IS PULMONARY TUBERCULOSIS ASSOCIATED WITH SMOKELESS TOBACCO USE?

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ABSTRACT

BACKGROUND

Tobacco is one of the major causes of disease and death in India, accounting for nearly 0.9 million deaths every year. The prevalence of SLT use among adult men in India increased from 24% in 1995 to 33% in 2009, whereas the prevalence of smoking reduced from 35% to 24% during the same period. Several studies have demonstrated the association between smoking and the risk of pulmonary TB, relapse of TB and mortality due to TB and poor tuberculosis treatment outcome. Little data exist on the prevalence and patterns of SLT use among patients with TB in India. The objective of present study to assess the association between the tobacco chewing and pulmonary tuberculosis with respect to prevalence and mycobacterium tuberculosis bacilli load.

MATERIALS AND METHODS

A descriptive study was conducted among 257 pulmonary TB patients between January 2017 and June 2017 attending Department of Respiratory Medicine, MLN Medical College, Allahabad. Using a structured interview schedule, retrospective smoking and smokeless tobacco use data were collected at the diagnosis.

RESULTS

Total 257 pulmonary tuberculosis patients enrolled in our study, of which 178 (69.2%) ever users of any form of tobacco in lifetime and 140 (54.4%) patients were current users of any form of tobacco at the time of the survey. Among the tobacco users, 42 patients were exclusive smokers, 68 were exclusive SLT users and 30 of them used both forms of tobacco. The prevalence of tobacco chewing and smoking was 48.5% and 30% respectively at the time of diagnosis. Among tobacco chewers, the AFB smear grading was 2.9% scanty positive, 23.5% were 1+, 38.2% were 2+ and 35.2% were 3+ respectively.

CONCLUSION

Tobacco chewing prevalence is higher than tobacco smoking alone among patients with tuberculosis. Proper education and programmatic protocols should address against the use of tobacco products either in form of tobacco chewing or smoking which often go undetected among TB patients.

KEYWORDS

Smokeless Tuberculosis, Tuberculosis.

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BACKGROUND

Both tobacco chewing and tuberculosis are major global public health problems. Tobacco is one of the major causes of disease and death in India, accounting for nearly 0.9 million deaths every year.¹ India is the second largest consumer and third largest producer of tobacco and tobacco products are available at very low prices. Chewing tobacco is one type of smokeless tobacco (SLT). Smokeless tobacco is available in many forms in India and is widely used by all social groups. It is more prevalent among the disadvantaged and people who live in rural areas. SLT is available in loose leaf, plug (plug-firm and plug-moist), or twist forms. The user puts a wad of tobacco inside the cheek. The estimated number of tobacco users in India was 274.9 million. Of these, 163.7 million used only SLT, 68.9 million were smokers, and 42.3 million used

both forms of tobacco.² The total economic costs attributed to tobacco use from all diseases in India in the year 2011 for persons aged 35-39 amounted to INR 104 500 cores (US\$ 22.4 billion).¹

Practically, anybody can get tuberculosis infection during a lifetime. It is potentially rapidly spread because it is airborne and spreads like the common cold, when infectious people cough, spit, talk or sneeze. The life time risk of breaking down among those infected with TB is 10-15%,³ determinants are co-infected with HIV, diabetes mellitus, smoking tobacco products, alcohol abuse, and malnutrition increases the risk progression from infection to TB disease.³ India accounts for one fourth of global TB burden i.e. 2.2 million out of 9.6 million new cases annually.³

The prevalence of SLT use among adult men in India increased from 24% in 1995 to 33% in 2009, whereas the prevalence of smoking reduced from 35% to 24% during the same period.² Several studies have demonstrated the association between smoking and the risk of pulmonary TB,⁴ relapse of TB and mortality due to TB⁵ and poor tuberculosis treatment outcome.⁶ Aggressive tobacco control has been reported to avert 27 million deaths from TB attributable to smoking by 2050.⁷ There is also compelling data on the association of SLT with chronic diseases including TB.^{8,9}

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There has been a call to implement smoking cessation strategies in TB control programmes.³ However, no such programmes were available for smokeless tobacco users. Little data exist on the prevalence and patterns of SLT use among patients with TB in India.

The objective of present study to assess the association between the tobacco chewing and pulmonary tuberculosis with respect to prevalence and mycobacterium tuberculosis bacilli load.

MATERIALS AND METHODS

Design and Study Population

A descriptive study was conducted between January 2017 and June 2017 among patients attending Department of Respiratory Medicine outpatients and inpatients clinics, MLN Medical College, Allahabad, Uttar Pradesh. To be eligible for enrolment, a patient had to be aged at least 18 years, should have provided two samples of sputum specimen that had been found smear positive for acid-fast bacilli by certified RNTCP lab where we used fluorescence staining procedure and smear grading done according to RNTCP guidelines.³

Data Collection and Analysis

At the time of study enrolment, after the patients had provided written informed consent, interview of eligible patients, most of the data were collected using a standardised questionnaire adopted from the one employed in global adult tobacco survey.¹⁰ The following data were collected: details of basic demographic and socioeconomic characteristics, disease history, pattern of past and present smokeless tobacco use and patient perceptions about links between relapse of TB and tobacco use. At the end of the study, the investigator gave tobacco cessation advice to encourage persistent and relapsed users to quit, and permanent quitters to stay abstinent from tobacco use. Analysis done by chi square test 95% confidence interval using SPSS software, P value < 0.05 was considered significant.

RESULTS

A total of 1691 presumptive TB cases were enrolled in our study, out of which 257 (15.2%, Table 1) patients having sputum smear-positive pulmonary tuberculosis, were further included in our study. The mean (SD) age of our patients was 40 (15) years (range 18–80 years). TB was more common among males (n=179) than females (n=78) and among 257 patients, 186 were new cases, 71 were retreatment cases who were started on Category I and category II DOTS respectively.

Of the 257 study patients, 178 (69.2%) were ever users of any form of tobacco in lifetime out of which 140 (54.4%) patients were current users of any form of tobacco at the time of the survey. Among the tobacco users, 42 patients were exclusive smokers, 68 were exclusive SLT users and 30 of them used both forms of tobacco [Table 2]. The prevalence of tobacco chewing and smoking was 48.5% and 30% respectively at the time of diagnosis. Among tobacco chewer, the AFB smear grading was 2.9% scanty positive, 23.5% were 1+, 38.2% were 2+ and 35.2% were 3+ respectively [Table 3].

Sputum AFB Smear Status	Tobacco User	Non Tobacco User
Positive	178	79
Negative	286	1159

Table 1. Prevalence of Tuberculosis and Tobacco use in Presumptive Tuberculosis Case

Type	Ever use (%)	Current use (%)
Any form of tobacco	178 (69.2)	140 (54.4%)
Tobacco chewing only	28 (10.8)	68 (26.4)
Tobacco smoking only	57 (22.2)	42 (16.3)
Both form of use	93 (36.1)	30 (11.6)
Never used any form of tobacco	79 (30.8)	117 (45.6)

Table 2. Patterns of Tobacco use among Pulmonary Tuberculosis Patients. (n=257)

At the time of diagnosis.

Sputum AFB Smear Grading	Tobacco Chewer (%) (n=68)	Non Tobacco User (n=68)
Scanty	2 (2.9)	6 (8.8)
1+	16 (23.5)	30 (44.1)
2+	26 (38.2)	18 (26.5)
3+	24 (35.2)	14 (20.5)

Table 3. Comparison of Sputum AFB Smear Grading among Smokeless Tobacco Users and Non-Tobacco Users

P value= 0.015

DISCUSSION

In our study, 69.2% of 257 patients with pulmonary tuberculosis surveyed in Department of Pulmonary Medicine, MLN Medical College, Allahabad, ever used some form of tobacco. The prevalence of current use of tobacco chewing in our study is 26.4% as compared to the prevalence of SLT among newly diagnosed patients with TB from Malaysia (29%)¹¹ and 29.7% from study conducted by K.G. Deepak et al⁹ in Udupi district, Karnataka. The prevalence of ever smoking only among TB patients was 22.2%, which was lower than that reported from K.G. Deepak et al⁹ and 27.9% among adult men in Mumbai Karnataka.¹²

From this study we found that 26.4% sputum-positive TB patients were addicted to tobacco chewing, 16.3% patients were addicted to smoking and 11.6% patients were users of both forms of tobacco which is almost similar to data reported by K.G. Deepak et al.⁹ A South African study observed that 56% of patients with active tuberculosis were current smokers.¹³ Similarly, 54.6% of Chinese patients with tuberculosis were smokers¹⁴ and 59.9% of the Georgia tuberculosis patients were either current smokers or individuals who had ceased smoking no more than two months earlier.⁶ In our study, we found that sputum bacillary load which was graded according to RNTCP guidelines³ was higher among tobacco users as compared to non-tobacco user TB patients.

The use of smokeless tobacco products (Tobacco chewing) was much higher among active TB patients than that of smoking. Smokeless tobacco products are linked to oral cancers in India¹⁵ and studies have also shown that the use of SLT increases the risk of death from respiratory diseases and TB in men. A perception that smokeless tobacco use is less harmful for patients with TB needs to be corrected, because of the serious health consequences of chewing

tobacco. Most of the tobacco messages provided by doctors to patients are used to be general in nature and focused on smoking. Hence, these patients were advised to give up smoking and alternatively were engaged in the use of SLT as a form of harm reduction, and as a nicotine substitution strategy. This study suggests that more tobacco and TB specific cessation messages need to be given to these patients.

There has been a recent call to include tobacco cessation as a routine part of TB management protocols.³ In India, where the chewing as well as the smoking form of tobacco is common, tobacco cessation efforts must focus on both smoking and tobacco chewing. We also found that many patients with TB or patients with respiratory symptoms prefer not to smoke, but continue tobacco chewing after diagnosis. Healthcare worker's effort to advise TB patients to quit tobacco during and following treatment needs to be encouraged as a routine part of TB counselling and support. Likewise, DOTS providers and healthcare professionals need to be trained to offer structured tobacco cessation advice to patients and offer support.

Our study had several limitations. First, our primary exposure variable – self-reported tobacco addiction status – was subject to potential misclassification. Data on tobacco use behaviour relies on self-report and may suffer from recall bias.

CONCLUSION

Tobacco chewing prevalence is higher than tobacco smoking alone among patients with tuberculosis. Proper education and programmatic protocols should address against the use of tobacco products either in form of tobacco chewing or smoking which often go unheeded among TB patients. Patients with tuberculosis are advised by their doctors, at the time of diagnosis, to quit smoking. Several patients shift from smoking to smokeless tobacco use, which needs to be addressed while providing tobacco cessation services. Proactive efforts are needed to encourage health care staff and DOTS providers to give strong cessation messages.

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