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Smoking status and lung cancer trends – A Single center experience from Southern India

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Abstract

Lung cancer is the commonest cancer worldwide; smoking is the biggest risk factor. However over the years non-smokers are increasingly suffering from crippling disease. We analyzed serially diagnosed lung cancer patients for their smoking status for a period of one year in a tertiary care teaching institute in southern India. We found lung cancer in non-smokers twice common in women than in men. Possibly due to biomass fuel exposure, indoor air pollution and environmental tobacco smoke, women are increasingly affected.

Keywords: Lung cancer, Non smoker, Biomass fuel exposure.

Introduction

Lung cancer is the most common cancer worldwide. However in India oral cavity malignancies are commonest followed by lung cancer[1]. Though lung cancer has temporal and causal association with tobacco smoking, increasingly non-smoker lung cancer is gaining prominence and is a serious public health concern. Non-smoker lung cancers are attributed to biomass fuel exposure, environmental tobacco smoke exposure, diesel exhaust and to post tubercular scar carcinoma[2].

Material and Methods: Prospective study which included all subjects diagnosed to have lung cancer in our tertiary care hospital from August 2015 to July 2016 based on histological or cytological confirmation who are willing to participate in the study. Detailed questionnaire administered for the willing subjects, which encompassed history, smoking status, previous treatment history, radiological features, mode of biopsy and histological and/or cytological reports.

Results

A total of 100 samples were collected from consecutive willing subjects during the period of 1st august 2015 to 31st July 2016. The gender distribution of the samples showed that 72% of them were from male patients and the remaining 28% of the samples were from female. Out of total 100 samples (Table - 1), 64 samples were from patients with smoking history and 36 were from non-smokers. With regards to the type of cancer, non-small lung cancer (NSCLC) was most prevalent accounting for 91 samples out of the 100 collected. The remaining nine belonged to the category of small cell lung cancer (SCLC). Among 64 smokers only one was female and rest all were males (Table 2). Lone female smoker suffered from SCLC, where as among non- smoking female subjects majority had NSCLC (24/25). Only one non smoking female subject suffered from SCLC. Among total of 74 males 11 were non-smokers and 63 were smokers. Non-smoking males suffered only from NSCLC where seven smokers among 63 male subjects suffered from SCLC.

Discussion

Lung cancer is a public health menace. Lung cancer among non-smokers is reaching epidemic proportions[3]. One report from USA stated an estimated 10–15% will be

caused by factors other than active smoking, corresponding to 16,000–24,000 deaths annually[4]. In our study non-smokers were as high as 36%, more than one third of the study population. Elderly female population in country like India are majorly non-smokers, however they are vulnerable to environmental tobacco smoke (passive smoking), biomass fuel exposure, environmental pollution and vehicle exhaust. Experimental exposure of non-smokers to tobacco smoke increased the urinary concentration of a tobacco specific carcinogen, and non-smokers exposed to environmental tobacco smoke have raised blood concentrations of tobacco specific carcinogen adducts—for example, DNA and haemoglobin adducts[5]. Lung cancer in women is an amply demonstrated outcome of cooking with open coal stoves in China. Indian women generally have low lung cancer rates. This may be attributed to the minimal use of coal for cooking in Indian households. Few studies in India have suggested an association with lung cancer even after adjusting for active and passive smoking. An odds ratio of 3.59 (95% CI 1.07-11.97) has been calculated[6].

In our study among 36 non-smokers, 69.4% were females where as only 30.6% were males. Study demonstrates lung cancer in life time non-smokers are twice common in females than males. Plausible explanation could be due to indoor air pollution including biomass fuel exposure and environmental tobacco smoking. Further probing in to genetic aspects to elucidate whether any specific pre-disposition which make non-smokers vulnerable for developing lung cancer would be interesting.

Conclusion : Lung cancer among non-smokers is a major public health concern. Health awareness and identifying genetic predisposition for developing lung cancer among non-smokers will help to substantially mitigate near certain epidemic.

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Tables :

Table 1. Distribution of lung cancer patients

	Total	Grand total
NSCLC	91	100
SCLC	09	
MALE	72	100
FEMALE	28	
SMOKER	64	100
NONSMOKER	36	

Table 2. Gender, Lung cancer typing and smoking status distribution

	Smoker		Non-smoker	
Female	NSCLC	0	NSCLC	24
	SCLC	1	SCLC	1
Male	NSCLC	56	NSCLC	11
	SCLC	7	SCLC	0