

Acute Exacerbation of COPD in the Elderly with Chronic Hypertension, Suspected Meniere's Disease and History of Active Smoking

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ABSTRACT

Background: Chronic Obstructive Pulmonary Disease (COPD) is a clinical symptom consisting of a group of chronic, progressive, and ongoing respiratory conditions. Meniere's Disease (MD) is a disorder of the inner ear characterized by hearing loss, tinnitus, and vertigo. **Objective:** Cases of COPD and MD in the elderly. **Case:** A 72-year-old man came to the primary clinic with the main symptoms of acute shortness of breath and vertigo. On physical examination there was an increase in the respiratory rate and wheezing in both lung fields and on the chest X-ray there was emphysematous lung. Neurological examination revealed hearing and balance problems. The patient was diagnosed with COPD and MD, with a history of active smoking for 30 years, and did not regularly visit the hospital. In this case, comprehensive interventions were carried out including Patient Centered, Family Focused, and Community Oriented. **Conclusion:** COPD and MD are chronic diseases that can cause acute symptoms and can recur, so that if they occur in the elderly it can reduce quality of life and mortality. Comprehensive intervention is needed to prevent the recurrence of dyspnea, vertigo, and complications.

Keywords: COPD, Meniere's disease, holistic, comprehensive

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Introduction

Chronic obstructive pulmonary disease (COPD) is a clinical syndrome comprising a group of chronic, progressive, and debilitating respiratory conditions including emphysema and chronic bronchitis. COPD is the third leading cause of death worldwide [1] and its incidence is expected to increase [2,3]. This disease is less commonly reported, especially in the Asia-Pacific region [4]. In one survey, the overall prevalence of COPD was estimated to be 4.5% in Indonesia and 9.5% in Taiwan. Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide, causing 3.23 million deaths in 2019. Nearly 90% of COPD deaths in people under 70 years old occur in low- and middle-income countries (LMICs). Early diagnosis and treatment, including smoking cessation support, is needed to slow the progression of symptoms and reduce relapse. Environmental exposure to tobacco smoke, indoor air pollution and occupational dusts, fumes, and chemicals are significant risk factors for COPD. COPD is the result of long-term exposure to harmful gases and particles combined with individual factors, including events that affect lung development during childhood and genetics [1].

Ménière's disease (MD) is an inner ear disorder characterized by hearing loss, tinnitus, and dizziness. In most cases, the disease is slow, progressive, and has a significant impact on the social functioning of the affected individual [5]. The incidence of Ménière's disease ranges from 3.5 per 100,000 to 513 per 100,000 [6][7], and is more common in elderly, Caucasian, and female patients [6][7][8]. The etiology of this disease is

still unknown, it is believed that there is endolymphatic accumulation in the cochlea and vestibular organs causing endolymphatic hydrops. The present study associates endolymphatic hydrops with hearing loss greater than 40 dB, while vertigo may or may not be [9]. This suggests that endolymphatic hydrops are not completely specific for MD, but may also occur in idiopathic sensorineural deafness. It is also important to identify comorbidities in patients with Ménière's disease, which are: migraine [10], autoimmune diseases (rheumatoid arthritis, systemic lupus erythematosus, and ankylosing spondylitis) and genetics. Ten percent of cases in Europe with familial Ménière's disease can be either autosomal recessive or autosomal recessive [11]. In this article, we will describe a case study of COPD and DM in the elderly.

Case

A 72-year-old male patient complained of shortness of breath and chest palpitations that were felt 4 hours before entering the emergency room at the Kedungkandang Health Center. On arrival, the patient's blood pressure was 150/80 mmHg, pulse 130x/minute, RR: 38x/minute, T: 37°C, SpO2 93% with O2 NRBM 10 lpm. On physical examination, there was a wheezing sound at the apex of the left lung. Because there was a complaint of tachycardia, we examined the EKG, and the results were sinus tachycardia. Then the patient was nebulized by using Ventolin and Pulmicort, and 1 hour later, improved. On returning home, the patient experienced worsening symptoms, and we decided to refer the patient to the hospital. The patient considered

the recurrence to be due to exhaustion and rain one day ago. Initially, the patient refused to be brought to the ER. However, because the symptoms worsened, the family immediately brought them to the emergency room at the primary care. The patient and family would be concerned about something happening to their heart or lungs. The patient hopes that the recurrence of symptoms will disappear soon. The day before entering the ER, the patient had a fever that was not too high, but the patient did not check his temperature. He felt a fever throughout the day, followed by shortness of breath, which initially worsened. The patient admitted that he had phlegm in his throat that was difficult to expel.

The patient has been a heavy smoker since a young age, as much as one pack per day. In 2002 the patient decided to stop because there were symptoms of coughing that were getting more frequent. The patient also realized he had hypertension (160/80) in 2002. There is no family history of a similar disease. The neurological examination found physiological reflexes within normal limits, no pathological reflexes were found, the Romberg test fell in all directions, proprioceptive tests within normal limits, and dysdiadochokinesia tests within normal limits. A blood examination (21-11-2016) found an increase in ESR, urea, and random blood sugar. Chest radiograph (21-11-2016) shows emphysematous pulmonum. ECG (22-11-2016) sinus tachycardia 100 beats/minute. Head CT Scan (4-8-2016): Cerebral infarction in the external capsule, corona radiata dextra (sub-acute infarction), and corona radiata sinistra (old infarct) accompanied by senile brain atrophy. He was diagnosed with an acute exacerbation of COPD, chronic hypertension, and suspected Meniere's disease.

The patient was hospitalized, then treated for symptoms of shortness of breath with Ventolin 2.5 mg/5ml, Pulmicort 0.25 mg/ml, and salbutamol 2 mg tablets twice daily. After getting better, he takes the remedies at home regularly, controls to the primary care one week after returning from hospitalization, avoids triggering factors for exacerbations (cigarette smoke, air pollution, decreased immune system), carries out pulmonary rehabilitation, prevent exacerbations by wearing a mask when leaving the house, and wear an umbrella/raincoat when it rains. For chronic hypertension, he takes amlodipine 5 mg tablet twice daily. For suspected Meniere disease, dimenhydrinate 50 mg tablet once daily. For Meniere's disease, he should take a low diet in sodium (< 1500 mg/day), a low diet in caffeine, nicotine, alcohol, and foods containing theophylline such as chocolate, and vestibular rehabilitation. Suggest stopping smoking and performing pulmonary rehabilitation (breathing and cough exercises).

Discussion

Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease characterized by airflow obstruction in the airways that is progressive, non-reversible, or partially reversible, progressive, usually caused by a pulmonary inflammatory process caused by exposure to harmful gases that can give a picture of a systemic disorder. Factors that play a role in the increase in the disease [12]: smoking habits are still high (men over 15 years 60-70%), population growth, increasing the

average age of the population from 54 years in the 1960s to 63 years in the 1990s, industrialization, air pollution especially in big cities, in industrial sites, and mining. The patient found risk factors in the form of active smoking from a young age for 30 years, and a work environment that was in a polluted area when he was young (now the patient has retired).

Symptoms and signs of COPD vary widely, ranging from asymptomatic, to mild to severe symptoms. On physical examination, there were no obvious abnormalities or signs of pulmonary inflation. The diagnosis of COPD is based on: clinical features and physical examination. Clinically in the form of a history of smoking or former smokers with or without respiratory symptoms, a history of significant exposure to irritants at work, there are predisposing factors in infancy/childhood, such as low birth weight (LBW), recurrent respiratory infections, cigarette smoke environment. and air pollution, repeated coughing with or without phlegm, shortness of breath with or without wheezing. On physical examination in the form of pursed-lips breathing (mouth half-closed protruding), barrel chest (comparable antero-posterior and transverse diameters), use of accessory muscles for breathing, hypertrophy of accessory muscles of respiration, widening of the ribs, if right heart failure has occurred, a venous pulse can be seen. jugular neck and leg edema, pink puffer or blue bloater appearance, weakened emphysema fremitus, widened intercostal space, hyper resonant emphysema and narrowed heart border, low diaphragm, lowered liver, normal or weakened vesicular breath sounds, crackles and/or wheezing During normal breathing or forced expiration, prolonged expiration, the heart sound is heard far away. In this patient, the diagnosis of COPD was established from history and physical examination, namely a history of smoking for a long time and physical examination revealed dyspnea and wheezing in the left lung field [12].

The degrees of COPD is based on the 2022 Global Initiative for Chronic Obstructive Lung Disease (GOLD), divided into 4 degrees: Grade I (mild COPD): with or without clinical symptoms (cough-producing sputum). Mild airflow limitation (VEP1/KVP < 70%; FEP1 > 80% Prediction). At this stage, the person may not realize that their lung function is abnormal. Grade II (moderate COPD): worsening airflow obstruction (VEP1 / KVP < 70%; 50% < FEP1 < 80%), accompanied by a shortening of breathing. In this stage, the patient usually begins to seek treatment because of the shortness of breath he is experiencing. Grade III (severe COPD): characterized by worsening airflow limitation/impairment (VEP1/KVP < 70%; 30% VEP1 < 50% predicted). There is worsening shortness of breath, decreased exercise capacity, and repeated exacerbations that have an impact on the patient's quality of life. Grade IV (very severe COPD): severe airflow limitation/impairment (VEP1 / KVP < 70%; FEP1 < 30% predicted) or FEP1 < 50% predicted plus chronic respiratory failure and right heart failure [13]. In this patient, the degree of COPD could not be determined because spirometry was not performed.

The differential diagnosis of COPD is asthma, SOPT (Post-tuberculosis Obstruction Syndrome) which is an obstructive airway disease found in post-tuberculosis

patients with minimal lung lesions, pneumothorax, chronic heart failure, a lung disease with other airway obstructions such as bronchiectasis [12]. In this patient the differential diagnosis was ruled out based on the anamnesis, there was a history of active smoking and no symptoms of tuberculosis, physical examination showed no abnormalities on inspection, palpation, percussion, auscultation of the heart, and supporting examination revealed widened intercostals on chest X-ray examination.

Meniere's disease is a syndrome consisting of attacks of vertigo, tinnitus, fluctuating hearing loss, and a feeling of fullness in the ear. This disease is a disease that causes humans to be unable to maintain an upright standing position. This is caused by hydrops (swelling) of the endolymph cavity in the cochlea and vestibule [9]. This patient complained of spinning dizziness and getting worse when walking, there was a complaint of ringing in both ears, especially the right ear, and decreased hearing.

Other disease conditions can produce symptoms similar to Meniere's disease, so the possibility of other diseases must be ruled out to make an accurate diagnosis. The initial evaluation is based on a very careful history. The diagnosis of this disease can be facilitated by the diagnostic criteria of AAO-HNS (American Academy of Otolaryngology-Head and Neck Surgery) 1995 [14].

This patient had symptoms of vertigo with a duration of 20 minutes and improved with rest, on neurological physical examination there were no abnormalities, subjective complaints of tinnitus in both ears, and subjective complaints of decreased hearing, especially in the right ear. But audiometric examination was not performed so the diagnostic scale could not be determined.

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