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Prehospital procedures and transport of the diseased with a suspected Chronic Obstructive Pulmonary Disease – case description

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Abstract

Chronic iterative lung disease is an incurable disease that can be prevented. Available treatment, including cessation of smoking, allows the hindering of its progress. The goal of COPD treatment is to alleviate its symptoms, improve effort tolerance as well as the quality of life, and reduce the risk of progression by reducing the number of exacerbations. Medical

Emergency Unit in Kielce accepted a call regarding a 55-year-old man who complains about severe shortness of breath for several hours, not responding to the medicines he has at home. The Basic Emergency Response Team is dispatched to the event. In practice, emergency medical team interventions regarding patients reporting dyspnea are not uncommon. In a significant proportion of patients, dyspnea occurs as a result of a chronic obstructive pulmonary disease (COPD).

Introduction

Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the world. Chronically inhaled cigarette smoke and other harmful gas molecules, such as smoke from fumes, can cause inflammation of the airways. Chronic inflammatory reaction can lead to the destruction of the pulmonary parenchyma (emphysema) and the remodeling of the small respiratory tract. These changes lead to a progressive restriction of air flow and an air trap, which is manifested by dyspnea. The assessment of airflow disturbances in obstructive diseases is performed by spirometry - a test necessary for a certain diagnosis of COPD. This is an incurable disease that can be prevented. Available treatment, including cessation of smoking, allows the hindering of its progress. The goal of COPD treatment is to alleviate its symptoms, improve effort tolerance as well as quality of life, and reduce the risk of progression by reducing the number of exacerbations. The key to the success of its treatment is to understand the basis of the disease and the contribution of tobacco smoke in its formation. All patients should be encouraged to quit smoking and supported in the fight against that addiction.

The most recent recommendations of GOLD 2018 in the diagnosis and treatment of patients with chronic obstructive pulmonary disease (COPD) emphasized the need to individualize therapy using patient assessment algorithms for the severity of symptoms, the frequency of exacerbations, availability and the possibility of taking a particular drug. Proper pharmacological therapy reduces the symptoms of COPD, reduces the frequency and severity of exacerbations and improves overall health and tolerance of the patient's effort. Despite the emergence of new drugs, more and more perfect devices for their inhalation or the possibility of comfortable combination therapy, a method to stop the significant decline in lung function in long-term evaluation has not been invented to this day. Prognosis in severe COPD is serious and comparable with prognosis in patients with advanced forms of lung cancer. The 5-year survival rate is, according to different authors, from 26% to 50%.

Case description

Disposition: At 5:38 a call was received in the Emergency Medical Service unit in Kielce, regarding a 55-year-old man who reports strong shortness of breath for several hours, not responding to the medicines he has at home accompanied by a severe chest pain.

The P (Basic) Emergency Rescue Team is dispatched to the event. The team consists of a paramedic and a paramedic-driver.

Team P goes to the indicated address in the K1 alarm mode (with the signals on). The travel time is three minutes.

Arrival at the site: At 5:43, the team reaches the place which is a single-family house. Along with the equipment (rescue kit with an ampulatorium, oxygen therapy kit, resuscitation kit, defibrillator), the team members go to the apartment in which the patient is located. On site, the team finds a man sitting in a chair in the room. The paramedic begins the initial assessment of the victim.

Medical history: The man reports that he has been treated for COPD for several years. On the day of Emergency Response Team call, the dyspnea persists for several hours and increases over time, the symptoms do not recede despite the administration of own medications.

Physical examination: The patient is pale, the skin is cool. Blood pressure measurement (BP) is 110/70 mmHg, pulse oximetry (sPO₂) 68%, standard blood glucose, number of breaths (RR) is 24 / min, heart rate (HR) 131 beats / min, capillary reversal below 2 seconds, GCS (Glasgow ComaScale) 15 points. The pupils are even, reacting correctly to light, audible wheezing and creaking, tones of the heart clean, loud.

Recommendation: Immediate inclusion of oxygen therapy with the use of nebulization from Salbutamol in the dose of 5mg with the use of an oxygen mask with a flow of 5 L / min of 100% oxygen under continuous control of pulse oximetry with the aim that the saturation values do not exceed 88-92% oxygen, intravenous injection and administration of Hydrocortisone in a dose of 200mg, administration of 0.9% NaCl solution in a volume of 500ml

Diagnosis: Exacerbation of the Chronic Obstructive Pulmonary Disease (COPD) was diagnosed on the basis of the entire clinical image.

Procedure: Preliminary protection of the patient was started immediately. Oxygen therapy was implemented along with the use of nebulization with 5mg Salbutamol under strict pulse oximetry control. Two large intravenous (i.v.) access points were created for 1.8.G cannula, 200 mg Hydrocortisone i.v. was administered, fluid therapy was switched on with 500 ml of 0.9% NaCl (NatriumChloratum).

Administered to the patient: Ventolin (Salbutamol) 5mg inh., Corhydron (Hydrocortisone) 200mg i.v., 0.9% NaCl solution 500ml i.v.

Transport: The patient was secured for the time of lifting him using a cardiological chair to the ambulance with continuous oxygen therapy. In the ambulance, the patient stayed on the stretcher in a half-sitting position. The paramedic reassessed the patient's condition according to the ABCDE scheme: A-patency of the airways - unobstructed, B-breath for 10 seconds with hearing, eyesight and feeling - about 18-20 breaths / min SpO₂ 79 %, C-circulation - comparing the central and peripheral heart rate, auscultating the tones of the heart and controlling the monitor and pulse oximetry - 113 beats / min, assessing the skin and capillary return. The other parameters remained unchanged.

After reaching the cardiology center's Emergency Department, the team that took over the patient were already waiting.

Discussion

In practice, emergency response teams' interventions in patients reporting dyspnea are not uncommon. In a significant proportion of the patients, dyspnea occurs as a result of a chronic obstructive pulmonary disease (COPD). Studies show that the use of a non-invasive ventilation with positive pressure (NIV) in the event of exacerbation of the disease results in reduced mortality, reduced need for intubation, and shortens the time of hospitalization. When administering oxygen in the case of COPD, one should pay special attention to SpO₂ values. The oxygen therapy should be used under strict SpO₂ control and only if the patient suffers from breathlessness and its clinical symptoms are visible. Chronic hypercapnia is not a contraindication to oxygen therapy if there are features of hypoxemia. It should, of course, lead to caution in the use of O₂ and it is worth using low flows (1-4 l / min.) to obtain an SpO₂ value of 88-92%. There are always concerns about stopping the respiratory drive (due to the mechanism of hypoxemic drive in COPD), although in acute cell hypoxia the only way to reverse the patient's condition is to use such high oxygen concentrations. The initial

assessment of the patient and the information about the current course of COPD should allow the selection of patients who are likely to enter the terminal phase of the disease and whose intubation would be inappropriate. In these patients a non-invasive soothing ventilation should be used when awaiting the results of the treatment aiming to combat the reversible factors causing the exacerbation. An important element in shaping new rules of handling patients in this group should be the intensive education of primary care physicians, pneumonologists and internal medicine doctors as well as the preparation of medical teams, including nurses and possibly volunteers, to care for patients with severe and terminal COPD.

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