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Misdiagnosis of respiratory symptoms in elderly patients – clinical cases

Błędy w diagnostyce objawów ze strony układu oddechowego u pacjentów w starszym wieku – przypadki kliniczne

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Słowa kluczowe

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Summary

Respiratory symptoms are among the most common causes of medical consultation at all ages. In older adults, clinical picture may be blurred, pathological signs may overlap with normal aging and course of respiratory diseases is often influenced by comorbidities. Thus, the risk of under- and over-diagnosis is increasing with age and is highest in the oldest-old. Some disorders, e.g. asthma, are believed to begin in childhood or adolescence, and onset of symptoms at older age is often mistaken with other diagnoses, especially chronic obstructive pulmonary disease (COPD). A topic requiring special consideration is the use of inhaled medication by elderly patients and lack of clinical efficacy of such treatment that often triggers change in the therapeutic regime, while active control of inhalation technique might reveal improper inhalation as a cause of problems. Routine comprehensive geriatric assessment may help to assess changes in physical and mental performance of the patients and facilitate diagnosis. Clinical cases presented in the article encompass a broad spectrum of respiratory problems in the elderly patients.

Streszczenie

Objawy ze strony układu oddechowego należą, niezależnie od wieku, do najczęściej występujących przyczyn konsultacji medycznych. Obraz kliniczny chorób układu oddechowego u osób w starszym wieku może być niecharakterystyczny, objawy chorobowe mogą nakładać się na oznaki fizjologicznego starzenia, a na przebieg kliniczny tych chorób mogą wpływać choroby towarzyszące. Ryzyko nadrozpoznowania i niedorozpoznowania zespołów chorobowych zwiększa się z wiekiem i jest największe wśród najstarszych seniorów. Niektóre choroby, np. astma, są uznawane za choroby wieku dziecięcego lub młodego i, jeśli początkowe objawy choroby wystąpią w starszym wieku, często są one błędnie przypisywane innemu rozpoznaniu, najczęściej przewlekłej obturacyjnej chorobie płuc (POChP). Na szczególną uwagę zasługuje zagadnienie stosowania leków wziewnych przez osoby starsze i brak skuteczności terapii, co często staje się powodem zmiany sposobu leczenia, podczas gdy sprawdzenie techniki inhalacji może pomóc wykryć, że przyczyną problemów jest po prostu nieprawidłowe przyjmowanie leków. Rutynowe zastosowanie całościowej oceny geriatrycznej pozwala na monitorowanie zmian w zakresie sprawności funkcjonalnej i stanu umysłowego pacjentów i często umożliwia postawienie prawidłowego rozpoznania. Przypadki kliniczne przedstawione w tej pracy obejmują szerokie spektrum zaburzeń układu oddechowego u pacjentów w starszym wieku.

INTRODUCTION

Establishing clinical diagnosis is a process based on the history of patient's symptoms, clinical signs, and additional information obtained from laboratory tests, chest X-ray and other available data. In elderly patients, the diagnostic process is often more difficult due to blurred clinical picture, overlapping of disease symptoms with signs of aging, and comorbidities. Inadequate geriatric education of medical staff may

result in errors in clinical judgment, especially in relation to the oldest-old and cases where knowledge of age-related changes and comprehensive geriatric assessment play crucial role in formulating diagnosis. Thus, recognizing a new disease in an elderly patient is a challenging task, with a considerable risk of under- and over-diagnosis.

Respiratory symptoms are among the most common reasons for medical consultation at all ages.

In older adults, limited respiratory capacity may present as functional decline while, on the other hand, low exercise performance should be differentiated with dyspnea. Clinical cases described below show how complicated the process of reaching a proper diagnosis in senior patients can be. The presentation of ten cases was divided into the following parts: medical history, clinical signs and diagnostic tests results, preliminary diagnosis and treatment, disease course, final diagnosis. At the end of each case description there is a short commentary elucidating reasons of difficulties or errors in establishing the proper diagnosis.

CASES

Case 1

An obese seventy-five-year-old woman with arterial hypertension treated for the last 20 years reported significant dyspnea after climbing two flights of stairs. Consultant cardiologist advised body mass reduction and continuation of pharmacological treatment of hypertension. A detailed history and analysis of symptoms by a consulting geriatrician revealed that the patient occasionally heard “an orchestra of wheezing” in her chest and had suffered from mild asthma in her childhood. The patient did not notice symptoms of allergy. She was referred for spirometry; it revealed bronchial obstruction with a positive response to bronchodilators. The above lead to formulating a new diagnosis: non-allergic asthma. New medication including long-acting bronchodilating agent and inhaled corticosteroid was introduced with prompt and significant improvement of symptoms – the patient could climb two flights of stairs without dyspnea. Thus, the diagnosis of non-allergic asthma was confirmed in this obese hypertensive elderly patient with limited exercise capacity.

The above case exemplifies a phenomenon quite common in care of geriatric patients; underdiagnosis of diseases due to ascribing symptoms to old age itself or to other diseases. In this case, low exercise capacity and dyspnea were erroneously interpreted as a result of obesity and impaired cardiovascular function. Simple and widely accessible test, spirometry, revealed respiratory cause of the patient’s complaints.

Case 2

An eighty-year-old woman regularly visiting a cardiologist due to stable ischemic heart disease, arterial hypertension and heart failure, decided to visit a geriatrician for the purpose of general medical check-up. The outpatient geriatric clinic was located on the second floor and the patient entered the clinic after climbing two flights of stairs, since the elevator had been temporarily out of order. The geriatrician was amazed to find signs of severe respiratory distress in the patient, including: breathing rate of 30/min with prolonged expiratory

phase, mild wheezing, and relatively low transcutaneous hemoglobin saturation (92%). The patient had history of 40 years of smoking. Spirometry showed severe obstruction (forced vital capacity $FEV_1 < 50\%$ predicted value) with no improvement after inhaling short acting beta-adrenergic agent. The diagnosis of chronic obstructive pulmonary disease (COPD) was established and the patient was given prescription for a long acting bronchodilator – tiotropium and referred for further assessment to an outpatient pulmonary clinic.

This case reflects several problems found in a patient with COPD: under-diagnosis of COPD in a person with confirmed cardiovascular disease (CVD), lack of active screening for COPD in a person with a long-term history of smoking, underreporting of symptoms by elderly patients with comorbidities. Paradoxically, the specialist care delivered by a cardiologist could have delayed the recognition of COPD due to lowered alertness of the primary health care physician and similarity of cardiovascular and pulmonary symptoms. Elderly patients with CV, especially smokers, should be screened for other diseases including COPD and patients with COPD should be actively diagnosed for CVD, since the comorbidity level in this group of patients is high.

Case 3

A seventy-eight-year-old woman was referred to a hospital due to increasing dyspnea and productive cough. The patient reported that problems with breathing had started 25 years before, and claimed that she had never smoked. She had never been hospitalized due to respiratory symptoms, but had regular yearly visits at an outpatient pulmonary clinic. Physical examination revealed slim posture, increased respiratory rate (25/min), prolonged expiratory phase, abnormal percussion and wheezing. Chest X-ray revealed diffuse emphysema. The patient presented a result of pulmonary function tests performed 6 months prior to the current exacerbation indicating severe airflow obstruction with an increased residual volume (RV) and an abnormally high respiratory resistance (RR) of 300% of the reference value. The diagnosis of COPD was evident. The patient was admitted to the hospital and treated with bronchodilators with moderate effect during the 24 first hours. Due to the absence of expected improvement of symptoms, on the second day of hospitalization the patient was given prednisolon (0.5 mg per kg of body mass). Rapid and significant reduction of symptoms was reported by the patient and control pulmonary function tests showed slightly improved FEV_1 and FVC accompanied by a significant reduction of RV and RR. Moreover, a detailed medical history taken by a medical student revealed clinical features typically occurring in asthma, not COPD, such as: evolution of

dyspnea from rapid onset and quick resolution of symptoms (attacks) to more chronic course of the disease with advancing age, intolerance of non-steroid anti-inflammatory drugs (NSAID) presenting as acute dyspnea and rush, as well as significant improvement after introducing inhaled steroids in the past. The diagnosis was revised and changed to severe aspirin-induced asthma with airway remodeling.

There are three main issues to be discussed in the above case. COPD is often erroneously diagnosed in patients with asthma due to the change of the disease course to more chronic with advancing age. In some cases, an overlap syndrome (asthma with coexisting COPD) is established, especially in patients with chronic asthma and multiple risk factors for COPD. The quality of spirometry in the elderly is a topic of debate and depends on many variables including the level of experience of the pulmonary function test technician and the quality of equipment. However, this case exemplifies yet another problem: severe and slightly reversible airway obstruction with emphysema and severely increased respiratory resistance in a patient with a long term history of asthma symptoms. It is believed that this rather rare phenomenon is a result of advanced airway remodeling due to asthma and occurs in some patients with chronic asthma and a long history of symptoms. Chronic lung hyperinflation observed in all obstructive airway disorders and considered reversible may transform in some patients into emphysema with irreversible destruction of lung parenchyma. In the case described above, there were two key factors warranting a proper diagnosis of asthma: a detailed history taken from the patient and availability of repetitive pulmonary function tests.

Case 4

An eighty-two-year-old man with dyspnea and history of 40 years of smoking was referred to a hospital from an outpatient medical center with a written diagnosis of COPD exacerbation. The patient was brought to the emergency room of the hospital by an ambulance on a cold winter morning, wearing a big hat, woolen scarf and a winter coat. Because of this outfit, physical examination of the patient was not readily possible, however a specific pattern of breathing focused attention: his respiratory rate was 30 per minute and each breath was accompanied by stridor – a wheezing sound during inspiration. Only after removing the woolen scarf and the coat it became evident that the patient's problem was located in the area of his neck – a large mass or tumor deforming the neck was visible on the right side of the neck, with skin unchanged. The patient admitted that the growing tumor had been present for some time. The patient was immediately referred for laryngological consultation and a laryngeal tumor causing severe

narrowing of the larynx was diagnosed. After performing immediate tracheotomy the symptoms of dyspnea and loud breathing resolved. The patient was referred for further specialist treatment to an ORL unit.

Differential diagnosis of dyspnea is one of the basic clinical tasks for medical students and young doctors, however it may be challenging even for experienced medical staff, especially when a combination of unfavorable factors occurs. As described in the above case, the patient was referred to a hospital from an outpatient clinic and probably by a medical doctor who knew the patient and treated him for COPD. Dyspnea reported by the patient at the outpatient clinic was assumed to be the result of COPD exacerbation. However, careful analysis of dyspnea and the way of breathing would have surely facilitated earlier diagnosis of upper airways obstruction. If the patient would have been asked whether it was more difficult to breathe in or out, he would have certainly indicated problems with inspiration characteristic for upper airway obstruction. Moreover, observed tachypnoe with audible stridor should have prompted careful inspection of upper airways. Additional unfavorable factors were cold weather and the patient's winter outfit with a scarf completely hiding his neck tumor. The patient did not understand a possible relationship between slowly growing neck tumor and dyspnea. In summary, a detailed examination of the patient can prevent medical errors. One diagnosis (in this case COPD) does not exclude other medical problems affecting the same system (in the presented case COPD and neck tumor caused respiratory signs and symptoms due to a combination of upper and lower airways obstruction).

Case 5

An eighty-two-year-old widow living alone, with diagnosed COPD and mild arterial hypertension called an ambulance because she felt dyspnea and chest tightness, and inhaled medications did not alleviate the symptoms. In the past, the patient experienced similar symptoms diagnosed as COPD exacerbations, but she was hospitalized for this reason only once. The emergency ambulance team administered intravenous corticosteroid and decided that the patient neither required further procedures nor hospitalization. However, the patient felt increasingly dyspneic and after four hours called the outpatient clinic asking for a medical home visit. After performing physical examination, the visiting doctor concluded that there were no detectable signs of respiratory disorders (no wheezing, normal transcutaneous oxygen saturation), but the patient had tachycardia (200/min), hypertension (160/90 mmHg) and her heart rate was irregular. Further discussion of the patient's complaints revealed that the patient felt mostly chest

tightness defined by her as dyspnea and did not experience problems with breathing itself. Therefore, the initial diagnosis of tachyarrhythmia and acute coronary syndrome was established and the patient was referred immediately to a hospital. During the hospital stay, a diagnosis of atrial fibrillation and non ST-segment elevation myocardial infarction (NSTEMI) was established and the patient underwent percutaneous coronary angioplasty (PTCA). The patient was discharged from the hospital without functional decline.

This case exemplifies the complexity of the geriatric patient. The patient was convinced that she had COPD exacerbation and explicitly formulated this diagnosis to the emergency ambulance team. It might have diminished their vigilance and prevented active search for another cause of symptoms. However, it is plausible that the physical examination of the patient was neglected, since cardiovascular disorders were not diagnosed or, possibly, tachycardia was interpreted as secondary to dyspnea by the ambulance team. Another important issue is that arrhythmia was experienced by the patient as chest tightness and dyspnea. It is highly probable that atrial fibrillation and hypertension were direct causes of myocardial ischemia and NSTEMI, since the symptoms lasted for many hours. It is also worth mentioning that hospitalization is a risk factor for functional decline and should be avoided in geriatric patients, however in this case the decision concerning immediate hospitalization should have been taken during the first emergency ambulance team visit, especially taking into account the fact that the patient lived alone. Analysis of social status should be an indispensable part of the comprehensive geriatric assessment.

Case 6

A seventy-five-year-old female came to an outpatient geriatric clinic reporting chronic cough lasting for three months after upper airway infection. During the last 6 weeks the patient was consulted by three specialists: a laryngologist, pulmonologist and internal medicine specialist. Chest X-ray was normal. The patient reported that consulting specialist diagnosed atrophic changes of oral and upper airway mucosa, and bronchial hyper reactivity, for which topical oral treatment and inhaled corticosteroids were administered with slight improvement of symptoms. The patient claimed that cough was still extremely interfering with daily activities and caused lowered exercise capacity and social isolation. The patient reported no chronic conditions, underwent right mastectomy because of breast cancer 25 years before and appendectomy in childhood. Physical examination revealed normal respiratory sounds and lowered transcutaneous hemoglobin saturation of 92% during resting and 88% after climbing one flight of stairs. A diagnosis

of interstitial lung disease was suspected and the patient was referred to a hospital for further assessment including high resolution computed tomography of the chest (HRCT) and functional lung tests. CT showed infiltrates characteristic for lymphangitic carcinomatosis and small right-sided pleural effusion. Further diagnostic procedures including pleural fluid examination confirmed the diagnosis of diffuse breast cancer and the patient was referred for palliative chemotherapy.

This case exemplifies the problem of delayed diagnosis in an elderly patient. Lymphangitic carcinomatosis is a severe cancer-related condition, however diagnosis is not easy since the symptoms develop gradually and chest X-ray results may be normal at early stages of the condition. However, it might be suspected that if the patient was younger, e.g. professionally active, diagnostic procedures would have been performed earlier, since cough interfered with patient's daily functional performance and exercise capacity. On the other hand, consulting specialists established diagnoses (atrophic upper airway mucosa, bronchial hyper-reactivity following infection) that might have correlated with the patient's symptoms. The geriatrician decided to refer the patient for immediate further diagnostic procedures on the basis of two findings: severe functional decline reported by the patient and abnormal results of pulse oximetry. It is worth stressing that analysis of changes in patient's self-perceived health and functional performance are major indicators in geriatric assessment, often neglected in general medical check-up. Despite age-related changes in oxygen exchange system in the lungs, healthy elderly individuals maintain normal blood oxygen values as measured by pulse oximetry ($SpO_2 > 95\%$).

Case 7

An eighty-one-year-old male, with diagnosis of chronic severe asthma since adolescence, with a history of long-term oral corticosteroid treatment and treatment for arterial hypertension, spent his holidays at a country house, where he performed gardening. During watering of plants with a bucket he felt dyspnea and weakness. Since the symptoms did not resolve after repeated administration of inhaled bronchodilators, the patient returned home and called his doctor. The physician examined the patient finding asymmetric respiratory sounds without wheezing and referred the patient to the hospital for further diagnostic procedures. A routine chest X-ray revealed right-sided pneumothorax with a collapsed right lung. The patient was immediately admitted to the hospital and treated with pleural suction drainage for 3 days. The treatment was successful and the patient returned home.

This case underlines the importance of differential diagnosis of asthma exacerbation. Symptoms

resembling asthma may be due to a number of conditions including pneumothorax. Secondary pneumothorax is seen in patients with COPD with dominant emphysema, but it is rare in asthmatic patients. In the case described above the probable sequence of happenings was as follows: the patient not used to physical exercise lifted a buckle of water which caused holding his breath, this situation increased hyperinflation of the lungs and ultimately led to a rupture of a solitary emphysematous bulla.

Case 8

A seventy-four-year-old female was admitted to the general hospital with a diagnosis of acute bronchitis with severe bronchospasm. Other pathologies such as pneumonia and pulmonary embolism were excluded; oral antibiotic and inhaled bronchodilator in the form of dry powder inhaler (DPI) was introduced. In spite of the treatment, no resolution of symptoms was noted and the patient was referred to a geriatrician for a comprehensive assessment. The consultant asked the patient about problems with inhaling from DPI – the patient's response was negative. However, the patient was asked to demonstrate the process of inhalation from DPI. It soon became obvious that the patient erroneously performed the inhalation: she forgot about preparing the bronchodilator capsule for inhalation (puncturing the capsule containing powder after inserting it into the inhaler) and kept the inhaler outside of her mouth instead of covering it with her lips. Correction of the inhalation technique was very efficient, the patient's bronchoconstriction symptoms accompanying acute infection resolved within 24 hours.

This case is an example of two quite common phenomena: a simple mistake may interfere with the course of treatment and unsatisfactory patient's compliance is often due to problems in communication between medical staff and the patient. Inhaled drugs are a special problem, since proper drug administration requires active cooperation of the patient and coordination of inspiratory phase with drug dosing. In spite of many novelties in inhaled drug systems making administration of medication easier, adequate training and regular control of inhalation technique seem to be the most efficient approach to satisfactory outcomes of treatment. Such approach requires awareness of the problem among nurses and physicians and providing continuous professional education. Moreover, an efficient cooperation between nurses and physicians may warranty the best outcomes for the patients.

Case 9

A seventy-six-year old man with hypertension efficiently controlled with two antihypertensive drugs observed dyspnea during climbing stairs or quick walking. Rare episodes of dyspnea happened with-

out exertion. He decided to visit a pulmonologist who was a close friend of the family. The consulting physician noted no abnormal findings on physical examination and referred the patient for additional tests. ECG was normal, chest X-ray showed no abnormalities and spirometry revealed mild obstructive changes without improvement after bronchodilator. However, the patient had considerable problems with adequate duration of expiration during spirometry and the quality of the test was considered poor. A preliminary diagnosis of late-onset asthma was made, the patient started treatment with long-acting bronchodilator and inhaled corticosteroids and was scheduled to perform control tests after three months. After two months the symptoms of dyspnea on exertion increased and the patient felt continuous weakness. The primary health care physician referred the patient for laboratory tests and basic blood analysis showed considerable pancytopenia. The patient was referred for further specialist consultation and the diagnosis of chronic leukemia was established. In spite of treatment the patient died after two months.

This case shows how the blurred clinical picture of diseases in the elderly combined with age-related alterations of physiological variables may affect the time of diagnosis. The patient presented with a symptom of dyspnea on exertion. ECG and chest X-ray were normal, but mild changes in spirometry directed the physician toward diagnosing asthma. The probable coexisting factor was the fact that the consultant was a pulmonologist. If the consultant was a cardiologist, the preliminary diagnosis might have been a cardiovascular disorder, e.g. ischemic heart disease. The problem in this case was lack of general check-up of the patient including basic blood tests. Dyspnea was caused by anemia in the course of pancytopenia. Thus, in diagnosing an elderly patient it is important to provide a holistic assessment including physical health, functional performance and laboratory tests.

Case 10

A ninety-three-year-old man was brought from his home to the hospital by an ambulance, called by a neighbor of the patient. In the emergency department, the patient presented as dyspneic, with tachypnoe of 30 breaths per minute. Vital signs including heart rate and arterial blood pressure were normal. The patient was very sleepy, but he reacted to voice and was trying to answer simple questions, he knew his name, but presented disorientation in time and place. Moreover, the staff of the emergency room noted that the patient presented strange, repetitive movements of arms and hands, as if he tried to catch objects in the air or pull up threads from the bed cover. Chest X-ray indicated lobar right-sided pneumonia and blood count was suggestive of bacterial infection, the

patient was admitted to the hospital with a diagnosis of community-acquired pneumonia. Data obtained later from the patient's daughter indicated that until the day of hospital admission, the patient lived independently and was professionally active as a professor at the university, drove car and did not require any assistance in everyday life. An empiric antibacterial treatment of pneumonia was introduced and the patient's health status rapidly improved, signs of respiratory distress diminished and his conscience and cognitive status quickly improved and were considered normal on the third day of hospital stay. The patient was discharged from the hospital on day 6th with the final diagnosis of pneumonia and transient delirium.

In the very elderly patients, acute illness may affect mental status with clinical manifestation of delirium often misdiagnosed as dementia. Delirium is defined as clinical syndrome with an acute onset comprising impaired consciousness, perception and cognitive functions. Dementia is a result of a long term process of neurodegeneration (e.g. Alzheimer's disease) or vascular changes in the brain, and the onset and progress of symptoms is slow and occurs over months/years. However, it is important to note, that patients with dementia are more prone to delirium than cognitively intact individuals, in such cases delirium superimposed on dementia is diagnosed. In the above case, strange abnormal movements of upper limbs were highly suggestive of delirium. Therefore, it is very important to assess mental status as a part of comprehensive examination of the elderly patients, especially in the case of the oldest old, as somatic and mental problems often coexist.

DISCUSSION

The presented case descriptions underline potential challenges in the diagnosis of respiratory diseases in older adults. To attain an accurate diagnosis, medical staff should pay special attention to obtain a full medical history of the patient, as well as to perform a detailed physical examination with elements of the comprehensive geriatric assessment. Such evaluation includes mental status, functional performance, screening for visual and hearing impairments and family/social support available to the patient. Vigilant observation and being prepared for challenging one's concept about preliminary diagnosis seem to play a crucial role in an effective treatment of the elderly patients. Communication with an older adult and understanding the multi-dimensional factors affecting exchange of information are indispensable for all parties participating in the communication process and should be the subject of a continuous training of health professionals on all levels of care.

Respiratory symptoms, such as cough, sputum production and audible wheeze are prevalent in older adults and increase the risk of death (1). Therefore, careful differential analysis of symptoms is important

and may prove beneficial in terms of survival. The most common chronic respiratory disease in older age is COPD. In spite of wide accessibility of international and national guidelines for management of COPD, this progressive disease is often under-recognized (2-4).

In Poland, statistical data estimate the prevalence of COPD at the level of 10% of the population, but this disease is commonly under-diagnosed at the level of primary care (5). Low public awareness of COPD plays an important role in COPD misdiagnosis. Public opinion survey performed recently in Poland showed that only 3% of people knew the term COPD and the results were similar for smokers and non-smokers (6). There is also a risk of over-diagnosis of COPD especially in advanced age. Spirometric parameter defining COPD, forced expiratory volume in one second/forced vital capacity (FEV₁/FVC)%, may be lower than predicted in one third of healthy never-smokers aged 70 years and over, and in as many as half of those aged 80 years and more (7). However, there are other studies showing that majority of elderly subjects are able to achieve quality of spirometry comparable to younger adult patients (8). Current COPD guidelines underline the need to assess not only the severity of symptoms and degree of airflow limitation, but also comorbidities and individual risk of exacerbations. New concept of combined assessment of COPD includes four variables: severity of symptoms and their impact on daily living, severity of breathlessness, number of hospital admissions during the previous year and severity of airway obstruction (2).

The major differential diagnosis of COPD is asthma and other potential diagnoses include congestive heart failure, bronchiectasis, tuberculosis and bronchiolitis (2, 3). The main areas for improvement are enhanced case identification, improved interpretation of spirometry and potential use of differential diagnosis questionnaires (9).

In a multi-center Italian study it was shown that nearly one in five elderly patients with asthma had previous diagnosis of COPD, while almost one third had no diagnosis of respiratory disease at all (10). Misdiagnosis was related not only to advanced age, but also to disability. Asthma in the elderly is under-diagnosed and undertreated in Poland and other countries and might be considered a public health problem (11, 12). Difficulties in accurate diagnosis may arise from different presentation of the disease and more difficult interpretation of clinical data in older adults (12). The Global Initiative for Asthma publishing yearly updated guidelines identifies the elderly as a special population (13, 14). Under-diagnosis of asthma may be due to poor perception, assuming dyspnea as a normal symptom in old age and reduced fitness. Over-diagnosis of asthma often results from confusion of dyspnea with shortness of breath associated with cardiovascular disorders. Asthma may also coexist with COPD, special guidelines for diagnosis of asthma-COPD overlap syndrome were developed (15).

Management of diseases with chronic airflow limitation includes administration of inhaled medications

using various types of devices: metered dose inhalers, powder inhalers and nebulizers. It is essential to check whether the patients are using inhalers properly. It is especially important for patients with low physical performance and cognitive impairment (16).

There is a risk of acute delirium in elderly patients with exacerbation of respiratory diseases, especially in case of hypoxaemia and cognitive decline. Repeated clinical assessment of acute changes in patient's consciousness and behavior facilitates recognition of delirium and early intervention. Abnormal hand movements imitating plucking at the air or picking small objects is strongly associated with delirium in hospitalized older adults (17).

Pneumothorax is a very rare complication of asthma. The physical examination showing asymmetry in chest auscultation is the key to clinical suspicion of pneumothorax which should be confirmed by chest radiography (18).

Pulmonary lymphangitic carcinomatosis is a rare metastatic lung disease with obstruction of pulmonary lymphangitic system. The main symptoms are prolonged and increasing dyspnea and cough suggestive of interstitial lung disease. Medical literature provides mostly case-reports describing single cases of the disease (19-21).

CONCLUSIONS

1. Misdiagnosis of respiratory symptoms in older adults is often due to multimorbidity, blurred clinical picture and stereotypic perceptions of health and disease in older age.
2. Differential diagnosis of dyspnea includes mainly asthma and COPD, however cancer-related symptoms should always be considered.
3. A detailed history and physical examination supported by a comprehensive geriatric assessment ensures holistic approach to patients with respiratory disorders.

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