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Original research

CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN THE COMMUNITY OF THUA THIEN HUE

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ABSTRACT

Aims: *To determine the rate of chronic obstructive pulmonary disease in people ≥ 40 years old and some related factors in Thua Thien Hue province in the 2021 - 2022 period. Clinical and paraclinical characteristics and risk stratification in patients with chronic obstructive pulmonary disease.*

Methods: *1600 people, aged ≥ 40 years old, selected randomly from among the residents area of Thua Thien Hue. Agree to participate in the study after being provided with information.*

Results: *The prevalence of COPD in Thua Thien Hue province is 5,4%. Age, gender, education, history of asthma and chronic bronchitis, using of straw and firewood stoves, and smoking are factors independently associated with COPD. History of allergy was 17,2%, ENT disease was 18,4%, gastroesophageal reflux disease was 16,1%. The most common symptoms were chronic cough (80,5%), expectoration (74,7%), and dyspnea (66,7%). 52,9% of patients had all 3 of the above symptoms. The rate of current smoking was 64,4%. X-ray symptoms in patients were very rare (1,1%). The ratio of FEV1/FVC < 30% was very rare (2,3%). The FEV1/FVC ratio from 50% - 80% accounted for the highest rate (37,9%), followed by the 30% - 50% group (21,8%). The majority of patients were detected at moderate obstruction level, accounting for 37,9%; the rate of patients detected with COPD at mild obstruction stage was 21,8%. The risk stratification of COPD exacerbation by type A was 29,9%, type B was 1,1%, type C was 59,8%, type D was 9,2%.*

Conclusion: *The rate of chronic obstructive pulmonary disease is quite high in the Thua Thien Hue community. A screening strategy is needed to detect chronic obstructive pulmonary disease early in the whole province. Pay attention to subjects who are male, illiterate or only literate, have asthma and chronic bronchitis, using the straw, firewood or coal stoves, smoke or have quit smoking.*

Keywords: *COPD, smoking, charcoal stoves, low education.*

I. INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a chronic respiratory condition characterized by persistent respiratory symptoms and airflow limitation due to airway and/or alveolar abnormalities [1]. According to the World Health Organization, COPD is the third leading cause of death worldwide, affecting people living in low- and middle-income countries, more than 80% of deaths occurs in this countries [2].

Exposure to risk factors (cigarette smoking, tobacco, cooking smoke, occupational dusts, respiratory infections at a young age...) increases the incidence of COPD. Nowadays, the prevalence of smoking is increasing, the aging of the world's population and the development of industry, especially in developing countries (including Vietnam), these are favorable conditions for the increasing incidence of COPD.

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Worldwide, COPD is in the spotlight, since its high prevalence, morbidity and mortality create formidable challenges for health-care systems. In Vietnam, there have been a few studies on the epidemiology of COPD in the community with results showing that the progression of COPD in Vietnam is also in line with the general trend of the world [3]. However, previous studies were mainly conducted in inner-city areas of cities and provinces. To contribute to having a comprehensive picture of the situation of COPD in Vietnam and especially to assess the role of risk factors on the rate of COPD, we conducted this study to determine the rate of chronic obstructive pulmonary disease in people ≥ 40 years old and some related factors in Thua Thien Hue province in the period 2021 - 2022; and explore the clinical and paraclinical characteristics and risk stratification in patients with chronic obstructive pulmonary disease.

II. MATERIALS AND METHODS

A cross-sectional descriptive study was conducted on 1600 people, aged ≥ 40 years old, selected randomly from among the residents area of Thua Thien Hue from 2021 to 2022. Agree to participate in the study after being provided with information.

Non-proportional stratified sampling was applied, representing the socio-economic regions of Thua Thien Hue province.

Study participants were interviewed using a questionnaire, clinically examined and measured spirometry to detect subjects with COPD and to learn personal information related to the disease.

Diagnosis of chronic obstructive pulmonary disease was based on: Coughing and expectoration for 3 months/year and continuously for 2 years or more; Dyspnea: Progressive, increased with exertion and respiratory infections; History of exposure to risk factors: smoking, occupational dusts, chemicals, cooking smoke and fuel fumes.

Examination: Signs of bronchospasm, obstruction and/or emphysema may be seen: percussion resonance, decreased breath sounds, wheezing; Signs of right heart failure may be seen in late stages.

Definite diagnosis of COPD: when Gaensler index (FEV1/FVC) < 70% after bronchial rehabilitation test [1].

Data processing and analysis was performed using SPSS 20.0.

III. RESULTS

Through a study of 1,600 people aged 40 and over in 4 regions: Urban, rural, coastal and mountainous areas in Thua Thien Hue province, we obtained the following results

3.1. Incidence rate and some factors related to chronic obstructive pulmonary disease

Prevalence of chronic obstructive pulmonary disease in Thua Thien Hue: The incidence of COPD is 5.4% (Figure 1).

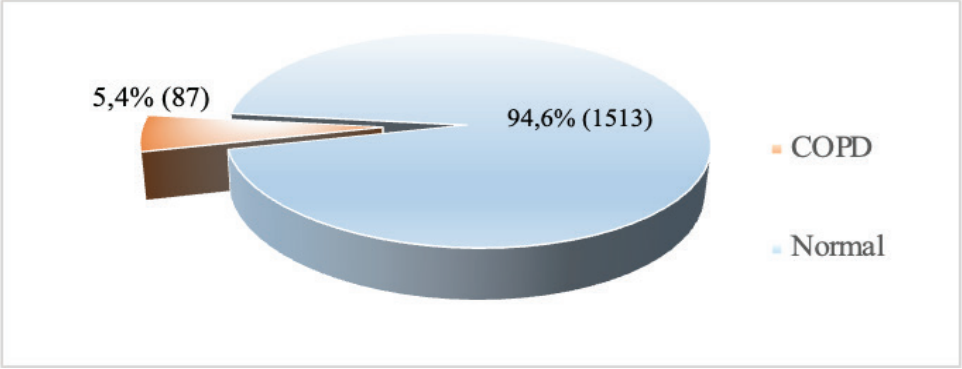

Figure 1: The prevalence of COPD in Thua Thien Hue province

Table 1: COPD factors related with

Factors	OR	p
Ages		
> 80	1.7	> 0.05
70 - 79	3.4	< 0.01
60 - 69	4.0	< 0.01
50 - 59	3.4	< 0.05
40 - 49	reference	
Sex		
Males	3.0	< 0.01
Females	reference	
Ethenics		
Others	0.8	> 0.05
Kinh	reference	
Education		
Illiterate	14.8	< 0.05
Literacy	14.1	< 0.05
Primary	4.6	> 0.05
Middle school	6.1	> 0.05
High school	1.7	> 0.05
Intermediate and above	reference	
Occupation		
Farmer	0.5	> 0.05
Officer	3.4	> 0.05
Housewife	0.8	> 0.05
Retired/Elderly	0.9	> 0.05
Self-employed	0.9	> 0.05
Fisherman	0.7	> 0.05
Worker	reference	
Smoking		
Currently smoking	4.4	< 0.01
Quitting smoking	4.0	< 0.01
Passive smoking	1.1	> 0.05
Never smoking	reference	
Bronchitis		
Yes	11.6	< 0.001
No	reference	
Stove type		
Straw. firewood. leaf. coal stove	3.1	< 0.001
Gas or electric stove	reference	

3.2. Clinical and paraclinical characteristics and risk stratification in patients with chronic obstructive pulmonary disease

Clinical characteristics of patients with chronic obstructive pulmonary disease: The most common symptoms were chronic cough (80.5%), sputum production (74.7%), and shortness of breath (66.7%). 52.9% of patients had all three symptoms. The current smoking rate was 64.4% (Table 2).

Table 2: Clinical characteristics of chronic obstructive pulmonary disease

Characteristic	n (%)
History	
Allergies	15 (17.2)
Previous ENT	16 (18.4)
Previous Gastroesophageal Reflux	14 (16.1)
Smoking	
Currently smoking	56 (64.4)
Quitting smoking	20 (23.0)
Passive smoking	4 (4.6)
Never smoking	7 (8.0)
Clinical	
Chronic cough	70 (80.5)
Chronic sputum production	65 (74.7)
Dyspnea	58 (66.7)

Characteristic	n (%)
No symptoms	9 (10.3)
One symptom	9 (10.3)
Two symptoms	23 (26.4)
Three symptoms	46 (52.9)

Paraclinical characteristics of patients with chronic obstructive pulmonary disease: X-ray symptoms in patients were very rare. FEV1/FVC ratio < 30% was very rare (2.3%). FEV1/FVC ratio from 50% - 80% accounted for the highest rate (37.9%), followed by the 30% - 50% group (21.8%) (Table 3).

Table 3: Paraclinical characteristics of chronic obstructive pulmonary disease

Characteristics	n (%)
FEV1 ≥ 80%	19 (21.8)
50% ≤ FEV1 < 80%	33 (37.9)
30% ≤ FEV1 < 50%	19 (21.8)
FEV1 < 30%	16 (18.4)
FEV1/FVC	
0.5 - 0.7	72 (82.8)
0.3 - 0.5	13 (14.9)
< 0.3	2 (2.3)
X-ray	
Normal	86 (98.9)
Symptoms of pulmonary congestion	0 (0.0)
Bronchitis	1 (1.1)

Risk stratification of patients with chronic obstructive pulmonary disease: The majority of patients were detected at moderate obstruction level, accounting for 37.9%; The rate of patients detected with COPD at mild obstruction stage was 21.8%. The risk stratification of acute COPD by type A was 29.9%, type B was 1.1%, type C was 59.8%, type D was 9.2%. (Table 4).

Table 4: Risk stratification of chronic obstructive pulmonary disease

Characteristics	n (%)
GOLD grading	
GOLD 1	19 (21.8)
GOLD 2	33 (37.9)
GOLD 3	19 (21.8)
GOLD 4	16 (18.4)
CAT	
0 - 9	25 (28.7)
≥ 10	62 (71.3)
mMRC	
0 - 1	20 (23.0)
≥ 2	67 (77.0)
Risk stratification	
A	26 (29.9)
B	1 (1.1)
C	52 (59.8)
D	8 (9.2)

IV. DISCUSSION

4.1. Incidence and some factors related to chronic obstructive pulmonary disease

Incidence of chronic obstructive pulmonary disease: The results of our study show that the prevalence of chronic obstructive pulmonary disease in the whole province is 5.4%. The rate in our study was higher than that of author Phan Thu Phuong when screening for chronic obstructive pulmonary disease in the suburban area of Hanoi (Soc Son district) showed that the overall prevalence of the disease for both sexes was 3.32% [4]. The study by Zhong et al. (2007) conducted on 20,245 subjects aged 40 and over living in 7 provinces and cities of China found that the prevalence of chronic obstructive pulmonary disease was 8.2% [5].

Factors related to chronic obstructive pulmonary disease. Age, gender, education, history of chronic bronchitis, using of straw or firewood stoves, smoking status or had quitted smoking were factors independently related to COPD.

Lindberg Anne (2005): The incidence of COPD increases with age with OR = 3.49 for older age [6]. Sobradillo V, when analyzing the multivariate logistic model, also showed that compared to non-smokers, the risk of developing the disease increased from 2 to 5 times in smokers of 15 packs/year or more (95%CI [3.37 - 7.91]) [7]. Zhong et al (2007) showed that patients with COPD had more common in rural areas, had a history of smoking, old and had low educational level [5].

4.2. Clinical, paraclinical characteristics and risk stratification in patients with chronic obstructive pulmonary disease

Clinical characteristics of patients with chronic obstructive pulmonary disease

History of allergies was 17.2%, ENT disease was 18.4%, gastroesophageal reflux disease was 16.1%. The most common symptoms were chronic cough (80.5%), expectoration (74.7%), and dyspnea (66.7%). 52.9% of patients had all 3 of the above symptoms. The rate of current smoking was 64.4%.

Ngo Thi Thu Huong showed that wheezing symptoms accounted for 70.9%, snoring was 61.6%, and crackling was 16.6% [8]. Sobradillo V et al (2000) showed that among subjects with airway obstruction, only 32.4% had clinical symptoms [7]. Paraclinical characteristics of patients with chronic obstructive pulmonary disease: X-ray symptoms in patients are very rare. Only 1 patient has bronchitis. FEV1/FVC ratio < 30% is very rare (2.3%). FEV1/FVC ratio from 50% - 80% accounts for the highest rate (47.9%), followed by the 30% - 50% group (21.8%). Vo Pham Minh Thu (2016) also gave the same average FEV1% result as ours, which is 50.35 ± 19.8%; in which patients with acute exacerbation frequency ≥ 2 have more severe airway obstruction. 75% of patients with acute exacerbation frequency ≥ 2 have severe airway obstruction (GOLD 3), this rate in the group with acute exacerbation frequency < 2 is 29.7%; 7.1% of patients with an acute exacerbation frequency of ≥ 2 had very severe airway obstruction (GOLD 4), while the rate in the group with an acute exacerbation frequency of <2 was 1.6% [9]. According to Nguyen Quynh Loan (2003), bronchial wall thickening was the most common X-ray lesion with a rate of 64.7%, lung dilatation (on straight films) was found at a rate of 58.8%, and dirty lung images were less common than the above two signs with a rate of 17.6% [10].

Risk stratification of patients with chronic obstructive pulmonary disease: The majority of patients were detected at moderate obstruction level, accounting for 37.9%; at mild obstruction level, accounting for 21.8%. Risk stratification of acute COPD exacerbations by type A was 29.9%, type B was 1.1%, type C was 59.8%, type D was 9.2%.

Dyspnea level according to mMRC score: The majority of patients with acute COPD exacerbations had a dyspnea level mMRC ≥ 2, accounting for 77.0%. The proportion of patients with mMRC score < 2 accounted for 23.0%. Research by Vo Pham Minh Thu (2016) also showed that the chronic dyspnea level of COPD patients was mainly recorded as mMRC 2 & 3 points, respectively 32% and 16%; The author also noted that patients with mMRC dyspnea scores of 4 - 5 points all had 2 or more acute episodes per year, and were also related to the GOLD 3 and 4 patient groups [9].

Impact on quality of life of COPD patients: Our results showed that the majority of patients' quality of life was affected by acute COPD episodes. The proportion of patients with CAT scores ≥ 10 was 71.3%.

V. CONCLUSION

The prevalence of COPD in Thua Thien Hue province is 5.4%. Age, gender, education, history of asthma and chronic bronchitis, use of straw and firewood stoves, and smoking are factors independently associated with COPD. History of allergy was 17.2%, ENT disease was 18.4%, gastroesophageal reflux was 16.1%. The most common symptoms were chronic cough (80.5%), expectoration (74.7%), and dyspnea (66.7%). 52.9% of patients had all 3 of the above symptoms. The rate of current smoking was 64.4%. X-ray symptoms in patients were very rare (1.1%). The ratio of FEV1/FVC < 30% was very rare (2.3%). The FEV1/FVC ratio from 50% - 80% accounted for the highest rate (37.9%), followed by the 30% -

50% group (21.8%). The majority of patients were detected at moderate obstruction level, accounting for 37.9%; the rate of patients detected with COPD at mild obstruction stage was 21.8%. The risk stratification of COPD exacerbation by type A was 29.9%, type B was 1.1%, type C was 59.8%, type D was 9.2%.

Disclosure

The authors report no other conflicts of interest in this work

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