

Original Article

Roll of Smoking in the Default of Tuberculosis Treatment in Rajkot District

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DOI: 10.5455/jrmds.2015348

ABSTRACT

Background: Smoking is the major cause of Mycobacterial infection, default and relapse of the infection.

Aims and Objective: This study was conducted to estimate the effect of smoking in the default patients of tuberculosis treatment.

Material and Method: 150 cases (TB treatment Defaulter) and 150 controls (Who have completed whole course of treatment) from the Rajkot district of Gujarat were enrolled and interviewed. Smokers were identified by pre-structured interview and self-report. Risk of treatment default was calculated in smokers.

Results: In smokers risk of treatment default was 265% higher (OR = 2.65) in comparison the non-smoker. Risk of treatment default was quite higher in female smokers in comparison the male smokers.

Conclusion: Smoking should be prevented to improve the tuberculosis treatment adherence.

Key words: Smoking, Tuberculosis, Default treatment

INTRODUCTION

Tuberculosis is the respiratory disease caused by the Mycobacterium tuberculosis [1]. Smoking increases the risk of Mycobacterial infection by alteration of mucociliary clearance, reduced alveolar macrophage activity; immune-depression of pulmonary lymphocytes and reduction of cytotoxic activity of natural killer cells, alteration on the activity of the pulmonary dendritic cells [2].

RNTCP (Revised National Tuberculosis Control Programme) programme launched in 1983 in India with in phased manner using globally recommended DOTS (Directly Observed Treatment Short Course) strategy and with goals of curing 85% cure rate. To achieve 85% cure rate is recommended that all patients started on treatment should complete full course of treatment. To ensure treatment adherence DOTS was emphasized, where in each dose of treatment is given under the observation of health worker. Adaptation has given impressive results with higher treatment success, yet default continues to occur in certain situations and is a matter of concern [3, 4].

To improve treatment adherence reason for the default should be identified and prevented.

Smoking is the causal factor of tuberculosis as well impart a role in default and relapse of the tuberculosis [5, 6]. It is necessary to quantify the impact of the smoking on tuberculosis default.

This study was conducted with the aim to find the impact of Smoking on the default of the tuberculosis treatment.

MATERIAL AND METHODS

Study design: This retrospective case control type of study was conducted in the Pandeet Dindayal Upadhyay Medical College, Rajkot, and Gujarat, India during the 2006-2008 after institutional ethical committee approval.

Defining case and inclusion criteria for case: in this study case was defined defaulter of the tuberculosis treatment. The case were selected as the subjects who were registered under RNTCP programme in the Rajkot district during January 2006 to December 2007 and defaulted in the tuberculosis treatment. RNTCP definition (A Tuberculosis patient who, at any time after registration has not taken anti-TB drugs for 2 months or more consecutively) and criteria were followed to identify the defaulter of tuberculosis treatment. Cases were enrolled by

recalling them for treatment and home visit. Cases above the age of 15 years only were enrolled in the study after informed and written consent. Cases below the age of 15 years were not included in the study.

Defining control and inclusion criteria for control: In this study Control was defined as the subject who has completed anti-tuberculosis treatment under RNTCP programme. The controls were selected as the subjects who were registered under RNTCP programme in the Rajkot district and completed treatment during January 2006 to December 2007. Controls were enrolled by recalling the subjects for follow-up and home visit. Controls above the age of 15 years only were enrolled in the study after informed and written consent. Controls below the age 15 years were not included in the study.

Systemic random sampling method was used to select the 150 cases and 150 controls from the whole list retrieved after following the above inclusion and exclusion criteria.

Smoking: Habitual smoking was identified in patients on the basis of the history given by the patients. Subjects were categorised as smokers and non-smokers on the basis of the history. Only patients who were smoking during treatment duration were included in smoker criteria. Ex-smokers who gave up the smoking before the treatment start were included in non-smoking category.

Data collection: Using structured interview questionnaires cases and control were interviewed. Statistical calculations and analysis was done by Microsoft excel 2007 and Epi info 7.0™ software.

RESULTS

In this study 150 cases (defined as default in tuberculosis treatment) and 150 controls (defined as patients with completed tuberculosis treatment) were interviewed. Out of 150 cases 54 (36%) were smokers; out of 150 controls 20 (13.33%) were smokers.

Difference in the smokers and non-smokers between case group and control group was statistically significant at 95% confidence interval (chi square value: 20.73, p value < 0.05). Odd ratio for smoking between cases and control was 3.65 (2.05- 6.50) that indicates in smoker patients (under the tuberculosis treatment) have 3.65 times high risk of being default than that of non-smokers patients.

Table 1: Sex wise distribution of habitual Smoking in cases and controls

	Cases (n=150)		Controls (n=150)	
	Male	Female	Male	Female
Yes	32 (28.32)	22 (59.45)	13 (12.87)	7 (14.28)
No	81 (71.68)	15 (40.54)	88 (87.13)	42 (85.71)

(Parenthesis showing percentages)

In case group out of 150 defaulter cases 113 were male and 37 were females; control group contained 101 male and 49 females [Table:1]

Male: 28.32% (32 out of 113) male cases and 12.87% (13 out of 101) male controls were smokers. Difference between smokers and non-smokers was statistically significant between male case and male control group at 99.5% confidence interval (chi square value: 5.23, p value < 0.05). Odd ratio for male cases and controls was 2.26 (1.11- 4.61). It indicates in male smoker patients under the treatment of tuberculosis have 2.26 times higher risk of being default than that of non-smokers male patients.

Female: 59.45% (22 out of 34) female cases and 14.28% (7 out of 49) female controls were smokers. Difference between smokers and non-smokers was statistically significant between female case and female control group (chi square value 8.85, p value < 0.05). Odd ratio for smoking between female cases and controls was 8.8 (3.12- 24.77) that indicates 8.8 times higher risk in female smoker patients for treatment default.

DISCUSSION

In the present study defaulter rate was found to be 74 (24.66%).

Dujaili JA et al (2011) reported 7.17 odd ratio for smoker in tuberculosis treatment default which is higher than this study [7]. Chalinger A et al (2007) reported in 21.6% default rate in 2156 smoker patients under tuberculosis treatment [8]. 13.4% (52 out of 395 patients were defaulters among the smoker in the study of Mahishale V et al (2015) [9]. In the present study we did not include the ex-smoker in the criteria of smoking; that may be the cause of variation of result of our study from the other study. In the present study in female smokers higher risk (OR = 8.8) was noticed in comparison of the male smoker (2.6) for the default of the treatment. This is may be due to high prevalence of smoking in females in comparison to the females in this study.

CONCLUSION

Even after the aggressive treatment and implication many criteria, new drugs the tuberculosis is still highly prevalent in India. In the condition factors defaulting like smoking should be emphasized so that the treatment adherence can be improved.

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Date of Submission: 09/10/2015

Date of Acceptance: 23/12/2015

How to cite this article: Arvind B Daxini, Lilavati N Vasava, Arvind S Pandey.Roll of Smoking in the Default of Tuberculosis Treatment in Rajkot District. J Res Med Den Sci 2015;3(4):284-6.

Source of Support: None

Conflict of Interest: None declared