

Chronic airflow limitation- a cross-sectional study among smokers & non smokers in Manipuri population

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Abstract: Cigarette smoking has been known to be the main cause of Airway diseases particularly Obstructive ones. The extent of airflow limitation depends on the number of cigarettes smoked and the duration of smoking. If intervened early, it may be reversible; however in most of the cases it becomes symptomatic only in later stages when there is significant decline in FEV₁.

Key Words: CAL= Chronic Airflow Limitation; FEV₁= Forced Expiratory Volume First Second.

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I. Introduction

Cigarette smoking is well recognized as a major cause of chronic airflow limitation. The effect of cigarette smoking & the development of chronic airflow limitation are usually assessed by change in forced expiratory volume in one second (FEV₁) in epidemiological studies. The natural decline of FEV₁ with age is well documented and in smokers is known to be affected by the number of cigarettes smoked.

Cigarettes kill an estimated 5 million people annually worldwide. By 2030, it would increase to about 10 million annually thus becoming the third leading cause of death. In Manipur smoking is a common habit prevalent in both urban & rural areas. In smokers, the rate of decline of FEV₁ is greater than in non smokers & the difference between the two groups could be in the range of 20-30%. Chronic airflow limitation (CAL) is defined as the FEV₁/FVC% < 65%. Not all chronic airflow limitation was associated with respiratory symptoms, confirming that the condition may be unrecognized until it is advanced.

II. Materials And Methods

The present study was a cross sectional study of the test result of spirometry test performed by 100 male smokers at the Human Research Room of Physiology Department, Regional Institute of Medical Sciences, Imphal, during the period from January 2016 to July 2017. The subjects were between the age of 18 to 70 years and had volunteered following recruitment drive by 'verbal information for research participation to any willing smoker coming across' by the members of the research group. A group of 40 non-smokers in the same age group acted as the control.

Subjects having known cardiovascular diseases, Bronchial asthma, lung cancer, ex-smokers and other recent or current respiratory tract infections were excluded from the study. Informed consents were taken from all the subjects and approval of the Institutional Ethics Committee taken.

A modified European Community Respiratory Health Study (ECRHS) questionnaire used by the DIDASCO study was followed for recording symptoms suggestive of obstructive lung disease.

III. Results

TABLE I

Sl. No.	Smokers (n = 100)	No. (%)
1	No. of non smokers	40
2	No. of smokers with CAL	66
3	No. of smokers with symptoms	14
4	No. of smokers with CAL and symptoms	16

TABLE2: Distribution of smokers with CAL and without CAL in relation to pack years consumption of cigarettes

Amount (pack years)	CAL developed	CAL not developed	Total
Less than or equal to 1 pack year	32	14	46
More than 1 pack year	34	20	54
total	66	34	100

TABLE 3

	FEV ₁ /FVC% (mean)	FEV ₁ (% of pred. val.)	
Smokers	56.98	59.6	
Non smokers	92.4	90.8	

IV. Discussion

This study provides further documentation of the decline in lung function in adult life in smokers and non-smokers, and quantifies the role of cigarette smoking in reducing lung function and causing chronic airflow limitation. We found that the rate of decline of lung function in smokers, as a group, was more rapid than that of non-smokers and was related to the amount smoked. Thus, in general, a smoker may expect to have lower lung function than a non-smoker of the same height and age and a more rapid decline in lung function.

We defined chronic airflow limitation as an FEV₁/FVC% or FEV₁% predicted of less than 65% on at least two occasions. Use of an FEV₁ less than 65% of predicted to define chronic airflow limitation is consistent with other studies. Chronic airflow limitation develops slowly and many subjects not classified as having this condition may have had early chronic airflow limitation with mild degrees of lung function abnormality. This study presents data to confirm that lung function in smokers, as a group, declines more rapidly than that of non-smokers. The effects of cigarette smoking, as a modifiable factor, have been extensively investigated.

Most subjects with chronic airflow limitation (2% of non-smokers and 66% of smokers) did not report shortness of breath or persistent cough with phlegm. Thus symptoms may not occur, and the disease may go unrecognized until severe and irreversible loss of FEV₁ has taken place. In this context relatively little attention has been given to factors other than smoking, such as childhood events, physiological characteristics, or environmental and social conditions, which are known to affect lung function and which may play a part in the development of chronic airflow limitation. In particular, bronchial hyper-responsiveness is associated with chronic airflow limitation and reduced lung function and its role deserves further investigation.

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