

RESEARCH ARTICLE

Oznur Kubra Odabas¹
Deniz Dogan²
Tarik Eren Yilmaz³
Adem Ozkara³

¹ Family Medicine Specialist,
Ankara Bala State Hospital,
Ankara, Turkey

² Pulmonologist, Health and
Science University GATA
Faculty Pulmonology

Department, Ankara, Turkey

³ Family Medicine Specialist,
Health and Science University
Ankara City Hospital Family
Medicine Department, Ankara,
Turkey

Corresponding Author:

Oznur Kubra Odabas
Ankara Bala State Hospital
06720, Ankara, Turkey
Phone: +90 5055875103
mail:oznurkubragencer@gmail.com

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konuralptipdergisi@gmail.com
www.konuralptipdergi.duzce.edu.tr

Evaluation of Accordance to Guidelines on the Management of Chronic Obstructive Pulmonary Diseases in Family Medicine

ABSTRACT

Objective: Chronic Obstructive Pulmonary Disease (COPD) has become increasingly important in recent years. The CAT (COPD Assessment Test) and mMRC (Modified British Medical Research Council) scales can be used in the clinical evaluation of the patients according to GOLD the COPD Protection Diagnosis and Treatment Guideline guideline. Patients were divided into groups A, B, C and D using the scales with the combined assessment scheme proposed by GOLD, and recommended treatment scheme for each step is determined. In this study, it is planned to investigate whether COPD patients getting the optimal treatment according to GOLD guideline.

Methods: This is a descriptive, cross-sectional study. 218 patients were included in the study. The questionnaire form of the study was applied to the patients and the patients were evaluated and scored with the help of these scales. Statistical analysis of the data obtained in this way was done by the SPSS program.

Results: According to the CAT result, guideline compliance was 9.8% in group A, 22.3% in group B, 5.8% in group C and 77.7% in group D. According to the mMRC result, guideline compliance was 12.5%, 24.4%, 14.2%, 80.8% in the group A,B,C,D respectively. It was determined that 40.8% of patients according to mMRC and 33% according to CAT were receiving the optimal treatment.

Conclusions: Patients with stable COPD had significantly higher use of bronchodilator drugs than recommended. The use of this scale by Family Doctors, will be important in determining the needs for treatment and COPD patients follow-up.

Keywords: Family Practise, Pulmonary Disease, Chronic Obstructive, Primary Health Care

Kronik Obstruktif Akciğer Hastalığı Tedavisinde Rehberlere Uyumun Aile Hekimliğinde Değerlendirilmesi

ÖZET

Amaç: Kronik Obstruktif Akciğer Hastalığı (KOAH) solunum yollarının kısıtlamasıyla karakterize bir hastalık olup son yıllarda hasta sayısının ve hastalığın morbidite-mortalitesinin artması sebebiyle önemi giderek artmaktadır. KOAH rehberlerine göre ilgili hastaların klinik değerlendirmesinde CAT (COPD Assessment Test) ve mMRC (Modified British Medical Research Council) ölçekleri kullanılabilir. GOLD (Global Initiative for Chronic Obstructive Lung Disease) KOAH Koruma Tanı ve Tedavi Kılavuzunun önerdiği birleşik değerlendirme şemasıyla hastalar bahsedilen ölçekler kullanılarak A, B, C ve D gruplarına ayrılmıştır ve her basamak için önerilen tedavi belirlenmiştir. Bu çalışmada inhaler tedavi kullanan KOAH hastalarının GOLD önerilerine göre optimum tedaviyi alıp almadığının araştırılması amaçlanmıştır.

Gereç ve Yöntem: Araştırma tanımlayıcı, kesitsel tipte bir araştırmadır. Hastalığının son üç ayda tedavi değişikliği yapılmamış ve aktif yakınması olmayan KOAH hastalarından araştırmamıza katılmayı kabul edenler çalışmaya dahil edilmiştir. Çalışmanın anket formu hastalara uygulanmış ve bu ölçekler yardımı ile hastalar değerlendirilmiştir. Hastanın aldığı tedavinin rehberlerle uyumlu olup olmadığı araştırılmıştır. Bu şekilde elde edilen verilerin istatistiksel analizi SPSS programı ile yapılmıştır.

Bulgular: CAT sonucuna göre yapılan değerlendirmede tedavide kılavuza uyum A grubunda %9,8, B grubunda %22,3, C grubunda %5,8, D grubunda %77,7 bulundu. mMRC sonucuna göre yapılan değerlendirmede tedavide kılavuza uyum A, B, C, D gruplarında sırasıyla %12,5, %24,4, %14,2, %80,8 bulundu. Sonuçlar değerlendirildiğinde mMRC'ye göre hastaların %40,8'i, CAT'e göre ise %33'ü gruplarına tam olarak uygun olan tedaviyi almaktadır.

Sonuç: Stabil dönem KOAH hastalarında azımsanmayacak bir oranda önerilenden daha yüksek grup bronkodilatör ilaç kullanımını olduğu saptanmıştır. Bu ölçeklerin aile hekimleri tarafından kullanılmasının, stabil dönem KOAH hastalarının takibi ve tedavi ihtiyaçlarının belirlenmesinde önemli olacağı düşünülmüştür.

Anahtar Kelimeler: Aile Hekimliği, Akciğer Hastalığı, Kronik Obstruktif, Temel Sağlık Hizmeti.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a disease characterized by severe restriction of the airways, especially in expiratory flow (1). There is a rising significance of COPD in recent years as the number of patients and morbidity-mortality rates of the disease increase (2). The most effective treatment of COPD is inhaler therapies. Current COPD diagnosis and treatment guidelines offer practical advice on how to optimize these therapies (3). GOLD (Global Initiative for Obstructive Lung Disease) guide is

one of the main guidelines used by the Department of Chest Diseases. In the GOLD 2018 guideline, a scheme for COPD patients has been established and patients are divided into groups A, B, C, D. These groups are assigned considering symptom scoring CAT (COPD Assessment Test and mMRC (Modified British Medical Research Council), number of emergency visits and number of hospital admissions in the last year. The recommended treatments for each group are detailed as in Figure 1(1).

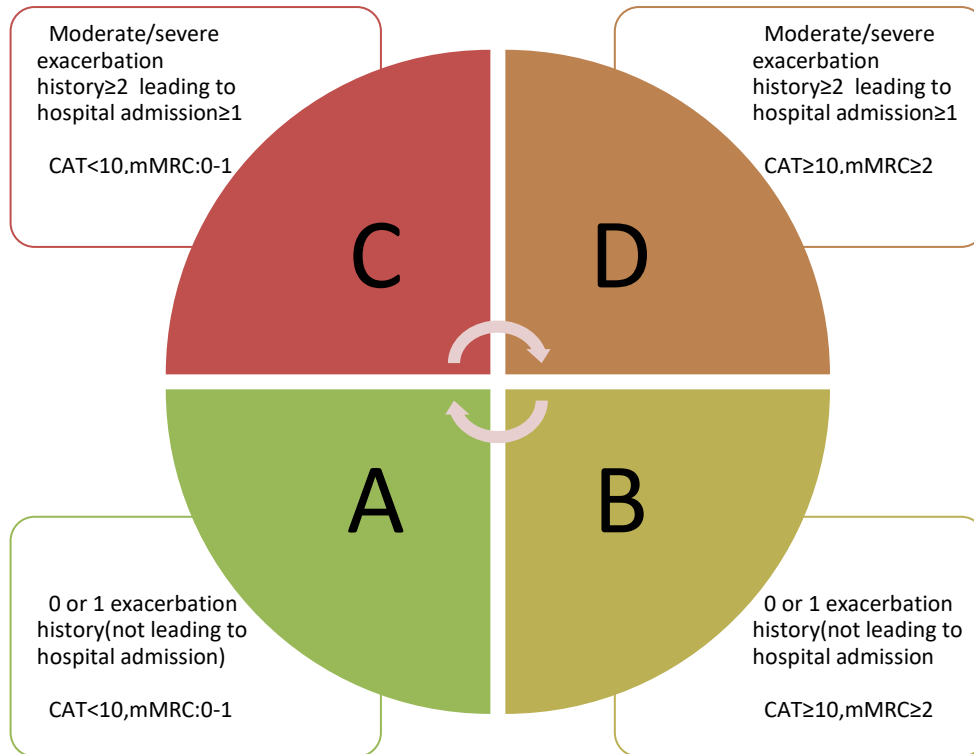


Figure 1. GOLD ABCD assessment tool(1)

*This table is taken from the GOLD guideline and arranged.

COPD patients are receiving more intensive treatments than the recommended treatments in the guidelines (4-7). This overtreatment comes with an excessive medical cost and burden (4). We have noticed the same overtreatment in our clinical experience. In order to emphasize this situation, we found it necessary to carry out this study.

In this study, we tried to understand whether the treatments that patients receive are compatible with the recommended treatments. Also it was aimed to introduce and remind the CAT and mMRC scales to the Family Medicine clinic, which are frequently used in Chest Diseases practice. In addition, it has been intended to contribute to the relatively few studies and related literature of Family Medicine and Primary Health Care.

MATERIAL AND METHODS

Participants and Study Design: Our study was an observational cross-sectional study.

Universe is chosen by stable COPD patients admitted to Ankara Numune Research and Application Center of Family Medicine and Chest Diseases Clinic. A sample was calculated according to 600 COPD patients who were admitted to these two outpatient clinics in January, February and March 2018. It is calculated with %95 confidence interval and %5 share of error, a sampling of 235 people was aimed to be achieved. The questionnaire was prepared by the researchers. Clinical questions recommended in the guidelines were asked to patients. The treatment of each patient was recorded. Symptom categories and the treatment categories were compared, thus, the level of compliance with international guidelines was observed in the treatment of COPD patients. The number of patients was reached in consecutive

order in June - August 2018 and the patient collection phase was completed.

Patients who had been diagnosed with COPD for at least 5 years, who were in the stable period of the disease, who received the same treatment for the last 3 months and who accepted to participate in the study were included in the study. Pulmonary Function Test values were not requested from each patient. Patients with COPD during acute exacerbation and cognitive impairment and dementia were excluded from the study.

Instruments: Socio-demographic characteristics such as age, gender, smoking status, additional diseases and the treatments they used were recorded with the relevant questionnaire. mMRC and CAT scales were administered to all patients. In addition, the patient's urgent applications within the last year, hospitalizations due to COPD and bronchodilator therapies used in the last 3 months were recorded. Patients were divided into groups A, B, C and D using the combined assessment scheme proposed by GOLD according to their severity (according to their symptoms) and the treatment they used.

To use the combined assessment scheme, symptoms are first assessed and scored with CAT or mMRC. Patient if CAT score <10 or mMRC level 0-1 is in the low-symptom groups. Low symptom groups are A and C. If the CAT score is ≥ 10 or the mMRC level is ≥ 2 , the patient has located in high symptom groups. High symptom groups are B and D. If the number of exacerbations in the last year is 0 or 1, it is in the low-risk group A or B, and if it is 2 or more, it is in the high-risk group C or D. If there is one or more hospitalizations due to exacerbation in the last year, then it is again in the high-risk group (C-D group). Thus, according to the combined evaluation, A,B,C,D groups are determined.

According to the treatments they were divided into groups;

Group A: short-acting bronchodilator drugs,

Group B: Those who use a long-acting bronchodilator drug (LABA or LAMA),

Group C: Two long-acting bronchodilator drugs (LABA + LAMA),

D group: LABA + LAMA + IKS / Theophylline, Macrolide group antibiotic, Roflumilast users were grouped.

Statistical Analysis: Microsoft Office Excel 2016 program was used for initial data entry. At the end of the study, SPSS for Mac Version 20.00 (SPSS Inc., Chicago, IL., USA) was used for

statistical analysis. Continuous variables were expressed as mean \pm standard deviation (SD) and categorical variables were expressed as number and percentage (%). The Kolmogorov-Smirnov test was used to determine whether the continuous variables were normal distribution. Chi-square test for discrete variables and Mann Whitney U test and Student-t tests for continuous variables were used for comparison of groups. Statistical significance was taken as $p < 0.05$.

Ethics Approval: This paper got ethics approval with 2043/2018 decision number at 07/06/2018 date, from Health Science University Ankara Health Practice Research Center Clinic researchers ethics committee.

RESULTS

A total of 250 patients who met the inclusion criteria of our study were included in the study. A total of 32 patients were excluded from the study, 18 of which were due to irregular drug use, 8 of whom were diagnosed with an acute attack period after the examination, and 4 of them refused to be included in the study. The data of a total of 218 patients were used for the study. The mean age of the patients was 62.5 ± 10.7 years, the mean body mass index (BMI) was 26.7 ± 5.3 years with a minimum 16.1, maximum 44.1 kg/m². The median smoking rate was 18% (n = 84), 41.1 ± 34.2 packs / year with a minimum of 0 and a maximum of 165 packs / year. 22.9% (n=50) of patients with COPD were found to have never smoked before (Table1).

Table 1. Age, BMI and smoking characteristics of the patients

Categories	Mean \pm SD	Min	Max
Age(year)	62.5 \pm 10.7	41	86
BMI(kg/m ²)	26.7 \pm 5.3	16.1	44.1
Cigarette(package/year)	41.1 \pm 34.2	0	165

Around half of the patients (48.2%, n=105) had no comorbidities. The most common comorbidities were hypertension (30.7%) and followed by diabetes mellitus (16.5%) and coronary artery diseases (13.7%) (Table2)

Table 2. Comorbidities of patients

Comorbidities	n (%)
Hypertension	67 (30.7)
Diabetes Mellitus	36(16.5)
Coronary Artery Disease	30(13.7)
Benign Prostatic Hypertrophy	9(4.1)
Bonchial Asthma	7(3.2)
Bronchiectasis	6(2.7)
Rheumatic Disease	5(2.2)
Heart failure	5(2.2)
Malignancy	5(2.2)
Chronic renal failure	3(1.3)
Hyperthyroidism	3(1.3)
Other	5(2.2)
None	105 (48.1)

Patients who were categorized according to the mMRC scale by questioning the symptom; 18.3% of patients (n = 40) were in group A, 45% of patients (n = 98) were in group B, 3.2% patients (n = 7) were in group C and 33.5% (n = 73) were in group D. In patients whose symptoms were questioned and categorized according to CAT scale; 32.6% of patients (n = 71) were in group A, 30.7% of patients (n = 67) were in group B, 7.8% (n = 17) were in group C and 28.9% (n = 63) were in group D (Table3).

According to mMRC, 12.5% of patients with group A, 24.4% of patients with group B, 14.2% of patients with group C, 80.8% of patients with group D received treatment proper to their group (Table4).

According to CAT, 9.8% of those with A group, 22.3% of those with B group, 5.8% of those with C group and 77.7% of those with D group were treated properly (Table5).

Table 3. Treatment-Symptom categories and percentages of patients and their categories

Groups	According to the treatment, n(%)	According to mMRC scale n (%)	According to CAT scale n (%)
A	28 (12.8)	40 (18.3)	71 (32.6)
B	36 (16.5)	98 (45)	67 (30.7)
C	34 (15,6)	7 (3.2)	17 (7.8)
D	120 (55)	73 (33.5)	63 (28.9)

Table 4. Comparison of the groups of patients determined according to mMRC with the treatment group and percentage of patients has proper treatment

		mMRC				TOTAL
		A	B	C	D	
TREATMENT GROUP	A	n 5 (12.5%)	10	0	13	28
	B	n 12	24 (24.4%)	0	0	36
	C	n 9	23	1 (14.2%)	1	34
	D	n 14	41	6	59 (80.8%)	120
TOTAL	n 40	98	7	73	218	

Table 5. Comparison of the groups of patients determined according to CAT with the treatment group and percentage of patients has proper treatment

		CAT				TOTAL
		A	B	C	D	
TREATMENT GROUP	A	n 7 (9.8%)	8	0	13	28
	B	n 21	15 (22.3%)	0	0	36
	C	n 14	18	1 (5.8%)	1	34
	D	n 29	26	16	49 (77.7%)	120
TOTAL	n 71	67	17	63	218	

When the results were evaluated, it was determined that 40.8%(n=89) of patients according to mMRC and 33%(n=72) according to CAT were receiving the optimal treatment that was completely suitable for their groups (Table 4,5).

DISCUSSION

Generally, as in our study, the mean age of the patients with COPD patients is above 60 years and the ratio of male patients is higher(8-11). We found that the smoking rate was 18%. In the literature smoking rate changes between %31-%52(8,12,13). Ratio of active smoking patients and the duration of use in our patient population is lower than the literature.

Of the 218 COPD patients in our study, 22.9% of patients (n=50) had no history of smoking. In literature non-smokers rate of COPD patient rates changes between %15-%52(2,14-17). The burden of COPD in never smokers is higher than previously believed (14). Tobacco use in the etiology of COPD is the most important risk factor, and there is a considerable proportion of patients who do not have smoking.

COPD is more common in patients aged 60 years and older (1). In this age group, the presence of additional diseases is also common. 51.8% (n = 113) of our study population had at least one comorbidity. The most common comorbidities were hypertension (%30.7) in accordance with the literature (8,9).

We applied both mMRC and CAT scales to patients and evaluated the results separately and compared the treatment group. When mMRC scale used 18.3%, 45%, 3.2%, 33.5% of patients, when CAT scale used 32.6%, 30.7%, 7.8%, 28.9% was in the A, B, C, D group respectively. In the Han et al.'s study, mMRC and SCRQ scales were used, 33.5%, 20.5%, 9%, 38% of the patients in the A, B, C, and D groups (18). In another similar study, Jones and his colleagues used CAT and found rates of A, B, C, D as 9.3%, 48.5%, 0.7% and 41.5%, respectively (19). While there is more similarity in categorization according to CAT, the lowest number of C group patients in all studies. Group C patients symptoms tests are low scores but hospital admissions or emergency referral is high and that is a rare situation. While the number of patients in the

C group was low, the rates of evaluations according to CAT were more similar to the literature.

When we have compared the scales among themselves according to the COPD severity levels as A + B (mild symptom) and C + D (severe symptom) by using GOLD suggestion; both CAT and mMRC, the ratio of patients in A + B group was 63.3%, C + D group was 35.7%. This suggests that the CAT and mMRC scales do not always give the same category, but are quite consistent in distinguishing between severe symptoms and mild symptoms. When we examine the group determined according to the patient's symptoms, rates of group A patients were 18.3% and 32.6% according to mMRC and CAT questionnaires respectively. When the treatment of the patients was examined, it was seen that the treatment of 18% of the patients was compatible with the treatment recommended for group A. In this case, group A patients who expressed the low symptom and low risk category were receiving the recommended treatment for the higher groups.

The rates of group B patients were, 45%, 30.7% according to mMRC and CAT questionnaires respectively, and 16.5% of patients were receiving the recommended treatment for group B. The rates of group C patients were 3.2%, 7.8% according to mMRC and CAT questionnaires respectively, and those who received the recommended treatment for this group were 15.6%. The rates of group D patients were 33.5% and 28.9% according to mMRC and CAT questionnaires respectively, 55% of patients received intensive therapy recommended to group D.

This situation shows that there is a shift towards C and D in the treatment categories and the highest rate of drug use in the D group, whereas the symptom categories are mostly in the A and B bands. This makes us think that many COPD patients are taking too much bronchodilator medication. It is a situation that should be considered in terms of both cost increase and drug side effects. There is no other study in the literature on the subject of treatment categorization A, B, C, D. In the ALPHABET study, based on all patients, the most preferred treatment regimen is a triple treatment regimen consisting of long-acting beta 2 agonist (LABA), inhaled corticosteroid (ICS) and long-acting anticholinergic (LAMA), recommended for each group according to the guidelines for pharmacological treatment. When the treatments were considered as equal priority, 7.3% of the patients should use this triple treatment regimen while 62% of the patients were using LABA + ICS + LAMA. The guideline compliance in the treatment was as low as in our study (8). Similar to our study, in a study conducted by Safka et al. In Canada, symptom categories were found to be intense in groups A and B, and treatment was found to be higher in the triple treatment regimen, LABA

+ LAMA + IKS, in the higher group compared to the new treatment categorization (20). In the new classification, when LABA + LAMA + IKS treatment is considered to be the D group, it is interpreted as this group is the most widely used treatment.

As far as the literature on this subject can be scanned, evaluating CAT and mMRC scales separately and while comparing treatment compliance, no other study grouping the recommended treatments in the GOLD 2018 guideline as A, B, C, D was found. When the results were evaluated, it was determined that 40.8% (n=89) of patients according to mMRC and 33% (n=72) according to CAT were receiving the optimal treatment that was completely suitable for their groups. Even if the patient was less symptomatic and included in the low symptom category, he was receiving the recommended triple treatment regimen for more severe symptoms and was exposed to overtreatment.

CONCLUSION

We concluded that usage of overdose bronchodilators in stable COPD patients has a significant rate. In order to prevent this, we found that CAT and mMRC scoring systems and CAT and mMRC symptom tests with GOLD guide suggestions can be easily applied by a family physician. We think that these scales can be easily performed in the primary care system. Early determination of the optimum treatment needs of patients with stable COPD, will have an important place in terms of diagnosis and disease management. This study was one of the rare studies in which both treatment groups and grouping of disease severity were evaluated together (considering GOLD 2018 Guidelines update).

Limitations: Our study has some limitations with a single-center study with a limited number of patients. Patients with COPD diagnosis and active drug use were accepted as COPD patients, and Pulmonary Function Test values were not requested from each patient. We think that this study will be more meaningful if the diagnosis of COPD is confirmed by Pulmonary Function Test and this study is performed with a larger population. Symptom tests are based on patient statements, thus there may be error factors here as well.

Suggestions: COPD patients are an important part of the chronic disease follow-up in family medicine. Knowledge and experience about inhaler therapies should be increased in order to better manage the treatment and follow-up of COPD patients in Family Medicine practice. CAT and mMRC scales should be used in the clinical follow-up of COPD patients. The clinical condition of the patient should be understood better by using the scales recommended by the guides and the correct use of the treatment should be reminded to the patient at each Family Medicine visit..

Supplementary Materials:**Supp 1. CAT (COPD Assessment Test)(1)**

I never cough	1 / 2 / 3 / 4 / 5	I cough all the time
I have no phlegm (mucus) in my chest at all	1 / 2 / 3 / 4 / 5	My chest is completely full of phlegm (mucus)
My chest does not feel tight at all	1 / 2 / 3 / 4 / 5	My chest feels very tight
When I walk up a hill or one flight of stairs I am not breathless	1 / 2 / 3 / 4 / 5	When I walk up a hill or one flight of stairs I am very breathless
I am not limited doing any activities at home	1 / 2 / 3 / 4 / 5	I am very limited doing activities at home
I am confident leaving my home despite my lung condition	1 / 2 / 3 / 4 / 5	I am not at all confident leaving my home because of my lung condition
I sleep soundly	1 / 2 / 3 / 4 / 5	I don't sleep soundly because of my lung condition
I have lots of energy	1 / 2 / 3 / 4 / 5	I have no energy at all

*This table is taken from the GOLD guideline

Supp 2. mMRC (Modified Medical Research Council) (1)

Grade 1	Not troubled by breathless except on strenuous exercise
Grade 2	Short of breath when hurrying on a level or when walking up a slight hill
Grade 3	Walks slower than most people on the level, stops after a mile or so, or stops after 15 min walking at own pace
Grade 4	Stops for breath after walking 100 yards, or after a few minutes on level ground
Grade 5	Too breathless to leave the house, or breathless when dressing/undressing

*This table is taken from the GOLD guideline.

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