5] Noordeen SK, ELiminating leprosy as a public health problem: why the optimism is justified (Editorial). Int. It. Lepr.1995;63(4): 559-556.

[6] DR. S. T. OOMMEN, Advantages and disadvantages of fixed dose combinations in the treatment of leprosy The Gulf Journal of dermatologyVolume 6. No.1. April 1999.

[7] Pettit JHS, Rees RJW. Sulphone resistance in leprosy, an experimental and clinical study, Lancet 1964; 2:673.

[8] DGHS (Govt. of India) Leprosy Division (1992) Status Report 12.

[9] DGHS (Govt. of India) Leprosy Division (1992) Facts and figures 1-3.

[10] DGHS (Govt. of India) Leprosy Division (2001) Mini MDT Guidelines 11-5.

[11] Desikan KV. Therapeutic strategies in management of leprosy, Progress in clinical Neurosciences. Neur Soc Ind 2001;16:101- 5.

[12] Bhattacharya SN, Sehgal VN. Reappraisal of the drifting scenario of leprosy multi-drug therapy: new approachproposed for the new millennium. Int JDermatol 2002; 41 : 321-6.

[13] Becx-Bleumink M. Duration of multi-drug therapy in paucibacillary leprosy patients; experience in the leprosy control program of the All Africa Leprosy and Rehabilitation training Center (ALERT) in Ethiopia. Int J Lepr 1992; 60 : 436-44.

[14] Becx-Bleumink M. Relapses amongst leprosy patients treated with multi-drug therapy; experience in the leprosy control program of the All Africa Leprosy and Rehabilitation Training Center (ALERT) in Ethiopia; practical difficulties with diagnosing relapses; operational procedures and criteria for diagnosing relapses. Int J Lepr 1992; 60 : 421-35.

[15] Bhattacharya SN, Sehgal VN. Leprosy in India. Clin Dermatol 1999; 17 : 159-70.

[16] World Health Organization. Global leprosy situation 2012. Wkly Epidemiol Record 2012; 34 : 317-28.

[17] Dowdle WR. The principles of disease elimination and eradication. Bull World Health Organ 1998; 76 : 22-5.

[18] Patro BK, Madhanraj K, Singh A. Is leprosy ‘Elimination’ a conceptual illusion? Indian J Dermatol Venereol Leprol 2011; 77 : 549-51.

[19] Robbins G, Tripathy VM, Misra VN, Mohanty RK, Shinde VS, Gray KM. et al. Ancient skeletal evidence for leprosy in India (2000 B.C.). PLoS One 2009; 4.

[20] Monot M, Honore N, Garnier T, Araoz R, Coppe´e Jy, Lacroix C, et al. On the origin of leprosy. Science 2005; 308 : 1040-2.

[21] Browne SG. The history of leprosy. In: Hastings RC, editor. Leprosy, 1st ed. Edinburgh: Churchill Livingstone; 1985. p. 1-14.

[22] Trautman JR. A brief history of Hansen’s disease. Star 1990; 50: 3-16.

[23] Gussow Z. Leprosy, racism and public health: social policy in chronic disease control. Boulder, Colo: Westview Press; 1989.

[24] Awofeso N. Leprosy control, public health paradigms and stigma. Aust NZ J Public Health 2011; 35: 9-11.

[25] Jacob JT, Franco-Paredes C. The stigmatization of leprosy in India and its impact on future approaches to elimination and control. PLoS Negl Trop Dis 2008; 2: e11z.