ORIGINAL ARTICLES AAEM

Ann Agric Environ Med 2000, 7, 29–31

CHRONIC BRONCHITIS IN RURAL AND INDUSTRIAL AREAS

Konstantinos I. Gourgoulianis, Panagiota Katikos, Maria Moraitis, Nektarios Argiriou, Paschalis-Adam Molyvdas

Lung Function Laboratory, Department of Physiology, Medical School, University of Thessaly, Larissa, Greece

Gourgoulianis KI, Katikos P, Moraitis M, Argiriou N, Molyvdas P-A: Chronic bronchitis in rural and industrial areas. *Ann Agric Environ Med* 2000, **7**, 29–31.

Abstract: The purpose of the study was the determination of prevalence of chronic bronchitis in people older than 55 years in rural and industrial areas. 569 people over 55 years old living in central Greece were studied. A protocol was completed for each patient that included smoking habits, job, age, weight, drugs used for respiratory system and symptoms. A chest radiograph was taken for each patient. Each patient was submitted to three trials of dynamic spirometry. The best results were used for the study. The patients who complained of expectoration for three months for two continuous years and had obstructive pattern of lung function were diagnosed with chronic bronchitis. 9.6% of the subjects in rural area and 17.1% in industrial area were diagnosed with chronic bronchitis. Half the COPD patients never visited a doctor for this specific problem and were diagnosed for the first time. One out of three examined people had abnormal lung function. Consequently, more than one out of ten people older than 55 years have chronic bronchitis. Industrial exposure seems to double the risk for chronic bronchitis.

Address for correspondence: Dr K.I. Gourgoulianis, Pulmonologist, Assistant Professor, Medical School, University of Thessaly, 22 Papakiriazi, 41222 Larissa, Greece.
E-mail: Kgourg@med.uth.gr

Key words: chronic bronchitis, spirometry, industrial area, rural area.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a chronic condition characterized by the presence of chronic bronchitis or emphysema. The majority of patients are older than 50 years, have been smoking cigarettes for many years and report symptoms such as dyspnoea at exercise and common colds [7]. Daily chronic productive cough for at least three months for two continuous years is the main diagnostic finding in chronic bronchitis [9]. In epidemiological studies, chronic bronchitis in often defined by irreversible lung function loss. Except smoking, occupational exposure to air pollution and socioeconomic status are correlated with COPD.

The purpose of this study was to investigate the epidemiology of chronic bronchitis in two different areas in central Greece, one rural and one industrial.

MATERIALS AND METHODS

Five hundred sixty nine subjects who lived in central Greece, were studied by a pulmonologist, a general practitioner and medical students in Recreation Centres for the elderly. The total examined population were over 55 years old. Two hundred of 364 subjects who lived in Larissa, a rural area, were farmers. 185 of the 205 subjects who lived in Volos, an industrial area, were industrial workers. Most of them were retired.

All patients were asked to complete a questionnaire which included age, job, smoking habits, weight and height. It was also examined if the patients had a personal medical history of frequent common colds, asthma or another respiratory disease. All patients were asked how many times they were examined by a doctor and particularly by a pulmonologist each year, during the last three years for respiratory system symptoms. They were

Received: 10 March 2000
Accepted: 1 June 2000

Table 1. Characteristics of 569 subjects.

Mean age (years)	69.2 ± 13.4
Females/Males	313/256
Smokers/Non smokers	182/387
Auscultation findings	185 (32.5%)
Asthma history	37 (6.5%)
Frequent common colds	55 (9.7%)
Abnormal spirometry	
FEV_1 < 80% of predicted values	188 (33%)
FEV_1 < 60% of predicted values	48 (8.4%)

Table 2. Subjects' profile in 2 different areas.

Subjects	Rural area (Larissa)	Industrial area (Volos)	P
	364	205	
Females	210 (57.6%)	110 (53.5%)	NS
Smokers	114 (31.2%)	68 (33%)	NS
Farmers	200 (55%)	25 (12.2%)	< 0.001
Industrial workers	23 (6.3%)	185 (90%)	< 0.001
Use of inhalers	56 (15.4%)	40 (19.5%)	NS
Chronic bronchitis	35 (9.6 %)	35 (17.1%)	< 0.05

Table 3. Chronic bronchitis patients' profile in 2 different areas.

Subjects	Rural area	Industrial area	P
Farmers	60.7%	17%	< 0.001
Industrial workers	12.3%	42.3%	< 0.001
Examined by pulmonologist	32.1%	44.1%	< 0.05
Never examined by physician	50.0%	42.4%	NS

then asked if they used drugs and especially inhalers. All kinds of drugs and their duration of use were listed. The patients were asked if they had symptoms like cough and its characteristics, expectoration, dyspnoea, or other symptoms from the respiratory system. Expectoration was studied with emphasis on the quantity and frequency, meaning how many days each month and for how many years.

All patients were clinically examined and the results were recorded, especially those from thorax auscultation. All patients were asked to bring a recent thorax radiograph and were submitted to spirometry. They were all submitted to three trials in sitting position and the optimum was recorded. The weight and height, without shoes, were measured and the predicted values of dynamic volumes and flows were estimated [2]. The values from the optimal trial for forced vital capacity (FVC), forced expiratory volume in first second (FEV_1), the ratio FEV_1/ FVC and peak expiratory flow (PEF) were estimated. The patients who complained of expectoration, more than 60 ml daily, for at least three months for two continuous years and had obstructive pattern in lung function test, were diagnosed with chronic bronchitis. Those patients that had in their medical history a disease that could cause the expectoration, were excluded.

Data were statistically analysed with the SPSS statistical programme.

RESULTS

Table 1 shows that the mean age of subjects was 69.2 years. About one out of three was a smoker or had abnormal lung function. One out of ten reported more than three common colds annually.

Table 2 shows the subjects characteristics in two areas. Chronic bronchitis in an industrial area of Volos (17.1%) was about twice as frequent than in a rural area of Larissa (9.6%). No differences were found between the two area groups in gender and smoking habits. Most of the subjects in Larissa area were farmers whereas only 12.2% of the subjects in Volos area were farmers.

In an industrial area, patients were examined more often by a physician and especially by a pulmonologist than in a rural area ($p < 0.05$). About half the patients had never been examined by a physician (Tab. 3).

DISCUSSION

The results of our study showed that out of the subjects older than 55 years, 9.6% of rural area and 17.1% of industrial area were diagnosed with chronic bronchitis. About one out of two chronic bronchitis patients was diagnosed for the first time and had never visited a physician for this problem before.

Several international studies estimated the percentage of chronic obstructive pulmonary disease as 5% in general population and 20% among older people [3]. Contrary to the high frequency of the disease internationally, the number of deaths due to chronic obstructive pulmonary disease is small in Greece. Therefore, mortality is not the best way to evaluate the disease frequency. According to our study, about 15% of the patients over 55 years of age have chronic obstructive pulmonary disease. This percentage confirms the international reports mentioned previously but contradicts the data presented in a statement by the European Respiratory Society [7]. According to these data, Greece seems to have the smallest frequency of the disease in comparison to European countries. This seems odder if it is correlated with the high percentage of smokers in the Greek population during recent years. Consequently, the effect of this feature is that chronic obstructive pulmonary disease is a common health problem in Greece that it is possibly underestimated.

The prevalence of chronic bronchitis differs from country to country and perhaps from area to area in the same country [5, 13]. Except for smoking, occupational exposure is another risk factor of chronic obstructive pulmonary disease. In our study, industrial workers have an increased risk of chronic bronchitis. They were workers in textile factories or had exposure to dust or fumes. In most previous studies, the magnitude of the effect of occupational dust has been less than that of personal smoking [4, 11].

It is also impressive that 50% of the patients with chronic bronchitis had never been examined by a physician. The patient learns to live with the symptoms and usually visits a doctor many years after they start when a serious respiratory infection appears as a complication of chronic obstructive pulmonary disease. The deterioration usually appears during winter and is faced as a common cold. The expectoration, that is a diagnostic criterion for chronic bronchitis, is also underestimated [1, 6, 8].

In contrast to epidemiological studies that estimate the frequency of chronic obstructive pulmonary disease based on mortality, the direct studies of examining the patients in the general population will show the true dimensions of the problem of chronic obstructive pulmonary disease in rural or industrial areas [10, 12]. Approximately, more than 15% of the general population over 55 years of age had chronic obstructive pulmonary disease. Occupational exposure seems to increase the risk of chronic bronchitis.

REFERENCES

1. American Thoracic Society: Standards for the diagnosis and care of patients with COPD. *Am J Respir Crit Care Med* 1995, **152**, S77-S120.
2. ATS STATEMENT: Lung fuction testing: Selection of reference values and interpretative strategies. *Am Rev Respir Dis* 1991, **144**, 1202-1218.
3. Bakke PS, Baste V, Hanoa R, Gulvik A: Prevalence of obstructive lung disease in a general population: relation to occupational title and exposure to some airborne agents. *Thorax* 1988, **46**, 863-870.
4. Burge PS: Occupation and COPD. *Eur Respir J* 1994, **7**, 1032-1034.
5. Burrows B: Epidemiologic evidence for different types of chronic airfow obstruction. *Am Rev Respir Dis* 1991, **140**, 225-252.
6. Burrows B: Predictors of loss of lung fuction and mortality in obstructive lung diseases. *Eur Respir Rev* 1991, **1**, 340-345.
7. European Pulmonary Society (ERS) Siafakas NM, Vermeire P: Optimum evaluation of severity and therapy of Chronic Obstructive Pulmonary Disease. *Eur Respir J* 1995, **8**, 1398-1420.
8. Ferguson GT, Cherniack RM: Management of COPD. *N Engl J Med* 1993, **328**, 1017-1022.
9. Georgopoulos D, Authonisen NR: Symptoms and signs of COPD. **In**: Cherniack N (Ed): *Chronic Obstructive Pulmonary Disease.* Saunders, NY 1990, 357-363.
10. Gourgoulianis KI, Lavdas E, Mizios P: Prescription of bronchodilator drugs by primary health care physicians in asthma. *Respiration* 1994, **61**, 204-206.
11. Hendrick DJ: Occupation and COPD. *Thorax* 1996, **51**, 947-955.
12. Jeffery PK: Chronic obstructive pulmonary disease and cigarette smoke-induced epithelial damage. *Eur Respir Rev* 1992, **2**, 136-143.
13. Sherril DL, Lebiwitz MD, Burrows B: Epidemiology of COPD. *Clin Chest Med* 1990, **11**, 375-388.