RESEARCH ARTICLE

Diagnostic Features and Management of Patients With Chronic Obstructive Pulmonary Disease

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ABSTRACT

Background: *World Health Organization (WHO), Indicate in 1990 occupy 6th order as the leading cause of death and will occupy 3rd order after cardiovascular disease and cancer.In Indonesia estimated 4,8 million patients with prevalence 5,6%.*

Method: *This research was conducted by using descriptive research design with cross sectionall approach. The number of samples is 80 people with simple random sampling technique*

Results: *Based on the result of research from 80 samples of patients obtained most age ≥60 years ie 50 patients (62,5%),the most of gender is male 69 patient (86,3%),the most of clinical symptoms is shortness of breath 42 patient (52,5%),the most of smokers status is active smoker 58 patient (72,5%), the most of job is entrepreneur 30 patient (37,5%),the most of examination support is radiology 50 patient (62,5%), the most of management is bronchodilator 35 patient (43,7%) and the most of mortality rate was in the ICU room 5 patient (50%).*

Conclusion: *The result showed with Chronic Obstructive Pulmonal Disease the most treated was male patiens with age ≥65 years, the most of job is entrepreneur, which have a history of smoking with clinical symptoms of shortness breath and cough phlegm, the most of used examintaion support is radiology and the most of management is bronchodilator. Choronic Obstructve Pulmonal Disease management is excellent with fewer deaths.*

Keywords: Chronic Obstructive Pulmonal Disease, Management, examination support.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a term used to describe diseases characterized by airflow obstruction. The obstruction can occur in the respiratory tract or in the lung parenchyma. These diseases include chronic bronchitis (a respiratory tract problem) and emphysema (a parenchymal problem).1

Data from the World Health Organization (WHO) indicates that in 1990, COPD ranked

sixth as the leading cause of death worldwide and is expected to rank third, after cardiovascular disease and cancer. In the United States, COPD management costs approximately US$18 billion annually, with indirect costs reaching US$14 billion, with 16 million patients and over 100,000 deaths. The estimated number of moderate to severe COPD patients in Asia in 2006 reached 56.6 million, with a prevalence of 6.3%. The prevalence rate ranges from 3.5 to 6.7%, with cases reaching 38.16 million in China, 5.014 million in Japan, and 2.068 million in Vietnam. Indonesia has an estimated 4.8 million patients, with a prevalence of 5.6%. This figure could increase with the increasing number of smokers, as 90% of COPD patients are current or former smokers.2

The symptoms of COPD usually occur alongside the primary symptoms of the underlying cause. If chronic bronchitis is the cause, the primary symptom is excessive sputum production. However, if emphysema is the cause, the primary symptom is alveolar damage, with the clinical complaint of dyspnea associated with exercise.3

Physical examination and chest X-ray are not sensitive methods for diagnosing COPD. Physical examination findings of pulmonary hyperinflation, such as a low-lying diaphragm, decreased breath sounds, and hyperresonance on percussion, are highly specific for COPD, but are usually only present in advanced stages of the disease. High-resolution computed tomography (HRCT) of the lung is a sophisticated technique for early detection of emphysema, but its role in early detection and monitoring of COPD is currently not standardized. 4

Pulmonary function tests aim to measure lung capacity in the three stages of respiration: ventilation, diffusion, and perfusion. The results of these tests are used to assess the health status or lung function of the individual being examined. Ventilation measurements can use simple tools such as peak flow meters and spirometry. 5

To diagnose COPD in a patient, the gold standard is spirometry. In COPD patients, airflow obstruction occurs during expiration, which affects spirometry results such as FEV1 (Forced Expiratory Volume in one second), FVC (Forced Vital Capacity), and total lung volume. However, changes in spirometry results in COPD depend on age, gender, smoking history, and occupation. From these spirometry results, the severity of COPD can also be assessed as mild, moderate, severe, and very severe based on the FEV1/FVC ratio.4

Based on the above description, the researchers were interested in conducting a study to determine the diagnostic features and management of COPD at Deli Serdang Lubuk Pakam Regional Hospital.

METHOD

This study used a descriptive survey design with a cross-sectional approach. The study was conducted on a single occasion, aiming to develop a picture of COPD based on secondary data, specifically medical records. This study is also considered non-experimental because it did not control or manipulate the research variables. This descriptive study assessed the characteristics of patients with Chronic Obstructive Pulmonary Disease (COPD) who were outpatients at Deli Serdang Regional Hospital, Lubuk Pakam, in 2015.

The study was conducted as an outpatient at Deli Serdang Regional Hospital, Lubuk Pakam. The researchers chose this location due to data availability. Deli Serdang Regional Hospital, Lubuk Pakam, is a

teaching hospital in North Sumatra, making it easy to conduct the study. The study was conducted at Deli Serdang Regional Hospital, Lubuk Pakam, after the proposal was approved. The study began on May 30, 2017, and ended on June 22, 2017.

The subjects were outpatients diagnosed with Chronic Obstructive Pulmonary Disease (COPD) at Deli Serdang Regional Hospital, Lubuk Pakam, whose diagnosis had been confirmed through physical examination, radiology, EKG, and laboratory tests. The sampling technique used was simple random sampling, where each member or unit of the population had an equal chance of being selected. With a desired confidence level of 90% and an instrument accuracy level of 10%, the sample size obtained using this formula was 80 individuals.

This study used patient medical records (secondary data) as research material. The data used were medical records of outpatients with chronic obstructive pulmonary disease at Deli Serdang Regional Hospital, Lubuk Pakam. The researchers first conducted a research survey to determine the availability of data on outpatient care at Deli Serdang Regional Hospital, Lubuk Pakam. The researchers then observed medical records in the outpatient care of Deli Serdang Lubuk Pakam Regional Hospital in 2015. During the observations, they recorded subjects who met the inclusion criteria. The data was then analyzed.

RESULTSAND DISCUSSION
Characteristics of the Sample in this Study.

Table 1 shows the distribution of COPD by age, with the highest prevalence being 50

patients (62.5%) aged 65 years and 30 patients (37.5%) aged 45-64 years.

This can occur due to decreased lung function. Danusantoso (2013) stated that it is related to the pulmonary immune system. Any disorder in this area, such as IgA deficiency, C3-C4 deficiency, and Immotile Cilia Syndrome, each disrupts the cleansing function of the lower respiratory tract. This allows all kinds of debris (including germs) to more easily enter the lungs, with all its consequences, predisposing to the development of COPD in older age.

This disease is chronic, and exposure to various pollutants is often prolonged (many years), leading to a higher number of COPD sufferers being diagnosed in older age. This result is in line with Khairun Nisa's (2010) research conducted at H. Adam Malik Medan General Hospital, which found that the most COPD sufferers were aged $\geq$ 65 years, namely 51 sufferers (37.5%).

Table 1. Characteristics of the research sample.

Characteristics	Jumlah (n)	Persentase (%)
Usia		
$\geq$ 65 Tahun	50	62,5
45-64 Tahun	30	37,5
Gender		
Man	69	86,3
Woman	11	13,7
Main Complaint		
Shortness of breath	42	52,5
Coughing up phlegm, shortness of breath	38	47,5
Job		
Self-Employed	35	43,7
Private Employees	30	37,5
PNS	10	12,5
TNI		
	5	6,25

Smoker Status		
Active Smoker		
Passive Smoker		
	58	72,5
	22	27,5
Mortality Rate		
ICU Emergency Room	5	50
Regular Room	3	30
	2	20

Table 1 shows the distribution of COPD by age, with the highest prevalence being those aged 65 years and older, with 50 (62.5%), and those aged 45-64 years, with 30 (37.5%).

This can occur due to decreased lung function. Danusantoso stated that it is related to the pulmonary immune system. Any disorders in this area, such as IgA deficiency, C3-C4 deficiency, and Immotile Cilia Syndrome, each disrupt the cleansing function of the lower respiratory tract. This allows all kinds of debris (including germs) to more easily enter the lungs, with all its consequences, predisposing to the development of COPD in older age. This disease is chronic, and exposure to various pollutants is often prolonged (many years), leading to a higher number of COPD sufferers being diagnosed in older age. These results align with Khairun Nisa's (2010) research conducted at H. Adam Malik General Hospital in Medan, which found that the highest number of COPD patients were aged ≥ 65 years (51 patients) (37.5%).6

The high prevalence of smoking among men explains the high prevalence of COPD among men. These results align with Putri's research at H. Adam Malik General Hospital in Medan, which found that the majority of COPD patients were men (104 patients (76.5%) and women (32 patients (23.5%).7

Shortness of breath is a major problem in COPD and a reason patients seek treatment. Wibisono stated that shortness of breath in COPD occurs due to dynamic hyperinflation that worsens with an increased respiratory rate. Consequently, to avoid shortness of breath, many patients avoid exertion and become bedridden or sitting. Another complaint is coughing up phlegm, which usually occurs before or simultaneously with shortness of breath. Sputum is generally not abundant, only a few teaspoons per day, and is mucoid in nature, but becomes purulent with infection. As the disease progresses, physical abnormalities become more apparent. Barrel chest, purse-lipped breathing, and weight gain are seen. These results align with Lisa's (2013) study at Arifin Achmad Regional Hospital in Riau, where the most COPD patients

complained of shortness of breath (69 patients (86.25%), and coughing up phlegm accompanied by shortness of breath (11 patients (13.75%). 4

The most common chronic obstructive pulmonary disease cases were among self-employed workers, with 35 individuals. This is supported by literature indicating that COPD can be caused by indoor and outdoor air pollution, including cigarette smoke, stove fumes, motor vehicle exhaust fumes, road dust, chemicals, irritants, and toxic gases. Self-employed workers are generally more exposed to COPD risk factors. This study, conducted by Blanc et al. in 2009, found that COPD occurred in 58% of workers exposed to gases, dust vapors, or long-term exposure. 9

Agoes stated that smoking is a major factor in the development of COPD. Molecules found in cigarette smoke can inhibit the movement of cilia in the airways, impair

alveolar function, cause inflammation, and increase mucus secretion in the bronchi. This damage to the cilia and alveoli can facilitate inflammation in the bronchi and bronchioles, which is accompanied by lung infection. This inflammation in the bronchi and bronchioles can cause airway obstruction, weaken the bronchiole walls, and damage the alveolar walls.8

Wibisono stated that there are no medications for COPD that have been proven to reverse the long-term decline in lung function. Therefore, medications are used to reduce symptoms and/or complications. Bronchodilators are the mainstay of COPD management. Commonly used bronchodilators for COPD treatment include beta-2 agonists (salbutamol, terbutaline, fenoterol), anticholinergics (ipatropium bromide, tiotropium bromide), and xanthine derivatives (aminophylline, theophylline). Given as needed or routinely to prevent or reduce symptoms and exacerbations. Inhalation therapy is preferred, with the choice between beta-2 agonists, anticholinergics, and xanthine or combination therapy depending on the available medications and the individual's response to therapy and side effects (ESOs).4

CONCLUSION

COPD is a chronic lung disease in which the majority of sufferers are smokers, both active and passive. The link between smoking and this disease is evident in this study, which shows that most patients are either active or passive smokers. Mortality in COPD is usually related to secondary infections resulting from the destruction of lung parenchyma, which is the basis of the disease's pathogenesis.

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