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Diagnosis of chronic obstructive pulmonary disease (COPD) in older patients

Consensus statement of the Working Group on Pneumology in Older Patients

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Abstract

Chronic obstructive pulmonary disease (COPD) is a frequent disease from which approximately 8% of individuals aged 40 years and above suffer. The prevalence increases up to fivefold as age advances. Following an introduction including the etiology, measurement, characteristic features and classification of COPD, this article presents the consensus recommendations of the German Working Group on Pneumology in Older Patients. These include statements on the screening for frailty, dysphagia, malnutrition and cognitive impairment. The results are summarized with the final conclusion that adequate treatment of COPD can also slow the progression of cognitive decline and could potentially prevent or delay the onset of dementia.

Keywords
Cognitive impairment · Classification · Frailty · Dysphagia · Recommendations

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Introduction

Chronic obstructive pulmonary disease (COPD) is a common condition with a prevalence of approximately 8% in individuals aged 40 years and above. The prevalence increases up to fivefold as age advances [1]. Additionally, two thirds of new cases of COPD are diagnosed in older individuals [40].

The Chronic obstructive pulonary disease (COPD) is characterized by persistent bronchial obstruction, with symptoms such as chronic cough, often accompanied by sputum production and dyspnea. It is often associated with reduced exercise capacity. Wheezing at the lower part of the dorsal thorax is frequently audible and symptoms tend to worsen over time, a phenomenon known as exacerbation [41].

Bronchial obstruction is typically assessed through lung function testing, with spirometry being the most commonly used method [41]. An obstruction is present when the ratio of forced expiratory volume in 1s (FEV1) and forced vital capacity (FVC) falls below the lower limit of normal (LLN). Notably, using the LLN improves the diagnostic accuracy and reduces the risk of overdiagnosis, compared to the previous practice of applying a fixed cut-off of 70% for this ratio (so-called Tiffeneau index) [41].

The severity of COPD is measured by the reduction in FEV1. Based on this reduction COPD is classified as mild (FEV1 > 80%),

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moderate (FEV1 50–80%), severe (FEV1 30–50%) or very severe (FEV1 < 30%) according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria [41].

Additionally, the presence of dyspnea and the frequency of recurrent exacerbations are indicators of overall disease severity. Patients with no exacerbations and no dyspnea are classified as COPD group A, while those with dyspnea and without exacerbations fall into COPD group B. Patients with exacerbations requiring hospitalization or with two or more exacerbations per year belong to COPD group E. The previous groups C and D have been removed for more clarity in the new classification [41].

The main etiological risk factor for COPD is current or former smoking; however, about 20% of patients with COPD have never smoked. Therefore, the estimation of the etiology of COPD constitutes a comprehensive classification of the disease [8].

The etiology of COPD can be classified as follows: COPD-G caused by genetic defects, COPD-D due to abnormal lung development, COPD-C in smokers or former smokers, COPD-P from biomass exposure or air pollution, COPD-I in nonsmokers with infections in infancy, COPD-A with coexisting asthma, COPD-U of unknown etiology and COPD-M mixed causes [8].

The management of COPD is guided by established guidelines and the treatment choice depends on the severity and the group classification of the disease [41].

As geriatric problems increase with age, as does the prevalence of COPD, there is a substantial overlap. Of note, current guidelines referring to the management of COPD lack suggestions concerning older people with frailty, dementia or other geriatric syndromes [22, 26, 41]; however, the accurate detection of COPD is critical for improving the quality of life or reducing future exacerbations and hospitalizations. Notably, a considerable proportion of older patients with COPD remain undiagnosed [23]. In these individuals, the reasons for underdiagnosis may include dissimulation, low recognition of signs and symptoms and the attribution of symptoms to old age [25], the inability to perform a reliable medical history or a valid lung function testing [15].

Therefore, a working group of geriatricians and pneumologists presented a consensus of recommendations at the 64th Congress of the German Society of Pneumology in Mannheim, Germany in 2024 to meet the special diagnostic needs of older individuals with COPD and geriatric problems.

Geriatric problems in older patients with COPD

The most frequent geriatric problems in patients with COPD include frailty, sarcopenia, dysphagia, malnutrition and cognitive impairment, including dementia [5, 24, 43, 44]. Therefore, it is reasonable to screen older patients with COPD for these conditions.

Consensus statement

Older individuals with COPD should be screened for frailty, dysphagia, nutritional status and cognitive impairment.

Frailty in older COPD patients

Frailty is a complex geriatric syndrome characterized by reduced resilience and a diminished ability to recover from health problems [11]. The prevalence of frailty increases with age and is often associated with sarcopenia [42]. Several tools are used to assess frailty, including the frailty phenotype [14], the clinical frailty scale [32] and the frailty index [31]. More than one third of older individuals with COPD are frail [43]; however, there is no consensus on which tool is best for the assessment of frailty in older COPD patients. Frailty in older COPD patients affects not only activities of daily living but also COPD signs, symptoms, and disease progression [27].

Loss of muscle mass and muscle strength is more pronounced in older individuals, with COPD further contributing to reduced functional capacity and independence [2]. Handgrip strength is a valuable and simple test to assess overall muscle strength. In a case-control study of 520 COPD patients and 150 controls, handgrip strength was significantly lower in COPD patients and correlated inversely with the timed up and go test [2].

Reduced muscle strength also impacts diagnosis and treatment options for older COPD patients. Spirometry, particularly the measurement of the FEV1, is the most commonly used test to assess bronchial obstruction and monitor COPD; however, performing the test requires dexterity and strength, which may be diminished in patients with frailty or sarcopenia. Therefore, low muscle strength affects lung function test results. A study of 50 older COPD patients without dementia found a significant correlation between handgrip strength, peak expiratory flow and vital capacity [20].

Frailty in COPD is associated with longer hospital stays, poorer quality of life and a higher risk of exacerbations and readmissions [7, 16]. Additionally, the frailty status can impair coughing ability and airway clearance [21]. Importantly, frailty can be improved with targeted interventions [36] and is a potentially modifiable risk factor in COPD [17, 29].

Consensus statement

Older patients with COPD should be screened for frailty and treated accordingly.

More than 90% of community-dwelling older individuals are able to perform an acceptable spirometry [6]; however, in older COPD patients with moderate and severe dementia or severe frailty and a low level of activities of daily living (ADL) lung function testing is no longer feasible [15]. In addition, this condition is therefore associated with high probability of underdiagnosis and undertreatment for COPD and a higher rate of incorrect treatment with oral corticoid prescriptions [15].

Consensus statement

In older individuals with COPD handgrip strength should be measured and considered when interpreting the results of a lung function test.

In patients where lung function testing is no longer feasible due to frailty or cognitive impairment, low-dose computed tomography of the chest (CCT) can be a valuable diagnostic tool. In a recent cancer screening study, the positive and negative predictive values for confirmed

COPD were 84% and 76%, respectively [37].

Consensus statement

When lung function testing is not feasible in older patients with COPD, a low-dose chest computed tomography of the chest should be conducted.

Dysphagia in older COPD patients

Dysphagia is frequent in older individuals. Patients with swallowing difficulties are 4–10 times more likely to develop pneumonia [30].

Aspiration can result from dysfunctional upper airway protective mechanisms, reduced coordination of swallowing and breathing and changes in breathing habits [9]. The prevalence of aspiration in COPD patients has been reported to be as high as 30% [10, 24]. In many older patients, laryngeal penetration does not trigger a cough, making it difficult to detect. Penetration may lead to aspiration if the laryngeal vestibule is not effectively cleared [9]. Additionally, both penetration and aspiration appear to be associated with COPD exacerbations [9].

In older patients with COPD, penetration and aspiration should be closely monitored due to their frequency and potential harm if unrecognized. Treatment should be based on a thorough assessment of the swallowing process and managed by a speech therapist. A component of treatment is to relearn a physiological expiration-swallow-expiration breathing pattern, as many patients with COPD have a higher breathing frequency and swallow during inspiration [28].

Therefore, dysphagia should not be overlooked in COPD patients. A simple bedside clinical test, the dysphagia screening tool for geriatric patients (DSTG), has been validated and is easy to administer [39].

It is worth noting that dysphagia is not mentioned in current COPD guidelines, despite its clinical relevance [22, 26, 41].

Consensus statement

Older COPD patients should be screened regularly for dysphagia and treated accordingly.

Cognitive function and COPD

The relationship between cognitive function and COPD is intricate. First, epidemiological studies show that the risk of developing mild cognitive impairment (MCI) or dementia in patients with normal cognitive status is related to the severity of impaired lung function. Forced vital capacity (FVC), forced expiratory volume in 1s (FEV1) and peak expiratory flow (PEF) were all found to be inversely associated with cognitive decline in COPD patients [18]. The prevalence of cognitive impairment and dementia in COPD patients ranges from 3% to 61%, depending on the selection criteria and diagnostic tests used [4, 35]. Additionally, a meta-analysis revealed that COPD patients with poorer lung function are at a higher risk of developing MCI or dementia [33]. Impaired lung function is thus recognized as a modifiable risk factor for dementia [19].

Notably, interventional studies in COPD patients have consistently shown that rehabilitation procedures lead to significant improvements in cognitive function [3, 12]. Therefore, COPD should be considered as a modifiable risk factor for cognitive decline [13]. Early detection of cognitive impairment in individuals with COPD may be a key interventional target to delay or reverse further cognitive decline [3].

Consensus statement

Older patients with COPD should be screened for cognitive impairment.

Second, COPD is often overlooked and inadequately treated in patients with cognitive impairment or dementia. This may happen due to various reasons, such as patients failing to recognize or forgetting symptoms or neglecting to report them. Additionally, individuals with advanced dementia may have impaired understanding, coordination and dexterity, making valid lung function testing difficult. This often leads to underdiagnosis and undertreatment of COPD [15, 34].

Interestingly, the SA.R.A study showed that the inability to draw intersecting pentagons is associated with an inability to perform valid lung function tests (Bellia et al. [6]). This test had better predictive value than any other cognitive test. Therefore, it seems reasonable to ask patients with impaired cognition to draw intersecting pentagons before conducting lung function tests, to reduce frustration for both patients and personnel.

Management of COPD in older individuals with COPD

Figure 1 shows a consensus algorithm on how to manage COPD in older individuals.

Conclusion

The condition of COPD presents a significant challenge in older individuals with frailty or cognitive impairment. As a result, older COPD patients should be screened for geriatric issues, although the best tools for screening in this patient group remains under debate.

Diagnostic procedures may be difficult when taking a medical history or conducting a spirometry is not feasible. In such cases, gathering information from relatives and using low-dose computed tomography of the chest (CCT) is a rational approach to confirm COPD; however, the classification of COPD severity (classes I–IV) severity based on the GOLD criteria may no longer be possible in such patients. Despite this, the absence of a formal GOLD severity classification does not impair treatment decisions as the classification into patient groups A, B, or E is pivotal for treatment decisions. This essential information can often be obtained from the patient's history or from relatives.

Of note, heart failure is also frequent in older individuals and must be ruled out or treated accordingly. Therefore, measurement of N-terminal pro-brain natriuretic peptide (NT-pBNP) and echocardiography should be included in older patients with suspected COPD [38].

Adequate treatment of COPD may also slow the progression of cognitive decline and could potentially prevent or delay the onset of dementia.

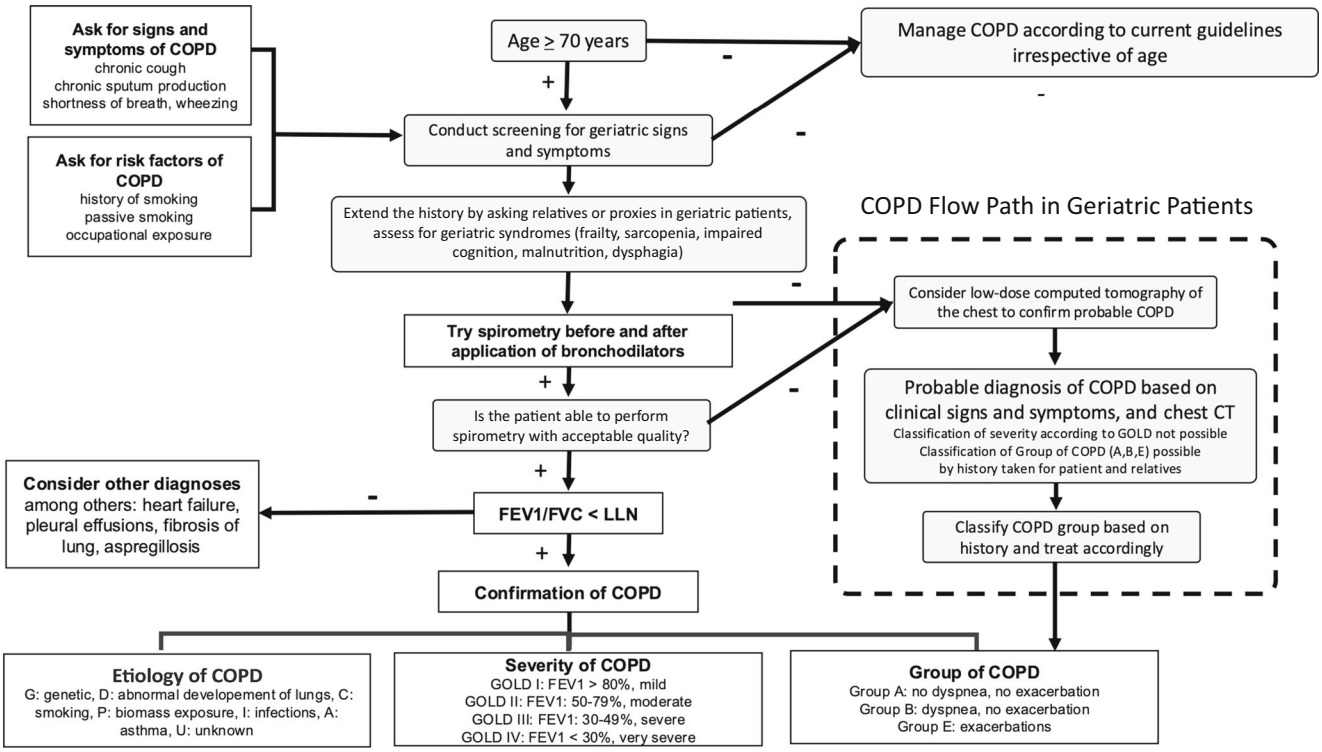

Fig. 1 ▲ Algorithm for the diagnosis of COPD in older individuals. *COPD* chronic obstructive pulmonary disease, *GOLD* Global Initiative for Chronic Obstructive Lung Disease, *FEV1* forced expiratory volume in 1s, *FVC* forced vital capacity, *LLN* lower limit of normal

The topics of a comprehensive geriatric assessment and especially the handling of inhalers in older individuals is the subject of another article in this issue.

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Declarations

Conflict of interest. C. Stenmanns, N. Netzer, C. Münks-Lederer, A. Schlesinger and S. Stieglitz declare that they have no competing interests. H. Frohnhofen received speaker honoraria from Heel, Amgen, Hennig, Idorsia, Johnson&Johnson and BMS.
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Diagnose der chronisch-obstruktiven Lungenerkrankung (COPD) bei älteren Patienten. Konsensusstatement der Arbeitsgruppe für Pneumologie bei Älteren Patienten

Die chronisch-obstruktive Lungenerkrankung (COPD) ist eine häufige Erkrankung, an der etwa 8% der Personen ab 40 Jahren leiden. Die Prävalenz steigt mit zunehmendem Alter um das bis zu Fünffache an. Nach einer Einführung, welche die Ätiologie, die Messung, die charakteristischen Merkmale und die Klassifizierung der COPD umfasst, werden in diesem Artikel die Konsensempfehlungen der Deutschen Arbeitsgemeinschaft für Pneumologie bei älteren Patienten vorgestellt. Dazu gehören Aussagen zum Screening auf Frailty, Dysphagie, Mangelernährung und kognitive Einschränkungen. Die Ergebnisse werden mit der abschließenden Schlussfolgerung zusammengefasst, dass eine adäquate Behandlung der COPD auch das Fortschreiten des kognitiven Verfalls verlangsamen und möglicherweise den Ausbruch einer Demenz verhindern oder verzögern kann.

Schlüsselwörter
Kognitive Beeinträchtigung · Klassifizierung · Frailty · Dysphagie · Empfehlungen

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