ANALYSIS OF THE PATIENTS ADMITTED TO OUR EMERGENCY DEPARTMENT DUE TO CHRONIC OBSTRUCTIVE PULMONARY DISEASE EXACERBATION

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Abstract

Objective: Chronic Obstructive Pulmonary Disease (COPD) is the fourth most common cause of death in the world according to the reports of the World Health Organisation (WHO). Exacerbations impair the quality of life, fastens the progression of the disease and, thus, plays an important role in the morbidity and mortality of the disease. In this study with, we aimed to investigate the factors effecting the characteristics of the patients admitted to our emergency department (ED) due to COPD exacerbation in term of management, dischargement, hospitalization and death.

Method: This retrospective study was approved by the Local Ethic Comitee of Ankara Numune Education and Research Hospital. This study consists of 106 patients with diagnosis of COPD.

Results: Into our study, 106 patients were included. Of these patients, 58 were male and 48 were female, and mean age was 67.62±11.67. 56 of our patients expressed that they were active smokers, 19 expressed that they gave up smoking and 56 expressed that they have never smoke. In the last year, mean number of exacerbations was 10.1±6.1. While 50 (47.2%) patients were discharged from the ED, others were hospitalized or transferred to other hospitals. 15 patients were transferred to the ICU. Mean age of these patients was 76.13±12.03 (p= 0.002). 8 patients admitted to the ICU were smokers and mean smoking period was 42.88 ± 7.58 years. Inpatients not transferred to the ICU, this period was 35.26±11.12 years (p= 0.035). In the ED and ICU 11 deaths (10.37%) occured. 9 patients did not know the drugs they use at home (p= 0.026). Exacerbation frequency in the past year was 14.45 ± 5.7 (p= 0.008). 1 patient who died had undergone NIMV followed by IMV and 10 patients had undergone IMV. None of the patients in our study were vaccinated. We determined that smoking is the most important ethiological factor.

Conclusion: We also determined that main target to reduce the frequency of annual exacerbations is patient education and patient concordance. When compared to mono therapy, combined inhaler therapy reduced the frequency of exacerbations and increases the rate of discharge.

Keywords: Emergency Department, Cronic Obstructive Pulmonary Disease, exacerbation.

Резюме

АНАЛИЗ ПАЦИЕНТОВ, ПОСТУПИВШИХ В ОТДЕЛЕНИЕ НЕОТЛОЖНОЙ МЕДИЦИНЫ В СВЯЗИ С ОБОСТРЕНИЕМ ХРОНИЧЕСКОЙ ОБСТРУКТИВНОЙ БОЛЕЗНИ ЛЕГКИХ

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Цель: В соответствии с отчетом Всемирной Организации Здравоохранения (ВОЗ), хроническая обструктивная болезнь легких (ХОБЛ) является четвертой в структуре наиболее значимых причин смертей в мире. Обострения заболевания приводят к снижению качества жизни, быстрому прогрессированию и, соответственно, повышению показателей смертности от ХОБЛ. Целью настоящего исследования явилось изучение факторов, влияющих на ведение, госпитализацию, выписку и смерть пациентов, поступивших в отделение неотложной медицины (ED) в связи с обострением ХОБЛ.

Методы: Исследование является ретроспективным анализом. Оно получило одобрение местного этического комитета Научно-исследовательского госпиталя больницы Нумуне, Анкара. В исследование было включено 106 пациентов с диагнозом ХОБЛ.

Результаты: Из 106 пациентов, участвовавших в исследовании, было 58 мужчин и 48 женщин в среднем возрасте 67.62±11.67 лет. Активными курильщиками являлись 56 пациентов, 19 отказались от курения и 56 отрицали курение в прошлом. В течение предыдущего года среднее число обострений составило 10.1±6.1. Пятьдесят (47,2%) пациентов были выписаны из ED, остальные были госпитализированы или переведены в другие больницы. 15 больных в среднем возрасте 76.13±12.03 лет (p= 0.002) были переведены в отделение интенсивной терапии, из них 8 были курильщиками со средней продолжительностью курения 42.88 ± 7.58 лет. Для остальных пациентов этот период составил 35.26±11.12 лет (p=0.035). В отделении интенсивной терапии и ED отмечено 11 случаев смерти (10.37%). 9 пациентов не помнили, какими препаратами они лечатся амбулаторно (p=0.026). Средняя частота обострений за предыдущий год была 14.45 ± 5.7 лет (p=0.008). Десять больных получали неинвазивную механическую вентиляцию, из них один пациент умер. Ни один из участников исследования не прошел вакцинацию. Курение оказалось наиболее важным этиологическим фактором болезни.

Заключение: Мы определили, что основным способом снижения частоты ежегодных обострений ХОБЛ является образование пациентов и взаимодействие с ними. Комбинированная ингаляционнаятерапия снижает частоту обострений и повышает показатели выписки пациентов в сравнении с монотерапией.

Ключевые слова: Отделение неотложной медицины, хроническая обструктивная болезнь легких, обострение.

Түйіндеме

ӨКПЕНІҢ СОЗЫЛМАЛЫ ОБСТРУКТИВТІ АУРУЫНЫҢ АСҚЫНУЫНА БАЙЛАНЫСТЫ ШҰҒЫЛ МЕДИЦИНА БӨЛІМІНЕ ТҮСЕТІН ПАЦИЕНТТЕРДІҢ ТАЛДАУЫ

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Мақсаты: Дүниежүзілік Денсаулық сақтау Ұйымының есебіне сәйкес, Өкпенің созылмалы обструктивті ауруының асқынуы дүниежүзіндегі өлім–жітімдердің ең барынша себептерінің құрылымда төртінші болып табылады. Аурулардың асқынуы өмір сапасының төмендеуіне әкеледі, және тиісінше өкпенің созылмалы обструктивті ауруының асқынуынан өлім–жітім көрсеткіштері артады.

Біздің зертетудің **мақсаты** өкпенің созылмалы обструктивті ауруының асқынуына байланысты шұғыл медицина бөліміне (ED) түсетін пацтиенттерді жүргізуге, госпитализацияға, шығаруға және өлімге әсер ететін факторларды зерделеу болып табылады.

Әдістері: Зерттеу ретроспективті талдау болып табылады. Ол Анкара, Нумуне Ғылыми–зерттеу госпиталі ауруханасының жергілікті этикалық комитетімен қолдау тапты. Зерттеуге өкпенің созылмалы обструктивті ауруының асқынуыөкпенің созылмалы обструктивті ауруының асқынуы диагнозымен 106 пациент енгізілді.

Нәтижелері: Зерттеуге қатысқан 106 пациенттің ішінде 58 ер адам және 48 әйел орташа жастары 67.62±11.67 жас. Белсенді шылым шегушілер 56 пациент,19 шылым шегуден бас тартқандар және 56 бұрын шылым шекпегендер. Алдыңғы жыл бойы асқынулардың орташа саны 10.1±6.1 құрады. Елу пациент (47,2%) ED шығарылды, қалғандары госпитализацияланды немес басқа ауруханаларға ауыстырылды. 15 науқастың орташа жасы 76.13±12.03 жас (р = 0.002) қарқынды терапия бөлімшесіне ауыстырылды, осыдан 8 шылым шегушілермен 42.88 ± 7.58 жас шылым шегу орташа ұзақтығымен болды. Қалған пациенттер үшін осы мерзім 35.26±11.12 жасты (р=0.035) құрады. Қарқынды терапия және ED бөлімшесінде 11 өлім–жітім жағдайлары (10.37%) анықталды. 9 пациент олар қандай препараттармен амбулаториялық емделгені есінде жоқ (р=0.026). Алдыңғы жылға асқынулардың орташа жиілігі 14.45 ± 5.7 жас (р=0.008) болды. Он науқас инвазиялық емес механикалық желдетпе алды, осылардың біреуі өлген. Зерттеуге қатысушылардың бірде біреуі вакцинация алмаған. Шылым шегу аурудың ең маңызды этиологиялық факторы болды.

 Қорытынды: өкпенің созылмалы обструктивті ауруының жыл сайынғы асқынуы жиілігін төмендетудің негізгі әдісін біз анықтадық, ол пациенттердің білімі мен олармен өзара әрекет етуі болып табылады. Құрама ингаляциялық терапия асқынулар жиілігі төмендейді және монотерапиямен салыстырғанда пациентетрді шығару көрсеткіштері артады.

Түйінді сөздер: Шұғыл медицина бөлімшесі, өкпенің созылмалы обструктивті ауруы, асқыну.

Introduction

Chronic obstructive pulmonary disease (COPD) is characterized by irreversible and progressive air flow restriction. This disease develops due to inflammatory processes caused by exposure to harmful gases and, especially, cigarette smoke [1]. COPD is lock of physical activity and a significant decrease in quality of life [2]. According to the World Health Organisation (WHO), COPD is the fourth most common cause of mortality and causes death of 2,7 million individuals every year [1]. Chronic obstructive pulmonary disease includes chronic bronchitis and emphysema but has been defined recently as the physiologic finding of nonreversible pulmonary function impairment [3]. Patients hospitalised with acute exacerbations of chronic obstructive pulmonary disease have poor short- and long-term survival [4]. In the United States, it accounts for approximately 500,000 hospitalizations for exacerbations each year. It requires the presence of one or more of the following findings: increase in sputum purulence, increase in sputum volume, and worsening of dyspnea.

Patients with COPD typically present with acute decompensation of their disease one to three times a year, and 3% to 16% of these will require hospital admission. Hospital mortality of these admissions ranges from 3% to 10% in severe COPD patients, and it is much higher for patients requiring ICU admission [5]. Unfortunately, few pharmacological treatments for COPD have been proven to reduce clinical events [6].

In this study with, we **aimed** to investigate the factors effecting the characteristics of the patients admitted to our ED due to COPD exacerbation in term of management, dischargement, hospitalization and death.

Materials and Methods
Patient Group

This retrospective study was approved by the Local Ethic Comitee of Ankara Numune Education and Research Hospital. This study consists of 106 patients with diagnosis of COPD according to GOLD 2009 and Anthonisen criteria who were admitted to our ED between October 2010 and March 2011.

Inclusion criteria of the patients were as follows: Patients with a history of drug use for a long time admitted to our ED due to dyspnea and patients without pulmonary malignity, pulmonary edema, pneumothorax, active tuberculosis, cystic fibrosis, metabolic acidosis. Medical data was obtained from medical reports of the patients.

Clinical symptoms and findings, ongoing treatments, concomitant diseases, the number of exacerbations in last year, number of exacerbations and hospital admittance in last 2 weeks, and history of intubation were recorded. Treatments performed in the ED were divided into 4 groups as follows: bronchodilators, steroids, antibiotics, and mechanical ventilation. Body temperature, blood pressure, heart rate and oxygen saturation measured by pulse oxymetry were evaluated. During the period of hospitalization, patients were evaluated due to demand of Intensive Care and NIMV/IMV. Routine blood test results such as complete blood count, glucose, urea, creatin, sodium, potassium, brain natriuretic peptide (BNP), arterial blood gas analyisi, fibrinogen, chest X-ray and ECG findings were recorded.

Statistical analysis

SPSS 15.0 (Statistical Package for social sciences 15.00 for Windows) package programme was used for statistical analyisis. Mean, standart deviation, median values of all parameters were calculated. Percentage comparison between groups was performed by Chi-square test. In case of normal distribution, t-test was used for comparison of means of 2 groups. p values less than 0,05 were considered as statistically significant.

Results

Into our study, 106 patients (58 male, 48 female) were involved. Age of the patients were between 44-97 and mean age was 67.62 ± 11.679. Among patients, 55 were smokers, 1 was chewing tobacco, 19 of the smokers gave up recently. All patients had dyspnea. Of our patients, 56,6% had a history of hypertension, 26,4% had heart failure. While the number of exacerbations in last 1 year was minimum 3 and maximum 20, hospital admittance in last 2 weeks was maximum 6.

In physical examination, rale in 39,6%, ronci in 60,4% of the patients. When chest X-rays of the patients were examined, increased aeration was the most common finding (38,7%). Mean leukocyte count of the patients was 11526 ± 5132. See table 1 for the baseline characteristics of the patients. While 50 of the patients (47,2%) of the patients were treated and discharged from ED, 6 patients (5,66%) were referred to hospital with pulmonology department. See table 2 for details.

Table 1. Baseline Characteristic of Patients with COPD.

Age (years)	67.62 ± 11.67
Sex (female/male)	48/58
History of smoking (packet/years)	54.64 ± 10.96
Smokers	56 (%52.64)
Non-smokers	50 (% 47.16)
Those who gave up smoking	19 (%17.92)
Initial symptoms, n (%)	
Dyspnea,	106 (100)
Cough	82 (77.35)
Sputum	55 (51.88)
Concomittant diseases , n (%)	
Hypertension	60 (56.6)
Heart failure	28 (26.4)
Diabetes Mellitus	26 (24.5)
Renal failure	7 (6.6)
Depression	6 (5.7)
Osteoporosis	5 (4.7)
Others	15 (14.15)
Medicine that patients use at home, n (%)	
Do not know the names of their drugs	53 (%50)
BIPAP	2 (%1.9)
Oxygen therapy	24 (%22.6)
Long-acting beta 2 agonist	52 (%49.1)
Short-acting beta 2 agonist	15 (%14.2)
Anticholinergics	24 (%22.6)
Inhaler steroids	33 (%31.1)
Theophylline	7 (%6.6)
Mean number of exacerbations	10.1 ± 6.1
Mean hospital admittance in last 2 weeks	1.1 ±1
Patients vaccinated (pneumococcus vaccine)	0
Vital findings and mean values (n=106)	
Oxygen saturation	75.47 ± 11.6
Systolic blood pressure (mm/Hg)	145.72 ± 29.69
Dyastolic blood pressure (mm/Hg)	77.01 ± 16.34
Respiratory rate (per minute)	25.17 ± 4.97
Temperature (centigrate)	36.9 ± 0.77
Heart rate (per minute)	97.05 ± 18.81
Findings of physical examination and ratios (n=106)	
Rale	42 (39.6)
Ronci	64 (60.4)
Silent lung	23 (21.7)
Ancillary Muscle Involvement	9 (8.5)
Pretibial edema	22 (20.8)
Jugular venous fullness	6 (5.7)
Chest X-ray findings and ratios (n=106)	
Aeration increase	41 (%38.7)
Cardiomegaly	30 (%28.3)
Pneumonic infiltration	10 (%9.4)
Pleural fluid	2 (%1.9)
Mean values of the laoratory findings	
Leukocyte	11526 ± 5132
Hemoglobin	13.55 ± 2.41
Trombocyte	243447 ± 94615
Glucose	150.76 ± 72.6
Urea	51.04 ± 36.8
Creatine	1.16 ± 0.94
Sodium	137.38 ± 4.24
Potassium	4.40 ± 0.67
Fibrinogen	410.35 ± 128.2
pH	7.41 ± 0.051
pCO_2	49.8 ± 13.98
Bicaronate	26.74 ± 4.85

Table 2. Characteristics of treatment and outcomes of the patients.

Characteristics of treatment methods in hospital	
Treatment in ED	103 (%97.17)
Patients to whom NIMV was performed	10 (%9.4)
Patients to whom IMV was performed	13 (%12.3)
Patients to whom intuation was performed previously	3 (%2.83)
Rates of discharge, hospitalization, referral and death rates	
Discharged from ED	50 (%47.2)
Refferred from ED	6 (%5.66)
Observed in ED	41 (%38.7)
Hospitalized in internal medicine department	4 (%3.77)
Admitted to Intensive Care Unit	15 (%14.15)
Transport after hospitalization	12 (%11.32)
Death	11 (%10.37)

ED: Emergency Department, NIMV: Non-invasive mechanical ventilation, IMV: Invasive mechanical ventilation

While mean age of the patients treated and discharged from ED was 62.82 ± 10.09 (age between 44-81 years), mean age of patients hospitalized was 73 ± 11.04 (age between 44-97) (p=0,01). The difference between two groups were found to be statistically significant. While 67,3% of the patients who used long lasting beta 2 agonist was discharged from the ED, 38,9% of those who do not use was discharged from the ED (p= 0.003). The difference between 2 groups was statistically significant. While 72,7% of the patients using inhaler steroid were discharged from the ED, 43,8% of the patients who were hospitalised from the ED (p= 0.006). The difference was statistically significant. While 67,9% of the patients who know the name of the drugs they use and 37,7% of the patients who do not know were discharged from the ED (p=0.002). The difference was statistically significant. According to exacerbations in last year, ratio of patients discharged from

the ED was 9,32 and of those who were hospitalised was 11,06 (p=0,038). The difference was statistically significant. When vital signs and physical examination findings of the patients were evaluated, it was determined that patients with higher oxygen saturation (p=0,01), lower respiratory rate (p=0,001) and patients who do not use accessory respiratory muscles (p=0,001) were discharged from the ED. The difference was statistically significant. When chest X-rays were evaluated, 10% of the patients with pneumonic infiltration (p=0,006), 36,7% of the patients with cardiomegaly (p=0,036), 31,7% of the patients with increased aeration (p=0,001) were discharged from the ED. It was determined that blood urea (p=0,00), creatine (p=0,007), potassium (p=0,029) and pCO2 (p=0,016) values of the patients discharged from the ED were lower when compared to patients who were not (table 3). The difference was statistically significant.

Table 3. Comparison of the Characteristics of the Patients Discharged and Hospitalised From the ED.

	Patients discharged	Patients hospitalised	P value
Oxygen saturation (mean)	79.95 ± 8.68	70.46 ± 12.51	p= 0.01
Respiratory rate (per minute)	23.6 ± 4.41	26.8 ± 5.04	p= 0.001
Use of accessory respiratory muscles	%0	%100	p= 0.024
Urea	39.17 ± 24.18	64 ± 43.73	p=0,00
Creatine	1.02 ± 0.9	1.31 ± 0.98	p=0,007
Potassium	4.26 ± 0.57	4.57 ± o.82	p=0,029
pCO2	42.70 ± 10.13	56.58 ± 16.16	p=0,016

It was determined that mean age of patients observed in ED was 76 ±10.24 (p=0,001). It was also determined that 12,2% (p=0,041) of the patients who use oxygen apparatus at home, 28,8% (p=0,041) of patients who use long-lasting beta 2 agonist, 21,2% (p=0,013) of the patients who use inhaler steroid were treated in the observation room of the ED. This ratio was 49,1% in patients who do not know the names of the drugs they use (p=0,028). The difference was found to be statistically significant. When vital signs, physical examination findings, laboratory results and chest X-rays were evaluated, it was observed that mean oxygen saturation value was found to be 72.39 ± 12.5 (p= 0.027). It was also determined that 56,5% of the patients with silent lung (p=0,047), 51,2% of the patients with increased areation findings on chest X-ray (p=0,035), 80% of the patients with pneumonic infiltration (p=0,013), and 56,7% of the

patients with cardiomegaly (p=0,017) were treated in the observation room of the ED. The difference was found to be statistically significant. When compared to patients discharged from the ED, urea, creatine and potassium levels were higher in patients hospitalised from the ED. Mean values were as follows; urea: 64.25 ± 43.1 (p= 0.004), creatine: 1.32 ± 1.01 (p= 0.016), potassium: 4.60 ± 0.88 (p= 0.021). Fifteen patients were hospitalised in Intensive Care Unit. Mean age of these patients was 76.13±12.03 (p= 0.002). It was determined that 12 (80%) of the patients did not know the names of their drugs (p=0,012). While 8 patients who were hospitalised in the ICU were smokers, mean period of smoking was 42.88 ± 7.58 years. This period was 35.26 ± 11.12 years (p= 0.035) in patients who were not admitted to ICU. The difference was statistically significant. Mean number of exacerbations in patients admitted to ICU was 14.07 ± 5.8

(p= 0.006), mean oxygen saturation was 65.87 ± 12.6'dır (p= 0.001). It was observed that rate of use of accessory respiratory muscles were 55,6%. When laboratory findings were evaluated, urea, creatine levels were found to be statistically significant high. It was determined that urea level was 69.47 ± 41.44 (p= 0.017) and creatine level was 1.27 ±0.54 (p= 0.045). Non-invasive mechanical ventilation was performed in 5 (33%), and IMV was performed in 11 (84,6%) of the patients admitted to ICU. Eleven patients died in observation room of the ED and ICU. Among these patients, 9 of them did not know the names of the drugs they use. Number of exacerations of these patients in last year was 14.45 ± 5.7 (p= 0.008). Their respiration rate per minute was 29.8 ± 4.3 (P= 0.002) , oxygen saturation was 66.64 ± 13.64 (p= 0.013) , and in 5 patients accessory respiraory muscle usage (p=0.00), and in 8 patients rale was determined (p= 0.024). These findings were statistically significant. When laboratory and radiological findings were investigated, an increase in urea level was observed. In these patients, urea was determined to be 74.27 ± 51.19 (p= 0.031), and in chest X-rays of 8 patients, increase in aeration was determined (p= 0.021). Difference between two parameters was statistically significant. See table 3 for the details. One patient who died was applied IMV following NIMV and 10 patients were applied IMV either in the ED or in the ICU.

Discussion

Chronic obstructive pulmonary disease is a disease characterized by exacerbations. Economic loss, labor loss and death occur due to these exacerbations. Mean hospitalization rate of COPD due to exacerbation is 2-3 times annually [7]. Lately, COPD became a common disease due to widespread use of tobacco products and increase in the numer of old population. In the United States, 16 million peaople have diagnosis of COPD [8]. COPD exacerbations consist of 2,4% of all hospitalizations and are the main reason for the cost of health care related to COPD [9]. Besides, COPD exacerbations cause significant morbidity and mortality. While mortality rate for the COPD exacerbations in hospital is 10%, it is 25% in ICU. In 2000, 1.5 million people were admitted to EDs for acute exacerbation of COPD, and of these people 726000 were hospitalized and 119000 died [3]. Into our study, 106 patients were involved between October 2010 and March 2011. Of these patients, 50 were discharged from ED, 6 patients were transferred to a facility with Pulmonology in order to be applied NIMV, and 50 patients were hospitalized (41 patients in the observation room of ED, 4 patients in internal medicine service, and 15 patients in ICU). During the treatment period, 11 patients died. Of these patients, 3 died in the observation room of ED and 8 died in ICU. While mortality rate in hospital was 10.37%, it was 53.3% in ICU.

In the literature, there are 2 studies conducted to evaluate epidemiology of COPD exacerbations. They are Perception of Exacerbations of Chronic Obstructive Pulmonary Disease (PERCEIVE) by Miravitlles et al. and the study of Haughney et al. The study named PERCEIVE involved 1100 patients among 83592 patients detected in 6 countries. In this study, 89% of the patients had a history of exacerbation last year and 21% was hospitalized due to exacerbation. It was determined that annual number of exacerbation was 5.1 and that symptoms and period of exacerbations were increasing with age [10]. In an epidemiological study by Haughney et al. 125 patients were involved. In this study, mean exacerbation rate was found to be 4.6 [11]. Traditionally, even though COPD is thought to be a disease of men, it was determined that death rate of women was found to be equal to those of men in the US in 2000 [12]. In our study, 58 of the patients were male and 48 of them were female. It was determined that number of exacerbations was 10.1in the past year. It was also determined that number of exacerbations in hospitalised patients was 10.59 and in patients admitted to ICU was 14.07.   It was 9.32 in patients treated in and discharged from the ED. Our COPD exacerbation rate is higher than the literature. These difference may be due to sociocultural differences of patient populations.

Predictors of death due to COPD are period of smoking, packets per year and timely smoking status [13]. Active smoking in adulthood causes a early decrease in lung functions by age rate of decrease increases as the amount of cigarettes increases. In some of the smokers, this progress results in a declined FEV1 level, dispnea and limitation of physical activities and, at last, diagnosis of COPD is made [14]. Active smoking is linked with increased risk of cough, sputum, wheesing and dispnea. It is reported that symptoms of respiratory failure increase with number of cigarettes and decreases with smoking cessation [15]. In our study, 52 of 106 patients (52.6%) were smokers and 19 of them (17.9) quit smoking. Mean period of smoking was 36,36 years and 54,64% packs/year. While 8 of 15 patients admitted to ICU were smoking, mean smoking period was found to be 35.26 ± 11.12 years. Smoking increases the frequency of exacerbation of COPD.

Prophylactic influenza vaccination is recommended in all patients with COPD [1]. In our country, single dose of influenza vaccination in autumn (in September and November) reduces the risk of influenza up to 50%. In addition, in patients over 65 years and in those whose FEV1 is under 40% of expected, a polisaccarite pneumococcus vaccination is proposed [16]. In our patient group none of the patients was vaccinated.

COPD is usually underestimated by patients. In a study, high rates of patients with limited physical activity, patients who do not go to job frequently and patients using health services frequently were interpreted as a serious underestimation of the patients [17]. In our study, as an interseting result, 50% of the patients did not know the names of drugs they use at home. When this patient group was evaluated, it was determined that 37% was discharged from the ED, 49,1% was observed in the ED or other departments, and 12 of the 15 patients admitted to the ICU were in this group. Similarly, 9 of the 12 patients who died were in this group. When this result was evaluated with the rate of vaccination, it is important to question the high rate of annual exacerbation combined with patient education and patients' compliance with the treatment.

In a meta analysis about COPD and beta agonists; a significant increase was obtained in FEV1 and PEF values in the morning with salmaterol when compared to placebo. It was also reported that it reduced dispnea score, exacerbation frequency, use of rescue medication and increase quality of life [18]. Studies reveal that tiotropium provides both an increase in FEV1 and quality of life and decrease in rate of exacerbations and hospitalization [6]. Antiinflamatory effect of inhaler corticosteroids is not as significant as in athma. In 4 randomized-controlled prospective studies with large patient groups have revealed that inhaler corticosteroids alone did not change the natural course of COPD [19]. While mild increase was determined in FEV1, it was reported that, independent from stage of the disease, significant effect on FEV1 was not detected. In ISOLDE study with severe COPD patients, 25% decrease in numbers of exacerbations and an increase in life quality was obtained [20]. Results of TORCH study and study of Kardos et al. revealed that slametarol/flutikazon combination reduced the frequency of exacerbations and improve the quality of life. These studies also proved the superiority of this combination on plasebo and monotherapy [21]. Even a statistical significance was not obtained in TORCH study (p=0.052), it was reported that mortality rate tended to decrease in a 3-year follow-up [22]. In our study, 67.3% of the patients using long acting beta 2 agonists and 72.7% of the patients using inhaler steroids were discharged from the ED. In the literature, it is reported that combination therapy is superior on mono agent therapy. Our results are compatible with the literature. While 55.4% of the patients using at least 2 agents at home were discharged from the ED, 34.1% of them were hospitalized. This ratio was 20% in patients who required ICU.

Concomitant diseases play an important role in mortality and morbidity rates in patients with COPD. Acoording to Kaiser Permanente Medical Care Programme, various diseases were found to be related with COPD comorbidity: obesity, diabetes, hypertension, hyperlipidemia, ventricular tachycardia, ventricular fibrillation, cardiac arrest, atrial fibrillation, other arrythmias, angina pectoris, myocardial infarction, stroke, pulmonary embolus, heart failure and kidney diseases [23]. In WHO LARES Study, the following conditions were mentioned to be strongly related to chronic bronchitis and emphysema diagnosed the past year: asthma, allergy, hypertension, osteoporosis, diseases of the joints, digestive system ulcerations, cataract, skin diseases, migraine, depression, stroke, diabetes and malignancies [24]. In our study, the most common concomittant disease was hypertension (56.6%), followed by heart failure (26.4%), diabetes mellitus (24.5%), renal insufficiency (6.6%), depression (5.7), and osteoporosis (4.7%).

It was reported that diagnostic value of physical examination is poor. Abnormal physical examnination findings of air flow restriction do not emerge until respiratory functions severely deteriorate. There are not any specific auscultation findings in COPD but auscultation may be helpful in differential diagnosis [1.2]. In our study, auscultation findings were as follows: ronci (60.4%), rales (39.6%), and ancillary respiratory muscle involvement (8.5%). Some of the patients with findings of

silent lung (56,5%) were treated in observation room in the ED. Of the 15 patients who required ICU, rales in 5, ancillary muscle involvement in 8 patients, were determined.

Chest X-ray is essential in diagnosis. Studies investigating the efficiacy of radiological evaluation on treatment reveal that abnormalities prominent enough to manage the treatment are observed in 16-21% of the chest X-rays of patients present with COPD exacerbation [5]. In our study, we did not observe significant results related to chest X-ray. Pneumonic infiltration was determined in 10 patients (9,4%).

It was reported that the most important determinative parameters of mortality in patients with COPD exacerbation were severity of COPD, presence of concomittant diseases (such as diabetes mellitus, cardiovascular diseases), long time hospital stay, intubation and mechanical ventilation requirement, presence of sepsis and multiple organ failure [4]. In our study, 11 of the 15 patients were transferred to ICU have died. Mean age of the patients transferred to ICU was 76.13±12.03. Total of 11 patients who have died undergone IMV. One patient initially undergone NIMV then IMV. In these patients, urea, creatin and potassium levels were found to be significantly elevated. This result is compatible with the frequency of concomittant diseases and presence of multiple organ failure.

Our study has some limitations. Spirometric measurements were not performed to determine the severity of the diseases and microscpic analyisis of sputum was performed.

Conclusion

In conclusion, we determined that there was not difference between sexes when number of patients were evaluated. The most important ethiological factor in development of COPD is smoking. The main objective to be focused for reducing annual frequency of COPD exacerbation is patient education and patient's compliance with treatment (none of our patients was vaccinated for pneumococcus). When compared to mono-therapy, combined inhaler therapy is more effective in reducing the frequency of exacerbations. The most important parameter that increases mortality is the requirement of IMV.

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