A Review on Leprosy Multi Drug Therapy and Eradication Program

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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.

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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 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 difficult. For example, it is impossible to administer, in a appropriate dosage for children, since Rifampicin and Isoniazid are present 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 Concomittance 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.

Hydinosulfone:
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 synergetic 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>
<thead>
<tr>
<th>Drug</th>
<th>Supervised dose</th>
<th>Frequency</th>
<th>Unsupervised dose</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin</td>
<td>600 mg</td>
<td>Once a month</td>
<td>50 mg</td>
<td>Daily</td>
</tr>
<tr>
<td>Clofazimine</td>
<td>300 mg</td>
<td>Once a month</td>
<td>100 mg</td>
<td>Daily</td>
</tr>
<tr>
<td>Dapsone</td>
<td>100 mg</td>
<td>Once a month</td>
<td>100 mg</td>
<td>Daily</td>
</tr>
</tbody>
</table>

Table 1: Duration of therapy
<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin</td>
<td>600 mg</td>
<td>Once a month</td>
<td></td>
</tr>
<tr>
<td>Dapsone</td>
<td>100 mg</td>
<td>Once a month</td>
<td>100 mg Daily</td>
</tr>
</tbody>
</table>

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.

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