UNIVERSITY OF MEDICINE, PHARMACY, SCIENCE AND TECHNOLOGY
„GEORGE EMIL PALADE" TÂRGU MUREŞ

DOCTORAL SCHOOL

SUMMARY OF THE DOCTORAL THESIS

Chronic obstructive pulmonary disease: early diagnosis and treatment of exacerbations to prevent worsening of the disease and its complications

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common, severe, treatable and preventable disease defined by chronic airflow limitation and varied symptoms that decrease the patient's quality of life as a result of significant exposure to harmful particles or gases. Exacerbations of chronic obstructive pulmonary disease (COPD) are acute negative events that can intervene in the natural evolution of the disease, associate worsening of the symptoms (dyspnea, cough with increased purulence of sputum, sleep disturbances and decrease in daily activity) and frequently lead to the modification of usual medication (association antibiotics and systemic corticosteroids).

OBJECTIVES

The present study aimed to bring to attention the threat that COPD poses to the individual/society (being a severely underdiagnosed disease), and the epidemiological/clinical particularities of patients in our geographic area. Criteria for assessment/self-assessment of the severity of exacerbations in people with COPD have been proposed to allow early treatment to prevent complications, exacerbations and reduce hospitalization costs.

The study proposed a "screening" protocol for people at high risk with the identification of the eligible population (smokers, people with professional exposure, people from disadvantaged backgrounds) as well as the concrete method of intervention.

Cost analysis for different types of patients allows customization and efficiency of disease management: stable COPD with ambulatory monitoring and COPD exacerbation.

The objective of study 2 consisted in the broad clinical–paraclinical characterization of the COPD–SARS–COV2 infection association in our geographic area.

Characterization of a group of cases with stable COPD, with outpatient treatment and comparisons with the group of cases with exacerbations hospitalized in the Pneumology Clinic.

The research activity within the doctorate also aimed at active information measures on the harmful effects of smoking in patient populations but also in middle school and high school students (high risk group for the initiation of smoking), activities that will continue for a long time.

The objective of the study carried out on adolescents was: to assess the prevalence and motivation of smoking in adolescents; assessment of students' knowledge regarding the harmfulness of smoking; knowledge of the possibilities of quitting smoking; their willingness to quit and to persuade other students to quit smoking.

GENERAL METHODOLOGY

We performed prospective studies of patients with COPD (with or without exacerbations) and retrospective analyzes based on observation sheets (those with COPD and SARS – COV2 infection).

Active investigation of some subjects at risk was carried out for the early detection of smoking status, early disease - simple chronic bronchitis or COPD (epidemiological, clinical criteria, spirometric criteria, interdisciplinary consultations).

A study was conducted on questionnaires distributed among students from grades 6-12, enrolled in general schools in Târgu-Mureş and neighboring localities, for the evaluation of smoking, knowledge about smoking and the implementation of anti-smoking medical education.

RESULTS

STUDY 1. included 209 patients with exacerbated COPD admitted to the Târgu-Mureş Pneumology Clinic (without SARS-COV2) in the period 2019 – 2021. Socio-economically active men predominated, an aspect directly correlated with smoking and occupational exposure. The total prevalence of smoking in COPD was significantly higher compared to the national average in the population >15 years (21%) and the European smoking average (18%). Cases from the urban environment predominated - an observation that can be explained by the high professional exposure in urban enterprises, but also by the increased accuracy of COPD diagnosis due to the increased accessibility to medical services in urban compared to rural areas. The cause of COPD was in most cases infection. Only 9.56% patients were vaccinated against influenza and 7.65% vaccinated against pneumococcal although the permanent recommendations of pulmonologists /guidelines were for prophylactic vaccination. Other avoidable causes of COPD: increased smoking, coexistence/exacerbation of cardiovascular comorbidities, sleep apnea/obesity-hypoventilation syndrome (15.8%). Evaluation of comorbidities and nutritional status in COPD was ongoing to identify risk factors of disease severity and COPD and their complex treatment (respiratory and nutritional rehabilitation, cardiological treatment, sleep apnea investigation and CPAP treatment). Patients with 3 comorbidities represented the statistically significant majority (68.89%). Our data emphasize the severity of pulmonary

function impairment at the extremes (in cachectic or obese subjects) and support the need for ongoing dietary and physical activity advice and consultation with nutritionists. Lung cancer was common in patients with COPD which warrants active screening (clinical examination, chest CT and bronchoscopy) in this population group (at increased risk due to smoking and inflammation in COPD).

Study 2. The association of exacerbated COPD with SARS – COV 2 infection is a retrospective study, which included 52 patients admitted to the Pneumology Clinic in Târgu Mureș. The association of COPD with SARS-COV2 infection in the group of patients admitted to the Pneumology Clinic for COVID-19 was frequent (17.16%), which qualifies COPD as a risk factor for this viral infection. Important deterioration of the general condition, including the appearance of signs of respiratory failure, the need for admission to intensive care was more frequent, than in non-COPD patients with SARS-COV2 pneumonia. Mortality is higher in patients with COPD and SARS-COV2. Careful follow-up of COPD cases (in the post-Covid period) in the outpatient department with education, severity staging, functional reassessment/CT and appropriate treatment adjustment and monitoring of post-Covid-19 sequelae are key factors for long-term disease management and preventing complications.

Study 3. processed the characteristics of patients with stable COPD evaluated through the Pneumology ambulatory (2020 – 2023). The age of the stable COPD group was significantly lower than in the literature reporting increased frequencies of COPD at ages >70 years. Both smoking and exposure to pollutants were risk factors for COPD. Comorbidities were also frequent in this group with stable COPD but with fewer cardiovascular complications and diabetes compared to the group with patients with COPD exacerbation. Compliance with treatment was very good and significantly higher in patients with exacerbations and contributed to the prevention of exacerbations.

Study 4 assessed adolescent smoking and smoking knowledge. Smoking was common among students, especially among teenage girls. Smoking was more reduced among boys, middle school and theoretical high school students. Most of the students who smoke have parents/grandparents who smoke, respectively they also smoke passively. They first lit a cigarette at the age of 14 or 15 in 41.3% of respondents, followed by the age of 12-13 in 36.95%. The majority (68.89%) of teenagers smoke with friends, Teenagers' motivation for smoking in 19 cases because of the environment, 15 out of curiosity, 14 for relaxation. Most of the children had not smoked a cigarette in the last 30 days. but 4 teenagers smoked almost daily. Most teenage smokers have not received information or received inadequate information from friends or the Internet. The students were very open to the recommendations provided and to the information received, which provides a high possibility for smoking cessation.

Comparing the smoking habits of young people in Romania with national and global data underlines the complexity of this problem. While there is progress in reducing the prevalence of smoking among adolescents, continued prevention and education efforts are essential. The individualized approach, adapted to the cultural and social specifics of each community, can significantly contribute to reducing smoking habits among young people. In conclusion, the comparative analysis of smoking habits among young people in Romania, at the national and global level, reveals the complexity of the factors that influence these behaviors. Although there are concerns about the proportion of young Romanians who have experienced smoking, it is clear that there is an increased awareness of the risks associated with this habit.

THE ORIGINALITY OF THE THESIS

The originality of the thesis derives primarily from the topicality of the study theme (exhaustive evaluation of COPD exacerbations in a representative group), an aspect that has not been debated in Romania in the last 20 years. Particular aspects in COPD unexplored until now were addressed: correlations between COPD and nutritional status, COVID infection, comparisons between COPD moderate/severe exacerbation with hospitalization and COPD managed in the outpatient setting. The causes of COPD exacerbations and admission to the Clinic were identified (discontinuation of medication, respiratory failure, pneumothorax, decompensation of the pulmonary heart, infections, extreme exposure to noxious substances, continued smoking, abandonment of treatment) and some means of counteracting them - e.g. prophylactic vaccination, close personalized management of patients with this chronic disease. Evaluation of students' knowledge about tobacco use, interest in anti-smoking activity. Risk and prognostic factors have been identified that early detection, together with clinical thinking and targeted investigations can lead to improved diagnosis and treatment in COPD. Original proposal to create a COPD patient education and exacerbation alarm tool for correct behavior and presentation to the doctor. Highlighting the 7-day costs in a patient with stable COPD and the gigantic costs in case of an exacerbation. The conclusions of the studies carried out in the doctoral thesis involved an important number of cases, which gives them a reference.