STUDY OF RELAPSE AND FAILURE CASES OF CAT I RETREATED WITH CAT II UNDER RNTCP – AN ELEVEN YEAR FOLLOW UP*

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Summary
Objective: To analyse the treatment outcome of Cat I smear positive relapse and failure cases and their fate when treated with Cat II regimen under RNTCP.

Methods: All Cat I smear positive relapse and failure TB patients treated with Category II regimen from 1994 to 2005 in a chest clinic of Delhi were analysed in this retrospective study. The re-treatment outcome data for relapse and failure cases of Cat I when treated with Cat II regimen was reviewed.

Results: The study population included 5576 registered as Cat I sputum positive cases in Gulabi Bagh chest clinic from 1994 to 2005. A total of 190 (3.4%) failed on Cat I regimen. Further out of 4905 (87.9%) successfully treated Cat I patients, 442 (9%) presented as relapses. The treatment success rate for relapse and failure cases of Cat I when subsequently treated with Cat II regimen were 76.4% and 48.8% respectively, with a significantly higher failure rate (27.6%) among Cat I failures subsequently treated with Cat II regimen.

Conclusion: The failure cases of Cat I subsequently treated with Cat II were observed to have a significantly lower success rates (p<0.05) as compared to relapse cases. The need for reappraisal of Cat II re-treatment regimen for failure cases among Cat I is suggested.

Key words: Tuberculosis, Relapse, Failure, Treatment outcome

INTRODUCTION

Under the Revised National Tuberculosis Control Programme, the patients are classified and treated according to categories1. Category I which includes, new cases of smear positive pulmonary TB, seriously ill newly diagnosed sputum negative and seriously ill extra-pulmonary cases, is given 2H₃R₃Z₃E₃/4H₃R₃ and Category II which includes patients who are either smear positive relapse, failure, treatment after default or sub category-others or have already taken treatment for more than one month prior to reporting is treated with 2S₃H₃R₃Z₃E₃/1H₃R₃Z₃E₃/5H₃R₃E₃ regimen. According to scientific knowledge and principles of treatment of tuberculosis, a single drug should not be added to a failing regimen2. However, cases of Cat I who fail to respond to the treatment or the cases who relapse after successful treatment and report back to the facility, are treated with Cat II regimen under RNTCP.

It is believed that relapses in case of tuberculosis usually have same strain of organisms and therefore are unlikely to be resistant3,4. Santha et al3 showed that 17% of the cases of Cat I failure had drug resistance to Rifampicin and Isoniazid and therefore justified the use of Cat II regimen in Cat I failure cases. Evidence-based research would be more appropriate to solve this dilemma. With that point in view, we analyzed the treatment outcome results of the failure cases and self-reporting relapse cases of Cat I who were treated with Cat II regimen since 1994 to 2005.

MATERIAL AND METHODS

It is a retrospective study from Gulabi Bagh Chest Clinic where the RNTCP was launched in 1993 as pilot project with a population of 10 lakhs and had in all 10 DOT-cum-microscopy centres in the domiciliary area in addition to seven DOT Centres. As per norms of RNTCP, one Health Visitor and one Lab Technician are posted at each microscopy-cum-DOT Centre, whereas only a Health Visitor is available at the DOT Centre. Data is maintained in TB register under the supervision of District Tuberculosis Officer as per RNTCP

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policy. Data pertaining to treatment outcome of Cat I smear positive cases was assessed and analyzed. Although it is not mandatory to follow up the cases and there is no budget provision for this activity under RNTCP relapse and failures of Cat I patients were recorded by the health visitors under the guidance of MOTC. Information about their time of presentation after completion of Cat I treatment along with their Cat I registration numbers was recorded and maintained. All these cases were carefully followed-up after registering them under Cat II treatment between 1994 to 2005 to assess their subsequent treatment outcome.

RESULTS

A total of 5576 Cat I sputum positive cases were registered and treated under RNTCP in the Gulabi Bagh Chest Clinic from 1994 to 2005. Treatment outcome of these patients for each year has been shown in Table 1.

### Table 1: Treatment outcome of patients registered under RNTCP from 1994 to 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Registered</th>
<th>Cured/Comp.</th>
<th>Died</th>
<th>Failure</th>
<th>Defaulters</th>
<th>T.O.</th>
<th>Relapsed Till 31.12.2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>478</td>
<td>448 (93.8%)</td>
<td>9 (1.8%)</td>
<td>4 (0.8%)</td>
<td>17 (3.6%)</td>
<td>0</td>
<td>70* (15.6%)</td>
</tr>
<tr>
<td>1995</td>
<td>513</td>
<td>440 (85.7%)</td>
<td>9 (1.8%)</td>
<td>8 (1.5%)</td>
<td>54 (10.5%)</td>
<td>2 (0.5)</td>
<td>54 (12.3%)</td>
</tr>
<tr>
<td>1996</td>
<td>428</td>
<td>366 (85.5%)</td>
<td>11 (2.5%)</td>
<td>10 (2.4%)</td>
<td>40 (9.4%)</td>
<td>1 (0.2)</td>
<td>49 (13.4%)</td>
</tr>
<tr>
<td>1997</td>
<td>455</td>
<td>386 (84.8%)</td>
<td>9 (1.9%)</td>
<td>14 (3.1%)</td>
<td>44 (9.8%)</td>
<td>2 (0.4)</td>
<td>43 (11.1%)</td>
</tr>
<tr>
<td>1998</td>
<td>341</td>
<td>293 (85.9%)</td>
<td>8 (2.3%)</td>
<td>19 (5.6%)</td>
<td>21 (6.2%)</td>
<td>0</td>
<td>28 (9.6%)</td>
</tr>
<tr>
<td>1999</td>
<td>444</td>
<td>385 (86.7%)</td>
<td>13 (2.9%)</td>
<td>17 (3.8%)</td>
<td>29 (6.6%)</td>
<td>0</td>
<td>24 (6.2%)</td>
</tr>
<tr>
<td>2000</td>
<td>483</td>
<td>431 (89%)</td>
<td>9 (1.9%)</td>
<td>19 (3.9%)</td>
<td>24 (4.9%)</td>
<td>0</td>
<td>29 (6.7%)</td>
</tr>
<tr>
<td>2001</td>
<td>414</td>
<td>368 (89%)</td>
<td>2 (0.5%)</td>
<td>19 (4.5%)</td>
<td>23 (5.5%)</td>
<td>2 (0.5)</td>
<td>30 (8.1%)</td>
</tr>
<tr>
<td>2002</td>
<td>462</td>
<td>409 (88.5%)</td>
<td>7 (1.5%)</td>
<td>22 (4.8%)</td>
<td>24 (5.2%)</td>
<td>0</td>
<td>35 (8.6%)</td>
</tr>
<tr>
<td>2003</td>
<td>491</td>
<td>442 (90%)</td>
<td>8 (1.6%)</td>
<td>16 (3.3%)</td>
<td>25 (5.1%)</td>
<td>0</td>
<td>24 (5.4%)</td>
</tr>
<tr>
<td>2004</td>
<td>463</td>
<td>408 (88%)</td>
<td>6 (1.3%)</td>
<td>17 (3.6%)</td>
<td>32 (6.9%)</td>
<td>0</td>
<td>29 (7.1%)</td>
</tr>
<tr>
<td>2005</td>
<td>604</td>
<td>529 (87.6%)</td>
<td>10 (1.6%)</td>
<td>25 (4.1%)</td>
<td>37 (6.2%)</td>
<td>3 (0.5)</td>
<td>27* (5.1%)</td>
</tr>
<tr>
<td>Total</td>
<td>5576 (100.0%)</td>
<td>4905 (100.0%) (87.9%)</td>
<td>101 (1.8%)</td>
<td>190 (3.4%)</td>
<td>370 (6.6%)</td>
<td>10 (0.3)</td>
<td>442 (9.0%)</td>
</tr>
</tbody>
</table>

* Significant decline z=4.21, p<0.05
Relapse cases of Cat I Smear positive cases

A total of 442 (9%) out of 4905 patients relapsed after successful outcome (Table 1). These patients, who presented on their own to the chest clinic as relapses of the Cat I treatment, were carefully, followed-up after registering them for Cat II treatment under RNTCP.

Although there is no provision for follow-up of successfully treated cases under RNTCP, in the present study an effort was made to collect the information on self-reporting relapses of Cat I who were treated with Cat II regimen. This was possible due to the efficient record-keeping and vigilance of area health visitors and STS and as per instructions of the DTO. The time of relapse of successfully treated cases was also observed. A total of 68.5% (303) of relapses reported to chest clinic within first year ($\chi^2=23.5$ for 11d.f., p<0.05). Moreover 50% of the total relapses were within first six months of completion of treatment. Out of these 442 relapse cases, 405 (91.6%) could be followed-up and 390 were again treated with cat II RNTCP regimen. Of these, 298 (76.4%) had a successful outcome.

Failure Cases of Cat I smear positive cases

In all, 190 (3.4%) cases out of 5576 failed in Cat I regimen. Out of these, 127 (66.8%) were re-registered for Cat II treatment. Of these, 48.8% had a successful outcome.

A comparison of results of treatment of relapse and failure cases of Cat I positive cases subsequently treated in Cat II under RNTCP revealed that while the success rate was 76.4% for relapse group, it was only 48.8% for failure groups (Table 2).

DISCUSSION

In the present study, majority of the cases relapsed within one year after completion of Cat I regimen it is presumed that the same may be true for Cat II treatment regimen also. The median follow-up was 6.4 years after Cat II treatment in the present study therefore was sufficiently long. Follow-up results of the cases of Cat I ‘failure’ and ‘relapse’ cases treated under Cat II, therefore are likely to represent the actual state of affairs under Revised National Tuberculosis Control Programme.

In the present study, follow-up of failure and relapse cases of Cat I treatment subsequently treated under Cat II has shown that while relapse sub-group had a successful outcome of 76.4%, the Cat I failure cases treated with Cat II regimen showed a very low success 48.8% (p<0.05). In contrast, the success results for 2006 cohorts as reported by RNTCP performance report were 72.5% and 55.7% for relapse and failure groups respectively. In a smaller study by Dhingra et al. also, a lower success rate for failure group (63.1%) as compared to relapse group (73.7%) was reported. However, the follow-up period was shorter (median duration of 26.5m and 18.5m respectively) and sample size was also small. Similar comparable results have been reported by Khatri et al. and Chadha et al.

Table 2: Treatment outcome of failure and relapse cases of Cat I positive relapse and failure cases put on Cat II regimen

<table>
<thead>
<tr>
<th>Type of cases</th>
<th>Total no. of cases</th>
<th>Completed/Cured</th>
<th>Died</th>
<th>Failure</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat I failure cases put on Cat II</td>
<td>127 (100.0)</td>
<td>62 (48.8)</td>
<td>8 (6.3)</td>
<td>35 (27.6)</td>
<td>22 (17.3)</td>
</tr>
<tr>
<td>Cat I relapse cases put on Cat II</td>
<td>390 (100.0)</td>
<td>298 (76.4)</td>
<td>20 (5.1)</td>
<td>24 (6.2)</td>
<td>48 (12.3)</td>
</tr>
</tbody>
</table>

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The proportion of patients failing under RNTCP is a matter of concern since the cases who fail not only transmit the infection to others but may also infect others with organisms which may be resistant to the first line drugs. The treatment of such cases with Cat II retreatment regimen may not meet expected results. The proportion of Cat I failure cases showing MDR strains has varied in different studies. While a study from Malawi found 0% MDR strain, another study from Lima reported 73% MDR strains for Cat I failure cases. Santha et al reported that only 17% of Cat I failure were having MDR strains thereby justifying that Cat I failure cases may be treated by Cat II regimen even if that means adding just one drug to the failing regimen.

The present study found that 27.6% of patients failed with Cat II regimen in failure group as compared to only 6.2% in relapse group (p<0.05). The proportion of patients failing Cat II regimen has been reported higher by other studies with failure group showing higher failure rates in many studies. Similar results have been reported under Revised National Tuberculosis Control Programme from all over the country with a failure rate of 15.1% for failure group as compared to relapse group 5.2%. Dhintra et al also observed a failure rate of 21.1% in the failure group as opposed to 5.3% in the relapse group.

Cat I failure and relapse cases when registered for Cat II treatment get only one new drug i.e. streptomycin; treatment duration however is prolonged to eight months but the dictum “Never add a single drug to failing regimen” is not followed. Under RNTCP in India, 17,769 failure cases were treated with Cat II regimen in 2006. Since the failure cases have significantly higher failure rate with Cat II regimen, treatment schedule for such cases requires rethinking and reconsideration to have higher successful results.

REFERENCES