Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 02, 2024

ORIGINAL RESEARCH

Assessment of etiological factors for chronic obstructive pulmonary disease in non- smokers

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Received: 08 January, 2024 Accepted: 11 February, 2024

Abstract

Background: The two main environmental determinants that provide a risk of chronic obstructive pulmonary disease are exposure to biomass smoke and occupational exposures. The present study was conducted to assess etiological factors of chronic obstructive pulmonary disease in non-smokers.

Materials & Methods:74 cases of chronic obstructive pulmonary disease (COPD) of both genderswere classified into 2 groups. Group I was smokers and group II was non- smokers.

Results: Out of 74 patients, males were 50 and females were 24. Out of 74 COPD patients, 54 were smokers and 20 were non-smokers. The etiology was exposure to biomass smoke in 1 and 8, asthma in 3 and 6, treated pulmonary tuberculosis in 16 and 4, occupational exposure in 21 and 1, outdoor air pollution in 8 and 1, low SES in 2 and 0 and LRTI in 3 and 0 patients in group I and II respectively.

Conclusion: Common risk factors of COPD in smokers were exposure to biomass smoke, asthma, treated pulmonary tuberculosis.

Keywords:COPD, Smoking, Pulmonary tuberculosis

Introduction

Chronic obstructive pulmonary disease (COPD) is predicted to rank third in terms of causes of mortality. It is characterized by lung parenchyma damage and increasing restriction of airflow.[1] The primary cause of COPD and the primary factor associated with a bad prognosis for individuals who already have the condition is tobacco use. The chance of getting COPD may be influenced by several factors.[2] Age, a history of asthma, genes, and early respiratory infections are the host factors that appear to be important.[3] The two main environmental determinants that provide a risk are exposure to biomass smoke and occupational exposures. There is ongoing discussion on the impact of body mass index (BMI), sex, and socioeconomic level on the likelihood of having COPD.[4]

Globally, smoking cigarettes is the leading cause of COPD. Nonetheless, in poor nations, exposure to air pollution may be the primary cause of COPD not caused by tobacco use.[5] According to recent studies, indoor pollution from open fires and the use of biomass fuel for domestic purposes in homes with inadequate ventilation is the cause of non-tobacco-smoking COPD. This discovery has a significant effect on COPD in rural communities, especially for

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 02, 2024

women who regularly cook and their small children.[6]The present study was conducted to assess etiological factorsofchronic obstructive pulmonary disease in non- smokers.

Materials & Methods

The present study comprised 74 cases of chronic obstructive pulmonary disease (COPD) of both genders. All patients were enrolled with their written consent.

Data such as name, age, gender, etc. was recorded. Patients were classified into 2 groups. Group I was smokers and group II was non- smokers. A comprehensive clinical and physical assessment was carried out. Forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and total expiratory duration were among the parameters that were recorded. Records were kept on smoking history, BMI, education, family history, history of allergies, burning of biomass, inadequate ventilation in the home, etc. Results were determined statistically. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 74		
Gender	**Males**	**Females**
Number	50	24

Table I shows that out of 74 patients, males were 50 and females were 24.

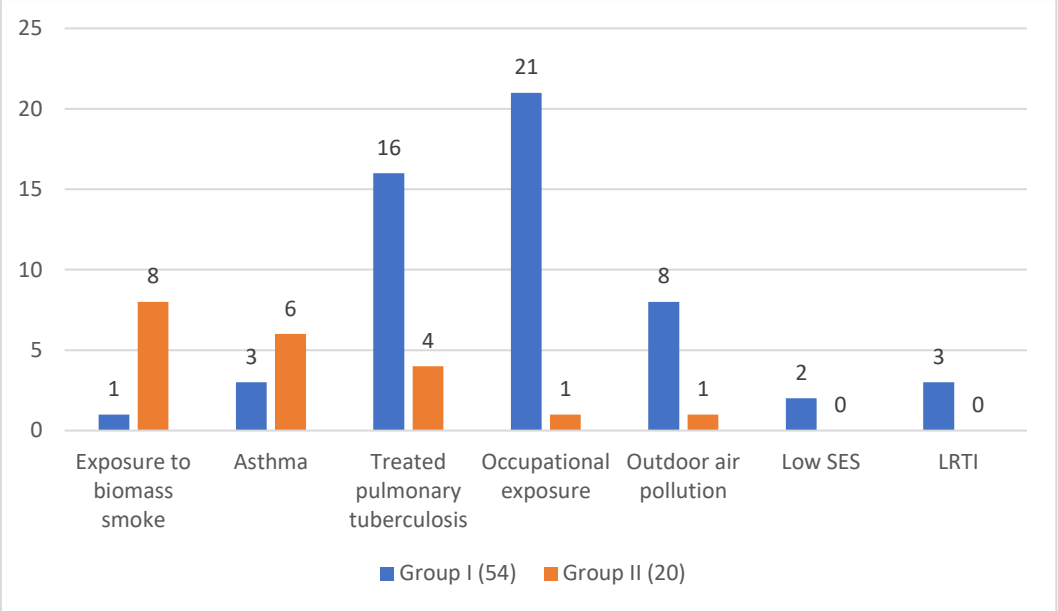
Table II Assessment of risk factors

Risk factors	Group I (54)	Group II (20)	P value
Exposure to biomass smoke	1	8	0.04
Asthma	3	6	
Treated pulmonary tuberculosis	16	4	
Occupational exposure	21	1	
Outdoor air pollution	8	1	
Low SES	2	0	
LRTI	3	0	

Table II, graph I show that out of 74 COPD patients, 54 were smokers and 20 were non-smokers. The etiology was exposure to biomass smoke in 1 and 8, asthma in 3 and 6, treated pulmonary tuberculosis in 16 and 4, occupational exposure in 21 and 1, outdoor air pollution in 8 and 1, low SES in 2 and 0 and LRTI in 3 and 0 patients in group I and II respectively.

Graph I Assessment of risk factors

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 02, 2024



Discussion

The elderly population, who are more prone to develop COPD, provides the majority of the data utilized to identify the disease's causes currently. The risk factors for the early start of COPD are still unknown, nevertheless, as few surveys have concentrated on younger populations. Moreover, no study has examined the extent to which the COPD risk factors may be identified based on the criteria employed to characterize the illness.[7] Tobacco smoke is the main risk factor for COPD, and smoking has been associated with a 50–70% population-attributable risk for the illness. The underlying causes of why some smokers get COPD and others do not are still mostly unknown. Due to their relatively low cumulative exposure to tobacco smoke, young people are a demographic that represents a population group in which causes other than smoking may contribute to COPD.[8]The present study was conducted to assess etiological factorsofchronic obstructive pulmonary disease in non-smokers.

We found that out of 74 patients, males were 50 and females were 24.According to several studies, between 25% and 50% of smokers will get chronic airway obstruction meeting COPD criteria. Another significant risk factor is second hand smoking, or ambient cigarette smoke absorbed by non-smokers.[9] Cigarette smoke and other irritants can activate macrophages, causing them to generate neutrophil-chemotactic substances such as interleukin (IL)-8 and leukotriene B4 (LTB4). Multiple proteinases released by neutrophils and macrophages cause the lung parenchyma's connective tissue to break down, leading to emphysema, and they also promote mucus secretion.[10,11] Although the majority of COPD cases are caused by tobacco smoking, the disease can also be developed by other inhalational agents, such as biomass fuel smoke, which is still utilized in underdeveloped nations and is thought to impact 3 billion people globally.[12,13]

We observed that out of 74 COPD patients, 54 were smokers and 20 were non-smokers. The etiology was exposure to biomass smoke in 1 and 8, asthma in 3 and 6, treated pulmonary tuberculosis in 16 and 4, occupational exposure in 21 and 1, outdoor air pollution in 8 and 1, low SES in 2 and 0 and LRTI in 3 and 0 patients in group I and II respectively.Marco et al[14]used various spirometric definitions of the condition to examine risk variables for COPD in a global sample of young individuals. The European Community Respiratory Health Survey was used to measure prebronchodilator FEV1/FVC in 4,636 patients without asthma between 1991 and 1993 and 1999 and 2002. COPD was classified using two criteria: one

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based on the Quanjer and LuftiBus reference equations (FEV1/FVC less than lower limit of normal) and the other based on the Global Initiative for Chronic Obstructive Lung Disease fixed cut-off criterion (FEV1/FVC, 0.70).

Conclusion

Authors found that common risk factors of COPD in smokers were exposure to biomass smoke, asthma, treated pulmonary tuberculosis.

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