

Association of Risk Factors with Lung Cancer

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A community oriented hospital based case control study was conducted to find out the association of socioeconomic factors with lung cancer at Mayo Hospital under the supervision of the Department of Community Medicine, King Edward Medical College Lahore. It was found that lung cancer was more common in people living in urban areas, smokers and addicts (heroin, hemp extract and tobacco chewing).

Key words: Lung cancer, risk factors

Lung cancer is a disease with global prevalence and incidence of which is increasing day by day. According to the distribution it has shown the greatest relative and absolute rise in mortality of any tumor this century in England and Wales and particularly in Scotland¹. In the USA it has been increasing in incidence by up to 10 % per year since 1930⁽¹⁾. In the developing countries lung cancer is the most common cancer in males and in females it is the 4th most common cancer². In Pakistan, according to a research work project, the percentage of people affected by lung cancer is 12.4 % out of all the cancers³. It accounts for approx. 1/3rd of all cancer deaths in males and more than 7% of all deaths in females⁴. Lung cancer occurs most commonly in ages between 40–70 with a peak incidence in 50s⁵. There are certain etiological factors which are associated with lung cancer and the most important of these all is smoking⁶. Some other determinants like age, sex, industrial hazards and air pollution also play an important role in the development of lung cancer. Among these age is an important factor and it is found that incidence of lung cancer increases with age⁷. There is also evidence that the prevalence of lung cancer is more in males and is increasing as compared to females as shown by the study which was conducted in Eindhoven Cancer Centre, Eindhoven, Netherlands under Janssen-Heijhen ML⁸ showing the proportion of adenocarcinoma among men has been increasing since 1975 with the decline in survival. Among women, on the other hand, both the proportion of adenocarcinoma and survival has remained more or less constant. Air pollution is one of the major risk factor in the development of lung cancer in advanced countries where smoke from the factories is polluting the environment and hazardous gases in this smoke damage the lungs badly⁹. It is considered that 90% of lung cancer is possible to avoid through prevention, especially changing of lifestyle¹⁰. We conducted this study to find out the role of different factors like smoking addiction in the causation of Lung Cancer so that the modifiable factors among them be avoided.

Materials and methods

A case control study was conducted by 4th year students of MBBS King Edward Medical College Lahore on the patients of lung cancer from November 2001 to May 2002.

In this study 22 diagnosed lung cancer patients in Mayo Hospital were included and 44 controls who were of same age, sex and socioeconomic status were selected by purposive sampling. To select the sample we devised a criteria which included the following points:

- People ranging from 2-70 years of age to rule out the complications of infancy & senile effects of old age.
- Both the sexes were included.
- People from both urban and rural areas.
- People who could read and write were labeled as literate.
- People were labeled as smokers who have been smoking 20 or more cigarettes a day for at least 10 years.
- People who have been using heroine through cigarettes, hemp extract or were indulged in tobacco chewing for over 20 years and were dependent on them to maintain their daily routine of life were labeled as addicts.

To conduct the study a questionnaire was developed including all the socioeconomic variables to be studied. These questionnaires were filled in the outdoor and ward of Oncology Department of Mayo Hospital Lahore. After collecting all the data compiled it and analysed the data by finding out p value and odds ratio.

Results

Table 1: Age and sex distribution of sample

Age (years)	n=	Cases		Control	
		Males	Females	Males	Females
2-45	24	7	1	14	2
46-70	42	13	1	26	2

Out of 22 lung cancer patients 7 males and 1 female were of age group 2-45 years and 13 males and 1 female were of age group 45-70 years where as out of 44 controls 14 males and 2 females were of age group 2-45 years and 26 males and 2 females were of age group 45-70 years.

Discussion

According to the literature lung cancer incidence is influenced by common socio-economic characteristics. The epidemiological studies also highlight the causal association factors regarding environment and the life style in development of lung cancer.

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In this study it is seen that lung cancer is found more commonly in people living in urban areas as compared to people living in rural areas because p value and odds ratio for urban area of residence are significant (Table 2).

Table 2: association of factors with lung cancer

Factors	Cases	Control	P value	Odds ratio
Area of residence	urban	18	0.001	6.50
	Rural	4		
Education al status	literate	15	1	1
	Illiterate	7		
Smoking	+ve	20	0.000001	17
	-ve	2		
Addiction (heroin, hemp extracts, tobacco chewing)	+ve	8	0.0006	12
	-ve	14		

This study revealed that smoking is an important risk factor for the development of lung cancer as p value (Table 2) is 0.000001 that shows a strong association of smoking with lung cancer. This pattern resembles the findings of Doll R, Hill AB who showed the association of smoking and carcinoma of lung¹¹. There is observed close association between increased incidence of lung cancer and increased tobacco usage. In correlation with the epidemiological research carried out by the leading scientists of the National Cancer Center Georgia, it is affirmed that tobacco smoking increases lung cancer risk. The risk is increased while smoking 20 and more cigarettes per day¹². The role of smoking was established for the development of squamous cell and small cell carcinoma of lung. It was also established that tobacco smoke exposure (passive smoking) increases the risk of chronic lung disease. The tobacco smoke exposure causes the initiation of chronic lung diseases and lung cancer in non-smoker family members and colleagues¹². The death rates due to lung cancer are also high in smokers as compared to non smokers¹³.

Death rates ¹⁴ (standardized per 100000)			
Non smokers	10	Smokers:	
Ex-smokers	43	1-14 cig/day	78
		15-24 cig/day	127

Thus smoking, both active and passive, not only increases the risk of lung cancer but it also increases the mortality in lung cancer patients^{15,16}.

Study also reveals that lung cancer is a more common problem in addicts (hemp extract, heroine etc) as both p value and odds ratio for addiction as a risk factor lie in the significant range (Table 2). Other factors observed during the course of the study such as education were found to be insignificant in association with the causation of lung

cancer but their role as confounding factors cannot be ruled out.

Conclusion

Hence we conclude that Lung Cancer is more common in people living in urban areas, smokers and people addicted to heroine, using hemp extracts and tobacco chewers.

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