FREQUENCY OF CIGARETTE SMOKING IN PATIENTS WITH SMEAR POSITIVE PULMONARY TUBERCULOSIS

Raza Ullah[1], Farhan Mukhtiar[1], Rab Nawz Khan[1], Imran Ullah[1], Shahida Naz[2], Saeed Maqsood[3], Shimee Shehzadi[4]

ABSTRACT

BACKGROUND: Tuberculosis (TB) is a second leading cause of death by an infectious agent after HIV. A total of 8.6 million people fell ill with TB in 2012. Smoking is considered an epidemic in low income countries. Smoking affects all stages of TB. The objective of this study is to determine the frequency of Cigarette smoking in patients with smear positive pulmonary TB.

METHODS: This cross-sectional study was conducted in the medical wards/OPD of North West Hospital Peshawar. A total of 105 cases were included in the study through Non-probability consecutive sampling based on 33% prevalence of smoking in pulmonary tuberculosis, confidence level of 95% and 9% margin of error. All patients with smear positive pulmonary TB of either gender aged 16 years and above were included in the study. Patients treated previously with pulmonary TB were excluded. All patients with smear positive TB were asked for smoking after taking informed consent.

RESULTS: out of 105 patients, 63(60%) were males and 42(40%) female. Male to female ratio was 1.5:1. Age ranged from 16-70 years with mean age of 43.72 years ± 13.72SD. Over all frequency of cigarette smoking in pulmonary tuberculosis patients was 40%, in which 20(47.62%) have 6-10 pack years, 12(28.57%) patients have 11-20 pack, 6(14.29%) have less than or equal to 5 pack and 2(4.76%) have pack each for 21-30 and greater than 30 pack.

CONCLUSION: There is high incidence of smoking (40%) found in patients with smear positive pulmonary tuberculosis.

KEY POINTS: Smoking, pulmonary TB, frequency.

INTRODUCTION

Tuberculosis (TB) is a chronic infectious disease caused by mycobacterium tuberculosis. Almost one third of the world population i.e. approximately two billions peoples are infected with Mycobacterium tuberculosis[1]. The global Tuberculosis incidence continues to grow[2] despite excellent progress in expanding the Directly Observed Short Treatment Course (DOTS) strategy. WHO estimates that 9.27 million new cases of tuberculosis occurred in 2007(137 per 100000 population). The incidence of tuberculosis in Pakistan reported in 2007 was 1.63 millions[3]. Pakistan ranks 6th in the world with highest prevalence of tuberculosis[4].

Tuberculosis (TB) is a second leading cause of death by an infectious agent after HIV. A total of 8.6 million people fell ill with TB in 2012, of which 1.1 million people had HIV. Around 1.3 million deaths resulted from TB in 2012[5]. 80 percent of world's TB cases are in developing countries.

Smoking is still considered an epidemic in low income countries and in Pakistan the current prevalence among adults is 15.2% and among youth its around 6.3%[7, 8]. In countries where tobacco consumption has reached epidemic proportion, TB is a major health issue. In India, for example TB patients are three times more likely to be smokers compared to the rest of the population[9].

Smoking both active and passive effects almost all stages of Tuberculosis[6, 10]. Smoking results in delay in diagnosis leading to aggressive tuberculosis symptoms[11]. Smoking is an independent risk factor for development MDR-TB[12] and has also been associated with a negative influence on rate of culture conversion[13]. Furthermore, TB relapse is strongly influenced by smoking with a high rate observed in current smokers[14]. Tobacco smoking modulates the response of T cells responsible for medicating immune response against Mycobacterium Tuberculosis[15].

The purpose of the study is to determine the frequency of cigarette smoking in patients with smear positive pulmonary tuberculosis. No local statistics are available at the time of the study and this study will help in addressing and preventing this problem if significant relationship is established between cigarette smoking and tuberculosis.

MATERIALS AND METHODS

Diagnostic criteria

[1] Department of Endocrinology, Hayatabad Medical Complex Peshawar
2 Department of Dermatology MTI HMC Peshawar
3 Department of Cardiology Khalifa Gulnawaz Hospital Bannu
4 Lecturer KGMC Peshawar

Address for correspondence:
Dr Raza Ullah
Department of Endocrinology, Hayatabad Medical Complex Peshawar
Email: dr.raza127@gmail.com
Cell No: 03339298991

Smear positive pulmonary T.B:

This cross-sectional study was conducted in the medical wards/OPD of North West Hospital Peshawar from Jan 22, 2016 to July 21, 2016. A total of 105 cases were included in the study through Non-probability consecutive sampling technique. Sample size was calculated taking 33% prevalence of smoking in pulmonary tuberculosis, with the confidence level of 95% and 9% margin of error with the help of WHO software for sample size calculation.

All patients with smear positive pulmonary tuberculosis of either gender aged 16 years and above were included in the study. Patients treated previously with pulmonary TB were excluded. All patients with smear positive TB were interviewed for cigarette smoking after taking informed consent.

Statistical analyses were performed on SPSS version 15 software .Descriptive statistics were calculated for all variables. Continuous variables like age and duration of smoking were presented by mean +/- SD (Standard Deviation). Categorical variables like gender, smoking status and smear positive pulmonary TB was presented by frequency and percentage.

RESULTS

A total of 105 patients over 16 years of age attending the Department of Medicine unit North West General hospital Peshawar, fulfilling the inclusion criteria were included in this study.

Out of 105 patients, males patients suffering from pulmonary tuberculosis were 63(60%) and 42(40%) were females patients as shown in (Fig No 1). Male to female ratio was 1.5:1. Patients age was divided in four categories, out of which most presented in above middle age i.e. 46-60 years which were 43(41%) while 26 (24.8%) patients were in the age range of less than or equal to 30 years, 27(25.7%) were of age range 31-45 years and 9(8.6%) presented at age more than 60 years. The study included age ranged from 16 up to 70 years. Average age was 43.72 years + 13.72SD. (Table 1)

Over all frequency of cigarette smoking in patients suffering from pulmonary tubercolus was 40%, in which 30(28.6%) were current smokers, and 12(11.4%) were exSmokers. While 63(60%) patients were nonsmokers (Table 2). Among the patients with smoking, Majority of the patients 20(47.62%) have 6-10 pack years, 12(28.57%) patients have 11-20 pack, 6(14.29%) have less than or equal to 5 pack and 2(4.76%) have pack each for 21-30 and greater than 30 pack. (Fig 2)

Age wise distribution of pulmonary tuberculosis shows that age have no significant role over smokers in our study. Although the current and ex-smokers increases as the age increases. The majority of females presented with pulmonary tuberculosis were nonsmoker as that of male patients. (Table 3)

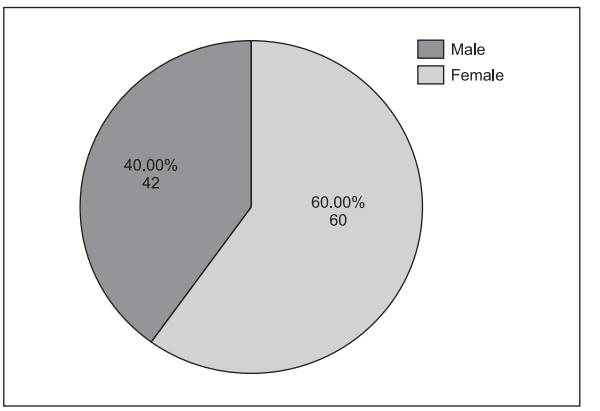

Fig 1: Gender wise distribution of the patients

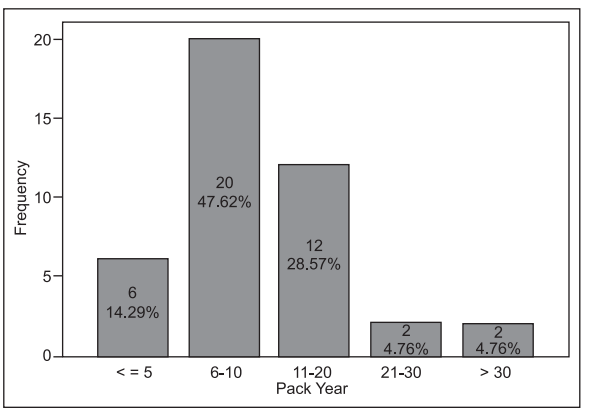

Fig 2: Pack year wise distribution of cigarett smoking

Table 1: Age wise distribution of the patients.

	Frequency	Percent	Mean+SD
<= 30.00	26	24.8	43.72+13.72
31.00 - 45.00	27	25.7	
46.00 - 60.00	43	41.0	
61.00+	9	8.6	
Total	105	100.0	

Table 2: Frequency of cigarette smoking status in pulmonary tuberculosis.

	Frequency	Percent
Current Smoker	30	28.6
Ex-Smoker	12	11.4
No Smoker	63	60.0
Total	105	100.0

DISCUSSION

Tobacco smoking and Tuberculosis are the two major health problems, especially in developing countries. As per estimates, deaths from tobacco consumption will be around 8.4 million in 2020, almost double to that estimated in 1990[16]. The shift in smoking

Table 3: Gender wise distribution of smoking status.

		Gender		Total	p-value
		Male	Female		
Cigarette Smoking status	Current Smoker	26	4	30	0.00
		41.3%	9.5%	28.6%	
	Ex-Smoker	10	2	12	
		15.9%	4.8%	11.4%	
	No Smoker	27	36	63	
		42.9%	85.7%	60.0%	
Total		63	42	105	
		100.0%	100.0%	100.0%	

paradigm from industrialized world to developing world coincides with the increased prevalence of Tuberculosis in these regions. About 17% of smoking population lives in India[17, 18]. About One-third of the smokers belong to middle age group, and it is in this age group pulmonary tuberculosis is most prevalent. Males are affected two-four times more than females[19].

Smoking is significantly associated with increased risks of tuberculous infection, tuberculosis (TB) disease, TB mortality and recurrent TB[20-24]. TB patients who have smoked are more likely to transmit TB to their child contacts[25]. A recent systematic review and meta-analysis reported that exposure to environmental tobacco smoke increases the risks of developing childhood TB disease and tuberculous infection[26].

In developing countries, where TB incidence is high, the increase in the prevalence of smoking can have a significant impact on the endemic tuberculosis. Lowe et al. had noted in a study in the UK, a higher prevalence of smoking (smoking_ 20 c/d) among patients with tuberculosis (50.1% in men and 11.4% in women) than in controls (43.4% in men and 2.4% in women)[27]. Davies et al. have also shown that the incidence of TB increases with the consumption of tobacco, the risk is multiplied by 2 or 4 if the number of cigarettes smoked per day is over 20[28]. The study by Wang et al. performed in Taiwan in 523 new TB patients also showed there was a positive association between smoking (current or former) and poor adherence to Treatment[29].

The reason for the increased risk of infection in smokers is unclear, but may be explained by the effects of smoking on pulmonary host defenses. Smoking has been shown to reduce natural killer cytotoxic activity, to suppress T cell function in both lung and blood, to impair mucociliary clearance of particles, and to increase numbers of alveolar macrophages in the lower respiratory tract.

CONCLUSION

As tuberculosis is on the rise and the situation is worsen by the drug resistant tuberculosis. This study showed that frequency of smoking in TB patients in the region is more prevalent than was expected. Tuberculosis is associated to cigarette smoking. The association does not show dose dependency. Cigarette smoking may be an important risk factor for developing tuberculosis.

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