Study of the Prevalence of Chronic Obstructive Pulmonary Disease among Smokers

Thesis

Submitted For Partial Fulfillment of the Master Degree of Chest Diseases

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2011

دراسة معدل الإصابة بمرض السدة الرئوية المزمنة بين المدخنين

رسالة مقدمة من الطبيبة

هـالـة أحـمـد عبدالـلـه
بكالريوس الطب والجراحة
كلية الطب
جامعة عين شمس
توطئه للحصول على درجة الماجستير في الأمراض الصدرية

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Summary

The present study was conducted in El-Mataria Teaching Hospital, chest department, by spirometric screening of 350 male volunteer smokers including quitters. Thirty eight (11%) of them were receiving treatment for COPD prior to the study, but the reminders (89%) were apparently healthy and not receiving treatment for COPD.

The aim of this study was to assess the prevalence of COPD among smokers aged 40 up to 65 with a history of at least 20 pack/year cigarette smoking, including quitters.

Exclusion criteria:

1. Persons complaining of chronic pulmonary diseases other than COPD.

2. Persons younger than 40 or older than 65 years.

3. Persons with smoking history less than 20 pack/year.

All of them were subjected for:

1. **Personal history:** including detailed history about smoking habit (duration, number and type of smoking).
2. **Occupational history:** to exclude occupational causes of COPD.

3. **Family history:** of COPD or other chronic pulmonary diseases.

4. **General examination:** Including

a. Vital data (pulse and blood pressure)

b. Height and weight.

c. Examination of upper and lower limbs.

d. Examination of head and neck.

5. **Local examination:** including

- Local chest examination.
- Local examination of other systems.

6. **Investigations:** including

- Routine laboratory investigations including:

  -Complete blood count.

  -Fasting and 2hours postprandial blood glucose level.

  -Renal and liver function test.

- Pulmonary function tests: were done using the computerized spirometer spirometrics 1986, model 2005; version 3.1, U.S.A.

All these data are collected and statistically analyzed:

- It was found that 79.1% of studied persons had no airway obstruction and 20.9% showed different degrees of airway obstruction.
- It was found that (42.5%) of cases that have airway obstruction as proved by spirometric study were receiving treatment for COPD prior to the study but the reminders (57.5%) were apparently healthy and not receiving treatment for COPD. So the spirometric screening of high risk population is a helpful method for early detection of COPD.
- There is a higher percentage of airway obstruction among old age group (>54 years) 25.3% compared to 16.7% in young age group (≤54 years) and the difference is significant statistically.
- 36% of subjects showed different degrees of small airways dysfunction.
- There is statistically significant negative (inverse) correlation between smoking index and pulmonary function parameters including FEV_1% and FEF_{25-75}%.
- There is statistically significant negative (inverse) correlation between age and FEV_1%.

Conclusion

The present study may represent a potentially useful model to use the spirometry in high risk population as an effective and easy method for the assessment of the prevalence of COPD.

Recommendations

According to the results of the present study, it is recommended to:

- Perform Spirometric screening of smokers aged more than 40 years in pulmonary outpatient clinics nationwide.
- Raise the awareness of the public health authorities, the medical community and the general public to consider COPD as a public health issue.
- Encourage programs for routine office spirometry in general practice.
- Supply primary care units with hand-held spirometers, and to provide GPs with skills and training in this specific domain, in addition to increasing their ability to incorporate spirometry in their daily routines.
- Help smokers with airflow limitation to quit smoking and to be followed up in antismoking clinics.
- Do much more efforts in order to design strategies for the improvement and motivation of prevention policies, early detection, diagnosis, and management of COPD patients at all levels of health care, especially in the provision of primary health care, in order to reduce the economic impact of COPD.

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Introduction

Chronic obstructive pulmonary disease is a major cause of chronic morbidity and mortality around the world. Many people suffer from this disease for years and die prematurely from it or its complications. COPD is the fourth leading cause of death in the world, and further increases in its prevalence and mortality in the coming decades can be predicted ***(Lopez et al., 2006).***

Chronic obstructive pulmonary disease (COPD) is a preventable and treatable disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and is associated with an abnormal inflammatory response of the lungs to noxious particles or gases, primarily caused by cigarette smoking ***(American Thoracic Society, 2004).***

The diagnosis of COPD should be considered in any person who has symptoms of cough, sputum production, dyspnea, or history of exposure to risk factors of the disease. The definitive diagnosis requires spirometry; namely, forced expiratory volume in the first second/forced vital capacity (FEV_1/FVC) < 0.7 that is not fully reversible (***American Thoracic Society and European respiratory Society, 2007).***

Tobacco smoking is the main risk factor for COPD, although other inhaled noxious particles and gases may contribute. This

causes an inflammatory response in the lungs, which is exaggerated in some smokers, and leads to the characteristic pathological lesions of COPD. In addition to inflammation, an imbalance of proteinases and antiproteinases in the lungs, and oxidative stress are also important in the pathogenesis of COPD ***(American Thoracic Society, 2004).***

The disease often manifests after the individual has been smoking more than 20 cigarettes a day over 20 years (20 pack/year) ***(Siafakas et al., 1995).*** A smoker who is sensitive to cigarette smoke may therefore have Spirometric changes from age 40 to 45 if they started smoking as a teenager or in the early twenties. It has been estimated that 15–20% of smokers develop COPD ***(Global Initiative for Chronic Obstructive Lung Disease, 2006),*** but more recent research suggests that as many as 50% develop COPD if the smoker reaches an advanced age ***(Teramoto, 2007).***

Aim of the work

The aim of this work is to assess the prevalence of COPD among smokers aged 40 up to 65 with a history of at least 20 pack/year cigarette smoking, including quitters.

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