RESEARCH

OVERDIAGNOSIS OF COPD AND ASTHMA IN DYSPNEIC ELDERLY PATIENTS

Turkish Journal of Geriatrics
DOI: 10.31086/tjgeri.2022.277
2022; 25(2): 204-214

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Received: Jan 20, 2022
Accepted: June 08, 2022

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Abstract

Introduction: Dyspnea, chronic obstructive lung disease and asthma are common in the elderly population. Because of difficulties in diagnostic testing, overdiagnosis of certain diseases is very frequent in this age group.

Objectives: The aim of this study was to evaluate dyspneic elderly patients diagnosed with obstructive lung disease and had a treatment without a relief.

Methods: Subjects over 65 years of age previously diagnosed with an obstructive lung disease with chronic dyspnea were evaluated. Sociodemographic data, history of exposure, diagnosis, and treatment were recorded. After the physical examination, the subjects underwent respiratory function tests and radiological and blood investigations. In addition to the previous diagnoses, a differential diagnosis of dyspnea was made.

Results: A total of 262 subjects over 65 years of age with chronic dyspnea were recruited. Two hundred subjects completed the steps of the study. Fifty-seven percent were women and 43% were men. Seventy percent of patients were diagnosed with chronic obstructive lung disease and 30% had asthma. All the patients received treatment for these diseases. Despite the medication, patients had various modified Medical Research Council (mMRC) levels of dyspnea (15.5% mMRC1, 74.5% mMRC2, 6.5% mMRC3, and 3.5% mMRC4). After diagnostic evaluation, a previous diagnosis of COPD or asthma was confirmed in 36.4% and 28.3% of the subjects, respectively ($p<0.001$).

Conclusion: The geriatric population had an overdiagnosis of chronic obstructive lung disease and/or asthma. Diagnostic procedures are essential for evaluating dyspnea in the elderly as well as in all age groups.

Keywords: Pulmonary Disease, Chronic Obstructive; Asthma; Dyspnea; Geriatrics; Diagnostic Errors

INTRODUCTION

With the increasing life expectancy in the world, the geriatric population is increasing rapidly. According to Turkey Statistical Institute population projection statistics, 15.9% of total population will be over 65 in 2025 (1). Considering these data, healthcare professionals need to find appropriate solutions for these individuals in the world dominated by the geriatric population throughout the coming years.

Breathing is an inconspicuous task under physiological conditions, and dyspnea occurs when it becomes disturbingly noticeable. Shortness of breath is a common symptom, especially in the geriatric population, and can occur for a variety of reasons, including respiratory, cardiovascular, metabolic, deconditioning, and even psychiatric problems (2). It is also one of the main symptoms of chronic obstructive pulmonary disease (COPD). The combination of dyspnea symptom and COPD, both of which are very common, increases the rate of COPD overdiagnosis in the geriatric population. Such incorrect diagnoses and overdiagnoses are reflected in society as both the cost burden of inappropriate drugs and the deprivation of the treatment of the undiagnosed actual illness. Many cases of dyspnea from peribronchial edema due to heart failure, formerly known as cardiac asthma, have also been misdiagnosed as bronchial asthma and are treated inappropriately. Another persistent problem in clinical practice is overdiagnosis. The main reason for this overdiagnosis is failure to use pulmonary function tests (PFTs), namely spirometry, or misinterpretation. Obstructive airflow limitation is diagnosed when the first second of forced expiratory volume/forced vital capacity (FEV1/FVC) ratio is below 70% (fixed rate) on spirometry. However, while %70 is difficult to achieve in elderly individuals, it is easily achieved in young individuals (3). This may cause overdiagnosis of obstruction on spirometry and underdiagnosis in young subjects (4). As with FVC and FEV1, using the age-adjusted FEV1/FVC ratio can prevent over- and under- diagnosis. Whether the age-adjusted FEV1/FVC ratio or fixed ratio should be used is an ongoing debate.

The aim of this study was to reveal the etiology of dyspnea in patients over 65 years of age and to determine the overdiagnosis of asthma or COPD. Thus, this study aimed to ensure that the patient receives the correct diagnosis and, therefore, the correct treatment and to reduce the cost burden of inappropriate use of drugs on the health insurance system.

MATERIALS AND METHODS

Study participants

The study included patients over 65 years of age who were admitted to the Ankara University Department of Chest Diseases Clinic (a territory referral center) with chronic dyspnea and a previous diagnosis of COPD or asthma between January 2018 and December 2019. Patients with acute dyspnea, under 65 years of age, those not providing informed consent or not completing the diagnostic steps, and those lost to follow-up were excluded from the study. This study was approved by the Human Research Ethics Committee of Ankara University (I-22-19).

Study design

This was an ambidirectional cross-sectional study without a control group. The sociodemographic data, medical history characteristics, and physical examination findings of the patients were recorded, and diagnostic steps were performed according to the differential diagnosis of chronic dyspnea. Symptoms, physical examination, modified Medical Research Council dyspnea scores, COPD assessment test, comorbidities, Charlson comorbidity scores, smoking history, body mass index (BMI), Epworth sleepiness scale, radiological studies, PFT, blood tests, arterial blood gas analyses, and echocardiographic data were recorded.

After completion of the examinations, the patients were evaluated based on the available data

and were primarily examined for the diagnosis of COPD or asthma. According to the results of this work-up, patients were diagnosed with either asthma or COPD. Patients who could not be grouped as such were further evaluated for dyspnea. The final diagnosis of all patients was confirmed by at least one of the Ankara University School of Medicine, Department of Chest Diseases.

Diagnostic procedures

Chest radiography and thoracic computed tomography (CT): Chest radiography was performed in all patients. Thoracic CT was performed when required. The examination was performed in the supine position at the end of inspiration and in a single breath-hold period. Images were recorded in the PACS and evaluated using a hospital information management system.

Spirometry: Expiratory flow rates were measured at rest with the Vmax Encore 229 Pulmonary Function according to American Thoracic Society/ European Respiratory Society (ATS/ERS) recommendations (5). Flow and volume time curves, FVC, FEV1, FEV1/FVC, FEF 25-75, and PEF values were measured.

Statistical analyses

The data were analyzed using IBM SPSS Statistics (version 22.0; IBM Corp., Armonk, NY, USA). Frequency analyses were performed for categorical variables in the entire sample, and the mean or median values were calculated for continuous variables. Sociodemographic, radiological, clinical, and laboratory data of all patients were compared using the chi-square test for categorical variables, Student's t-test, or Mann–Whitney U test according to the distribution pattern for continuous variables. Subjects with a previous diagnosis of COPD or asthma were compared using the chi-square test in subjects with a confirmed COPD or asthma diagnosed in our clinic. Logistic regression analysis was used for modeling to predict COPD diagnosis, but not for asthma subjects, because the number of patients was small. The significance level was expressed as $p<0.05$ for all tests.

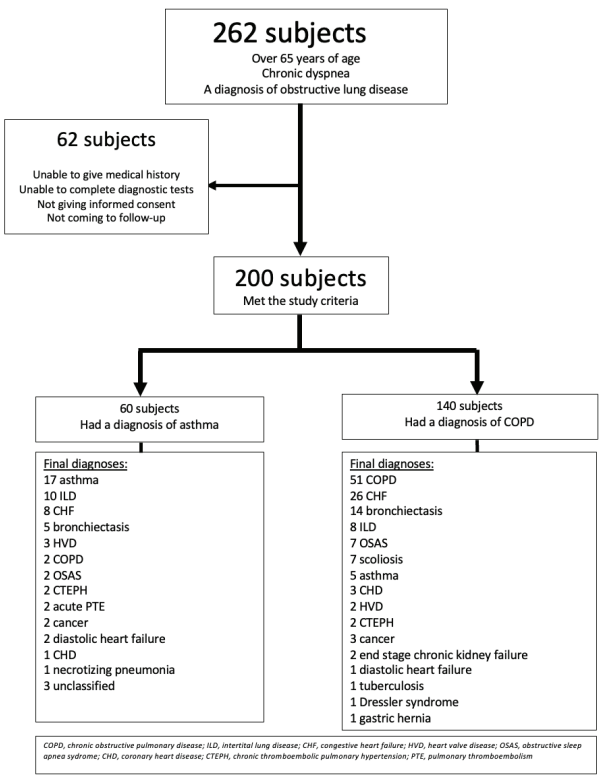
RESULTS

A total of 262 patients were evaluated, of which 200 met the inclusion criteria and were enrolled in the study. Sixty subjects with a previous diagnosis and treatment for asthma and 140 with a previous diagnosis and treatment for COPD were evaluated for the final diagnosis (Figure 1).

Demographics

The median age of the patients was 75 years (range: 65–97 years). Among all the patients, 57% were women and 43% were men. The previous treatment of the patients was recorded. Seventy-eight

Figure 1. Flowchart of the study



percent of the subjects used long-acting beta agonists, 78% inhaled corticosteroids, 62% long-acting anti-muscarinic, 23% short-acting beta agonists, and 10% short-acting anti-muscarinics, and 11.5% used these treatments with a nebulizer. Despite these treatments, the patients were symptomatic; therefore, they sought medical attention. The common symptom of dyspnea was rated using the modified Medical Research Council dyspnea scale. Fifteen percent of the patients reported mMRC1, 74.5% mMRC2, 6.5% mMRC3, and 3.5% mMRC4. The most common symptom accompanying chronic dyspnea was cough (74 %), followed by sputum (37.5%), chest pain (15.5%), and hemoptysis (5%).

Overdiagnosis of COPD

After careful diagnostic workup, among 140 patients with a previous COPD diagnosis, only 51 patients (36.4%) were confirmed to have COPD in our clinic, without showing agreement between the previous and our final diagnosis (p<0.001) (Table 1). Other diagnoses included congestive heart failure (26/140, 18.5%), bronchiectasis (14/140, 10%), interstitial lung disease (8/140, 5.7%), obstructive sleep apnea syndrome (7/140, 5%), scoliosis (7/140, 5%), asthma (5/140, 3.5%), coronary artery disease (3/140, 2.1%), and others (19/140, 13.5%) (Figure 1).

In women with a previous diagnosis of COPD, the diagnosis was confirmed in 18/65 versus 33/75 men (p=0.046), showing that COPD was more prevalent in men than in women. Mean age of confirmed and non-confirmed COPD cases were 71.58±11.80 years and 77.37±7.74 years, respectively (p=0.001). Thus, advanced age was a statistically significant factor for the overdiagnosis of COPD. The mean BMI of confirmed COPD cases was 21.50±3.88 kg/m^2, whereas that of non-confirmed COPD cases was 28.13±5.23 kg/m^2, showing that higher BMI values were statistically significant in the overdiagnosis of COPD (p<0.001). The proportion of smokers was 88.2% among the confirmed COPD cases. Cigarette smoking was statistically significantly lower in non- confirmed COPD cases (p<0.001). However, asbestos, biomass, and occupational exposure were not effective in COPD development. Regarding patient symptoms, cough and hemoptysis were not effective in the overdiagnosis of COPD, and sputum production and chest pain were important factors. Sputum production was higher (54.9% vs. 37.1%) and chest pain was lower (5.9% vs. 22.5%) in confirmed than in non-confirmed COPD patients (p=0.041 and 0.011, respectively). None of the auscultation findings (crackles, rhonchi, wheezing, and stridor) was powerful enough to differentiate COPD subjects (Table 2).

Regarding radiological features, emphysema was observed in 62.7% of confirmed COPD cases and 20.2% of non-confirmed cases (p<0.001). Pul-

Table 1. Concordance between previous and final diagnosis of subjects

	Previous diagnosis with COPD	Previous diagnosis without COPD	p value
Diagnosed with COPD	51	2	**<0.001***
Other diagnoses	89	58	
	Previous diagnosis with asthma	**Previous diagnosis without asthma**	
Diagnosed with asthma	17	5	**<0.001****
Other diagnoses	43	135	

COPD: Chronic obstructive lung disease

Table 2. Comparison of confirmed and non-confirmed COPD cases

	COPD confirmed n= 51 Mean/Median (+SD/min-max) %(n)	COPD non-confirmed n= 89 Mean/Median (+SD/min-max) % (n)	p value
Gender			
Female	35.3% (18)	52.8% (47)	
Male	64.7% (33)	47.2% (42)	**0.046**
Age	71.58 (±11.80)	77.37 (±7.74)	**0.001**
BMI (kg/m^2)	21.50 (±3.88)	28.13 (±5.23)	**<0.001**
Smoking history			
Yes	88.2% (45)	51.6% (46)	
No	11.8% (6)	48.3% (43)	**<0.001**
Exposure			
Asbestosis	17.6% (9)	29.2% (26)	0.158
Biomass	27.5% (14)	31.5% (28)	0.703
Occupational	13.7% (7)	14.6% (13)	1.000
Symptoms			
Cough	78.4% (40)	71.9% (64)	0.429
Sputum production	54.9% (28)	37.1% (33)	**0.041**
Hemoptysis	3.9% (2)	6.7% (6)	0.710
Chest pain	5.9% (3)	22.5% (20)	**0.011**
Auscultation findings			
Crackles	41.2% (21)	48.3% (43)	0.415
Ronchi	49% (25)	39.3% (35)	0.265
Radiological findings			
Infiltration	39.2% (20)	29.2% (26)	0.225
Fibrosis	17.6% (9)	13.5% (12)	0.507
Bronchiectasis	23.5% (12)	15.7% (14)	0.253
Emphysema	62.7% (32)	20.2% (18)	**<0.001**
Pulmonary edema	15.7% (8)	38.2% (34)	**0.005**
Pleural effusion	21.6% (11)	38.2% (34)	**0.043**
Laboratory findings			
Hemoglobin (gr/dL)	14 (9-15)	12 (9-14)	**0.005**
Hematocrit (%)	43 (30-49)	38 (27-45)	**0.006**
Leukocyte (10^3/mcL)	9.6 (7.6-11)	6.7 (6.6-10)	**0.006**
Platelet (10^3/mcL)	253 (90-340)	178 (107-238)	0.161
CRP (mg/L)	88 (12-197)	10 (2-51)	**0.036**
NT-pro BNP (pg/mL)	24 (0-35000)	1167 (47-5537)	**0.006**
Spirometry results			
FVC (%)	69.4 (±12.3)	65.8 (±25.1)	0.320
FEV1 (%)	49.5 (±14.9)	64.5 (±25.6)	**<0.001**
FEV1/FVC	54.9 (±10.3)	79.4 (±9.3)	**<0.001**
FEF25-75 (%)	26.9 (±11.4)	61.6 (±31.8)	**<0.001**
PEF (%)	47.9 (±20.4)	65.9 (±21.6)	**0.004**

BMI: Body mass index, CRP: C-reactive protein, NT-proBNP: N-terminal-pro brain natriuretic peptide, FVC: forced vital capacity, FEV1: forced expiratory volume in 1 second, FEF25-75: forced expiratory flow between %25-%75 of pulmonary volume, PEF: peak expiratory flow

monary edema was detected in 38.2% of non-confirmed cases, and in 15.7% of confirmed COPD cases (p=0.005). Similarly, pleural effusion was more prevalent in the non-confirmed cases than in the confirmed COPD cases (38.2% vs. 21.6%, p=0.043) (Table 2).

Among the spirometry test results, FEV1, FEV1/FVC ratio, FEF25-75, and PEF values were significantly lower in confirmed COPD cases (p<0.001, <0.001, <0.001, and =0.004, respectively). Laboratory findings, such as hemoglobin, hematocrit, leukocyte, and C-reactive protein levels, were higher in the confirmed COPD group (p=0.005, 0.006, 0.006, and 0.036, respectively). In contrast, the level of N-terminal pro-brain natriuretic peptide (NT-proBNP) was higher in the non-confirmed COPD group (p=0.006) (Table 2).

Overdiagnosis of asthma

After careful diagnostic workup, among 60 patients with a previous diagnosis of asthma, only 17 patients (28.3%) were confirmed to have asthma in our clinic without agreement between the previous and final diagnoses (p<0.001) (Table 1). The remaining 43 (71.6%) were diagnosed with other illnesses, such as interstitial lung disease (10/60, 16.6%), congestive heart failure (8/60, 13.3%), bronchiectasis (5/60, 8.3%), valvular heart disease (3/60, 5%), COPD (2/60, 3.3%), and others (15/60, 25%) (Figure 1).

The sex of the subjects did not differ between the confirmed and non-confirmed asthma subjects (asthma confirmation ratio for F 13/49, for M 4/11, p=0.712). The mean ages of confirmed and non-confirmed asthma cases did not differ statistically (74.35±5.49 years and 77.48±6.71 years, respectively, p=0.09). Tobacco, asbestos, biomass, and animal and occupational exposure were not a factor in asthma diagnosis. Regarding patient symptoms, cough, sputum production, hemoptysis, and chest pain were not different between the groups. Conversely, the auscultation findings made a difference, crackles (p<0.001), rhonchi (p=0.007), and wheezing (p<0.001) were statistically significant factors for asthma overdiagnosis (Table 3).

The radiological features of patients with confirmed and non-confirmed asthma were analyzed, and neither chest radiography nor chest CT revealed any differences between the groups. Considering the spirometry results of confirmed and non-confirmed asthma patients, while FVC, FEV1, FEF25-75, and PEF values were not different between groups, the median FEV1/FVC ratio of confirmed asthma patients was statistically significantly lower (71% vs. 81%, p=0.016). The arterial blood gas parameters did not differ between the groups. The hemoglobin (p=0.015), hematocrit (p=0.005), and leukocyte counts (p=0.025) were significantly higher in the confirmed asthma group (Table 3).

DISCUSSION

This study was planned based on the observation that patients over 65 years of age applying to hospital with chronic dyspnea were previously diagnosed with an obstructive pulmonary disease and prescribed at least one bronchodilator treatment. Although most patients did not benefit from the bronchodilator, the treatment had been stepped up, and patients received multiple bronchodilators without further benefit. As chronic dyspnea persisted despite treatment, we re-evaluated the patients for the correct diagnosis. Finally, such geriatric patients were overdiagnosed with obstructive pulmonary disease. Approximately 63% of the cases previously misdiagnosed as COPD and 65% of the cases previously misdiagnosed as asthma were rejected, and these patients received different diagnoses causing chronic dyspnea.

Demographics

Literature in English shows that women in all age groups complain of dyspnea more than men (6, 7). In good agreement with this finding, in our study in which patients with chronic dyspnea were examined, there were more women than men (57% vs. 43%). The diagnosis of COPD was confirmed in

Table 3. Comparison of confirmed and non-confirmed asthma cases

	Asthma confirmed n=17 Mean/Median (+SD/min-max) %(n)	Asthma non-confirmed n=43 Mean/Median (+SD/min-max) % (n)	p value
Gender			
Female	76.5% (13)	83.7% (36)	0.712
Male	23.5% (4)	16.3% (7)	
Age	74.35±5.49	77.48±6.71	0.093
BMI (kg/m^2)	27.25±6.23	27.65±4.80	0.886
Auscultation findings			
Crackles	0% (0)	53.5% (23)	**<0.001**
Ronchi	70.6% (12)	32.6% (14)	**0.007**
Wheezing	47.6% (8)	4.7% (2)	**<0.001**
Laboratory findings			
Hemoglobin (gr/dL)	13 (13-15)	11.6 (9.6-15)	**0.015**
Hematocrit (%)	43 (39-46)	37 (30-48)	**0.005**
Leukocyte (10^3/mcL)	9.4 (5.7-12)	6.4 (3-13)	**0.025**
Platelet (10^3/mcL)	187 (158-212)	239 (160-452)	0.318
CRP (mg/L)	4 (0.5-62)	9 (2-21)	0.327
NT-pro BNP (pg/mL)	56 (41-297)	368 (10-3603)	**0.025**
Spirometry results			
FVC (%)	76.1 (±19.3)	71.4 (±27.7)	0.547
FEV1 (%)	68.8 (±24.4)	71.6 (±27.4)	0.737
FEV1/FVC	71.6 (±11.7)	81.5 (±13.4)	**0.016**
FEF25-75 (%)	64.8 (±30.2)	71.5 (±28.7)	0.534
PEF (%)	65.4 (±18.3)	64.5 (±18.3)	0.911

BMI: Body mass index, CRP: C-reactive protein, NT-proBNP: N-terminal-pro brain natriuretic peptide, FVC: forced vital capacity, FEV1: forced expiratory volume in 1 second, FEF25-75: forced expiratory flow between %25-%75 of pulmonary volume, PEF: peak expiratory flow

46% of men and 27% of women. This may support the fact that COPD is predominantly a male-sex disease. Asthma diagnosis was confirmed in only 30% of the women previously diagnosed with asthma. This suggests that women were readily labelled as having asthma without confirmation of the diagnostic steps. The asthma diagnosis was confirmed in 63% of the male patients under the same conditions, suggesting that men more carefully went through the diagnostic steps and physicians were more cautious when diagnosing asthma in male patients, and therefore a more accurate diagnosis was made.

Spirometry

Overdiagnosis of COPD has been shown in many previous studies and is associated with different factors, one of which is not performing spirometry or misinterpreting its results. In our study, spirometry was performed in 81% of patients in the absence of contraindications. Spero et al. conducted a confirmation study with spirometry in hospitalized patients with COPD and showed that only 8.4% of the patients had spirometry and 5.8% were compatible with COPD. Of all the COPD patients included in the study, 4.5% were confirmed to have COPD by repeated spirometry (8). Walter et al. found that

31.8% of patients diagnosed with COPD in primary care did not actually have COPD (9). Authors who were investigating whether those diagnosed with acute exacerbation of COPD actually had COPD and exacerbations by looking at their hospital records and International Classification of Diseases (ICD) diagnoses observed that only 20.8% of the patients with COPD had undergone spirometry in the last 2 years (10). Ghattas et al. showed that only 17.5% of patients diagnosed with COPD, as they had a smoking history and dyspnea, had previously undergone spirometry. They performed spirometry on all COPD patients and found that only 35% of them had COPD (11). A multicenter study from 23 sites in 20 countries enrolled 919 patients with a previous diagnosis of COPD. Only 350 of those (38.1%) had an obstructive spirometry result confirming the diagnosis (12). Consistent with these studies, COPD diagnosis was confirmed by spirometry in 36.4% of the patients previously diagnosed with COPD in our study. Although spirometry is mandatory in the diagnosis of COPD (5), this may be avoided in some primary care facilities, especially in advanced age, due to the assumption that the patient cannot perform spirometry due to hearing problems or adapt to the forced expiratory maneuver. As observed in our study, 81% of patients over 65 years of age can comply with spirometry. In a study by Arne et al., spirometry was performed in 59% of newly diagnosed COPD patients, and the mean age of those undergoing the test was younger. The rate of performing spirometry was 76% under the age of 50, 64% between the ages of 50 and 65, and 51% over the age of 65 (13). In the same study, the diagnosis of COPD by spirometry was less frequent in primary care than in secondary care. Another study reported that spirometry was performed less frequently in a population without health insurance (11). Spirometry testing was performed in our clinic in accordance with ATS-ERS acceptability and reproducibility criteria. To interpret spirometry results in favor of COPD, a post-bronchodilator examination is required. Due to time or equipment limitations in primary care, prebronchodilator spirometry may also have caused the overdiagnosis of COPD detected in our study.

In the present study, considering spirometry, FEV1, FEV1/FVC, FEF 25-75, and PEF were significantly lower in patients diagnosed with COPD, fitting the definition of COPD.

Inflammation

COPD is a chronic inflammatory disease characterized by progressive airflow limitation. Although COPD is a lung disease, it causes severe systemic inflammation. In our study, we observed that CRP levels were higher in patients diagnosed with COPD than in those without COPD. Similarly, in other studies, CRP was higher in COPD patients than in the control group (14) and FEV1 level, 6-min walking distance, and PaO2 and CRP levels were inversely correlated (14, 15). Similar to COPD, CRP levels were also high during the asthma-stable period (16). However, in the present study, as our number of asthma subjects was small, we did not observe this fact.

Congestive heart failure

In the present study, congestive heart failure (CHF) was the most common diagnosis (17%), followed by obstructive lung disease. Bronchoconstriction may develop because of pulmonary edema due to CHF, namely cardiac asthma, increased pressure in the pulmonary and bronchial circulation, edema in the bronchial mucosa, and peribronchial cuffing. Thus, patients may experience rhonchi and wheezing. Jorge et al. found the rate of cardiac asthma to be 35% in patients with CHF; such patients presenting with wheezing had restrictive patterns in spirometric tests (17). Consistent with these findings, pulmonary edema and pleural effusion on chest radiography were higher in the unconfirmed group in the present study.

NT-proBNP is a marker that has been shown to be useful in differentiating the causes of cardio-respiratory etiology in patients with dyspnea. In a study

conducted with patients presenting with dyspnea with a mean age of 81 years, NT-proBNP was found to be higher in patients with cardiac dyspnea (18). Parallel to this finding, NT-proBNP was higher in cases in which we excluded the diagnosis of COPD in our study. It is reliable marker to differentiate CHF and obstructive lung diseases.

Body mass index

Misdiagnosis of COPD has been associated with obesity in several other studies. In a study conducted on hospitalized patients due to asthma or COPD exacerbation, obese patients were found to be four times more likely over diagnosed than the non-obese (19). Spero et al. found that patients misdiagnosed with COPD have a higher mean BMI (8). In a study in which spirometry was performed in patients diagnosed with COPD, airway obstruction was found in only 52% of the patients, and BMI was higher in those without airway obstruction (20). Similarly, in the present study, higher BMI was associated with an overdiagnosis of COPD. The association between asthma and obesity is complex. In one study, 41% of morbidly obese patients were found to have an overdiagnosis of asthma (21). In contrast, overdiagnosis of asthma was similar in the obese and non-obese groups in the study by Aaron et al. (22). In our study, there were no differences in BMI between the groups of subjects with confirmed and non-confirmed asthma, probably due to small sample size. A more careful examination is needed for obese dyspneic patients.

Strengths and limitations of the work

Strengths: The first strength of our study is that we prospectively examined the cases and not the ICD codes or hospital record data, like other studies questioning similar hypotheses. The age of the patients in our study ranged from 65 to 97 years. Therefore, we included each age period in the geriatric population. Thorough physical examination was done. Spirometry testing in our institution complies with ATS-ERS standards, and spirometry technicians are well-educated. As our clinic is a tertiary center for respiratory care, we were able to examine the chest X-rays and chest CTs when needed.

Limitations: One of the limitations of this study is reliance on patient history regarding previous diagnoses without data on previous PFTs. Patients generally are not fully versed on asthma/COPD differentiation; therefore patient recall may not be so reliable. Another limitation is that we do not have a control group, such as subjects with chronic dyspnea and without a previous diagnosis of COPD or asthma.

CONCLUSION

Chronic dyspnea is a common symptom in the geriatric population. Although it seems to be an ancient problem, COPD and/or asthma overdiagnosis persists in daily practice. Advanced age, male sex, and high BMI can cause COPD overdiagnosis. For older patients with chronic dyspnea, cardiac and respiratory pathologies should be considered as they show very similar medical histories. Physicians should not start bronchodilator treatment without confirmed COPD/asthma. Diagnostic tests, including spirometry, should be performed for the differential diagnosis of dyspnea regardless of age.

Conflict of interest

There is no conflict of interest.

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