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Research

Hospitalization Durations, Frequencies and Causes for Patients with Congestive Heart Failure

Konjestif Kalp Yetersizlikli Hastaların Hastanede Yatış Süreleri, Yatış Sıklıkları ve Nedenleri

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ABSTRACT

Objective: Heart failure (HF) is a major contributor to global cardiovascular mortality and morbidity. Despite advances in treatment, mortality from HF continues to increase.

Methods: This study examined 57 male and 47 female patients (total n=104) who were treated for congestive HF (CHF) at our hospital between 01.01.2010 and 31.12.2012. We investigated parameters affecting the number and duration of hospitalizations among patients with HF during the previous year.

Results: The mean age was 75.62±10.53 years (range, 52-102 years). Eighty six (82%) cases were older than 65 years, and 45 (42.3%) had been hospitalized more than once for CHF in the previous year. Hospitalization rates were low: 2 times for 28 (26.9%) cases, three times for 6 (5.1%) cases, four times for 7 (6.7%) cases, five times for 2 (1.9%) cases, and finally six times for 1 (1%) case. The mean interval between the hospitalizations for 44 patients hospitalized more than once was 77.1±79.878 days, ranging between 5 and 360 days. Eleven (10.6%) cases were alcohol consumers and 21 (20%) were smokers. According to functional capacity (FC) by New York Heart Association (NYHA), 4 (3.8%) cases were classified as class I, 48 (46.2%) cases were classified as class II, 26 (25%) cases were classified as class III, and 26 (25%) cases were classified as class IV. A significant difference was found between FC and the total hospitalization period, and between FC and the hospitalization rate ($p<0.001$, for both). A significant association was found between alcohol use and hospitalization rate ($p=0.006$) and between alcohol use and total hospitalization period ($p=0.001$).

Conclusion: The incidence of HF is increasing in patients older than 65 years. The frequency and duration of hospitalization among patients do not differ between female and male patient groups. The frequency and duration of patient hospitalization increase as the NYHA functional class advances.

Keywords: Functional capacities, heart failure, morbidity of heart failure

ÖZ

Amaç: Kalp yetmezliği (KY), dünya genelinde kardiyovasküler mortalite ve morbiditeye neden olan önemli bir klinik tablodur. Tedavideki başarılara rağmen, KY nedeniyle ölümler sürekli artmaktadır.

Gereç ve Yöntem: Bu çalışma, hastanemizde 01.01.2010 ile 31.12.2012 tarihleri arasında konjestif KY (KKY) tedavisi gören 57 erkek ve 47 kadın hasta olmak üzere toplam 104 hastayı incelemiştir. Son bir yıl içinde KY olan hastaların hastaneye yatış sayısını ve sürelerini etkileyen parametreler araştırılmıştır.

Bulgular: Ortalama yaş 75,62±10,53 olup, 52 ile 102 arasında değişmektedir. Seksen altı (%82) olgu 65 yaşın üzerindedir ve 45 (%42,3) olgu geçen yıl KKY nedeniyle birden fazla hastaneye yatıştırılmıştır. Hastaneye yatış oranları düşüktür: 2 kez 28 (%26,9) olgu, 3 kez 6 (%5,1) olgu, 4 kez 7 (%6,7) olgu, 5 kez 2 (%1,9) olgu ve son olarak 6 kez 1 (%1) olgu hastaneye yatmıştır. Birden fazla hastaneye yatış gerçekleştiren 44 hasta için ortalama yatışlar arasındaki süre 77,1±79,878 gün olup, 5 ile 360 gün arasında değişmektedir. On bir (%10,6) olgu alkol tüketicisi ve 21 (%20) olgu sigara

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ÖZ

içicisidir. New York Kalp Derneği'ne (NYHA) göre fonksiyonel kapasite (FK) sınıflandırmasına göre, 4 (%3,8) olgu sınıf I, 48 (%46,2) olgu sınıf II, 26 (%25) olgu sınıf III ve 26 (%25) olgu sınıf IV olarak sınıflandırılmıştır. FK ile toplam hastanede kalma süresi ve FK ile hastaneye yatış oranı arasında anlamlı bir farklılık bulunmuştur (her ikisi için; p<0,001). Alkol kullanımı ile hastaneye yatış oranı ve alkol kullanımı ile toplam hastanede kalma süresi arasında da anlamlı bir farklılık bulunmuştur (p=0,006; p=0,001).

Sonuç: Altmış beş yaşın üzerindeki hastalarda KY insidansı artmaktadır. Hastaların yatış sıklığı veya süresi, kadın ve erkek hasta grupları arasında farklılık göstermemektedir. NYHA fonksiyonel sınıfı ilerledikçe hastaların yatış sıklığı ve süresi artmaktadır. Bizim yatış süresi ve sıklığına etkisiz bulduğumuz diğer parametreler için çok sayıda hastanın yer aldığı başka çalışamalarla araştırılması gerektiği kanısındayız.

Anahtar Kelimeler: Fonksiyonel kapasite, kalp yetmezliği, kalp yetmezliği morbiditesi

INTRODUCTION

Heart failure (HF) is a syndrome in which the heart cannot pump sufficient blood to the periphery to meet the body's changing oxygen and metabolic needs. Congestive HF (CHF) is characterized by fluid retention, including edema, in chronic HF.

The incidence of HF is increasing among populations with longer life expectancies. This makes HF a widespread and growing public health problem. HF is progressive. Unless the underlying problem is eliminated, the prognosis is always poor, with an impaired quality of life and high morbidity and mortality rates. Approximately half of patients diagnosed with HF die within five years, and more than 60% of patients with advanced HF die within one year (1). HF constitutes a substantial burden on both patients and society. No intervention has been found to stop the disease effectively. This result clearly shows that patients at high risk of HF should be treated before CHF becomes apparent.

A good understanding of the etiology and pathophysiology of CHF, recognition of the factors that cause and accelerate its onset and affect its course, and complete identification of the hemodynamic and structural disorders that cause myocardial failure are needed to help early diagnosis and effective treatment of CHF. It reduces morbidity and treatment costs and prolongs life expectancy. In this study, we examined the duration and frequency of hospitalization and the reasons for these hospitalizations among patients with CHF.

METHODS

In this study, the medical records of 104 patients hospitalized with a diagnosis of CHF in the Internal Medicine Clinic of the University of Health Sciences Türkiye, Prof. Dr. Cemil Taşcıoğlu City Hospital between 01.01.2010 and 31.12.2012 were analyzed. Patients presenting with clinical symptoms of CHF and inpatients diagnosed with CHF were included in the study.

Age, gender, home caregiver status, occupational status, number of hospitalizations for HF in the last year, duration of hospitalization, smoking, alcohol use, medications, comorbidities, ejection fraction (EF), HF class, and etiology of HF were analyzed.

The patients' functional capacity (FC) was classified according to the New York Heart Association (NYHA) classification. Echocardiograms were performed with our hospital's echocardiography device (Vivid 3, 2007, USA) using a 2.5-MHz probe.

The patients' EFs were categorized as follows: ≥50% (normal), 30-49% (moderately reduced), and ≤30% (severely reduced). Parameters affecting the number and duration of hospitalizations for HF during the previous year were investigated. As our study is a retrospective file review, patient consent is not applicable.

Statistical Analysis

Statistical analyses were performed using SPSS for Windows (version 16.0). Data were analyzed using paired-sample tests, independent-sample tests, and analysis of variance (ANOVA).

Findings

The mean age of the patients was 75.62±10.353 years, with a range of 52-102 years. Eighty-six (82.7%) of our patients were older than 65 years. For 18 patients under 65 years of age, the mean number of hospitalizations was 1.83±0.316, and the mean duration of hospitalization was 16.28±4.151 days. For 86 patients aged 65 years or older, the mean number of hospitalizations was 1.69±0.111, and the mean duration of hospitalization was 18.16±1.951 days. 59 (56.7%) of our patients were not working; 45 (43.3%) were retired. Of our patients, 48 (46.2%) were illiterate; 41 (39.4%) were primary school graduates; 11 (10.6%) were middle school graduates; 3 (2.9%) were high school graduates; and 1 (1.0%) was a university graduate. Among male patients, 11 (24%) were illiterate, 15 (26%) were primary school graduates, 7 (15%) were middle school graduates, 2 (4%)

were high school graduates, and 1 (2%) was a university graduate. Among female patients, 37 (65%) were illiterate, 26 (55%) were primary school graduates, 4 (7%) were middle school graduates, and 1 (2%) was a high school graduate. There were no female university graduates. Home care was provided by 67 relatives (64.4%), 27 caregivers (26.0%), and 10 patients themselves (9.6%). Sixty patients (57.7%) were hospitalized once last year. Forty-four patients (42.3%) were hospitalized for CHF more than once last year. Of these patients, 28 (26.9%) were hospitalized twice, 6 (5.8%) three times, 7 (6.7%) four times, 2 (1.9%) five times, and 1 (1.0%) six times. Among the 44 patients hospitalized more than once, the interval between the most recent and the preceding hospitalization ranged from 5 to 360 days, with a mean of 77.10±79.87 days (Table 1). Alcohol use was present in 11 (10.6%) of the patients. Smoking was present in 21 patients (20.2%). Comorbidities were also analyzed, with hypertension (HT) being the most common. Comorbidities and their rates are shown in (Table 2).

According to the etiology of HF, 50 (48.1%) patients had ischemic heart disease, 43 (41.3%) had HT, 5 (4.8%) had rheumatic heart valve disease (RHVD), 2 (1.9%) had cardiomyopathy, and 4 (3.8%) had other causes. According to NYHA, the patients' FC was classified as class I in 4 (3.8%) patients, class II in 48 (46.2%) patients, class III in 26 (25.0%) patients, and class IV in 26 (25.0%) patients. There were significant differences between the FC and the number of hospitalizations, and between the FC and the total length of hospitalization (p<0.001; for both) (Table 3). EF was severely reduced in 21 (20.2%) patients, moderately reduced in 48 (46.2%), and normal in 35 (33.7%) patients. According to analysis of variance (ANOVA), there were no significant associations between patients' EF and the number of hospitalizations, nor between patients' EF and the total length of hospitalization (p=0.333 and p=0.933). Eighty-four (80.0%) patients were admitted to the hospital with dyspnea, 13 (12.5%) with nausea and vomiting, 8 (7.7%) with altered mental status, 7 (6.7%) with chest pain, 4 (3.8%) with atrial fibrillation (AF) with rapid ventricular response, 2 (1.7%) with decompensated chronic renal failure (CRF), and 1 (1.0%) with chronic obstructive pulmonary disease (COPD) exacerbation. There was no significant association between age and readmission (p=0.62) or between age and total hospitalization days (p=0.68). There were no significant differences between genders in readmission (p=0.91) or total hospitalization days (p=0.50).

The relationship between educational status and rehospitalization was analyzed using ANOVA and the t-test; no significant association was found.

The relationship between who cared for patients at home and readmission was analyzed using ANOVA and t-tests, and no significant relationship was found.

There were no significant correlations between smoking and either the number of readmissions (p=0.37) or the total length of stay (p=0.56). However, a significant association was observed between alcohol use and both the number of readmissions and total hospitalization days. There were significant differences among alcohol use, number of hospitalizations, and total hospitalization duration (p=0.006; p=0.001).

Patients using the diuretic furosemide were hospitalized more frequently. There was a significant association

Table 1. The interval between the last and previous hospitalization

	Patients	Minimum	Maximum	Mean
The interval	44	5 days	360 days	77.10±79.87 days

Table 2. Comorbidities and their rates

Concomitant disease	Number of patients	Rate (%)
HT	79	76
DM	34	32.7
CRF	21	20.2
Prev. CVE	11	10.6
Kr. AF	15	14.4
COPD	22	21.2
Hyperthyroidism	4	3.8
Cardiac cirrhosis	2	1.9
Alzheimer	2	1.9
RCV	5	4.8
Entb-extb.	2	1.9
DCV	7	6.7
MVR	1	1
HL	82	78.8
Pace-macer	3	2.9
Parkinson's	3	2.9

HT: Hypertension, DM: Diabetes mellitus, CRF: Chronic renal failure, Prev. CVE: Previous cerebrovascular event, Kr. AF: Chronic atrial fibrillation, COPD: Chronic obstructive pulmonary disease, RCV: Rheumatic valvular disease, Entb-extb: Entubation-extubation, DCV: Degenerative valvular heart disease, MVR: Mitral valve replacement, HL: Hyperlipidemia

Table 3. According to NYHA, the patients' FC

FC (clas)	Patients'	Rate (%)
I	4	3.8
II	48	46.2
III	26	25.0
IV	26	25.0
Total	104	100

NYHA: New York Heart Association, FC: Functional capacity

between diuretic use (furosemide) and rehospitalization (p=0.024). There was no significant difference in the total length of hospitalization (p=0.183).

Calcium channel antagonists were used by 19 (18.3%), beta-blockers by 54 (51.9%), acetylsalicylic acid by 71 (68.3%), aldosterone antagonists by 44 (42.3%), digoxin by 21 (20.2%), angiotensin-converting enzyme inhibitors (ACE-I) by 27 (26.0%); and angiotensin II receptor blockers (ARB) by 8 (7.7%). Diuretic use was significantly associated with rehospitalization (p=0.024). There was no significant difference between the total length of hospitalization (p=0.183). There was a significant association between use of aldosterone antagonists and the number of hospitalizations (p=0.048), but no significant association with total length of stay (p=0.186). There was no significant association between beta-blocker use and readmission (p=0.053), nor between beta-blocker use and total length of hospitalization (p=0.775). There was no significant difference in readmission between patients who used digoxin and those who did not (p=0.643), nor in total length of stay (p=0.950). There was no significant association between ACE-I use and rehospitalization (p=0.648), and no significant difference in total hospitalization duration (p=0.216). There was no significant difference between ARB use and rehospitalization (p=0.208), and no significant difference in total length of stay (p=0.130). There were no significant differences in diabetes mellitus (DM), HT, COPD, previous cerebrovascular event (CVE), chronic AF, and readmission, and total hospitalization duration (p=0.087, p=0.717, p=0.187, p=0.017, p=0.204, p=0.104, p=0.959, p=0.968, p=0.222, p=0.714; respectively). There was no significant difference in rehospitalization by CRF comorbidity (p=0.170), but there was a significant difference in total hospitalization days (p=0.003).

DISCUSSION

HF is among the most important causes of death in our country and worldwide (2,3). Among patients older than 65 years, the most common cause of hospitalization is acute HF (4). Approximately 50% of patients hospitalized for HF are readmitted with the same diagnosis within the first year after discharge (5). The one-year mortality rate among these patients is higher than that among outpatients. HF is also an economically significant public health problem due to recurrent hospitalizations (6,7).

Despite its high prevalence, poor prognosis, and substantial economic burden, epidemiologic studies of patients hospitalized for HF have only recently been conducted (7-9). The HF prevalence and predictors in Türkiye (HAPPY) study, conducted by the Turkish Society of Cardiology, showed that the prevalence of systolic HF in Türkiye was 0.8% and that 1.7% of patients had asymptomatic left ventricular systolic dysfunction. Furthermore, results from HAPPY indicated that the prevalence of diastolic dysfunction among our country's population aged 35 years and older was approximately 9%. In addition, data from the same study indicate that, with rates of HT (49%), diabetes (11%), obesity (27%), and coronary artery disease (4%), the population over 35 years of age in our country has a high burden of risk factors for the development of HF (10).

In our study, 86 patients (82.7%) were older than 65 years of age, and 18 were younger than 65 years of age. Large-scale studies found that patients over 65 predominated. In a study by Timms et al. (11) readmission rates were relatively high among older people, especially those over 65.

There were no significant differences in the number of hospitalizations or in the duration of hospitalization between patients above and below 65 years of age (p=0.62 and p=0.68). We attributed this result to the high mean age of our patients, the large number of patients over 65 years of age, and the small number of patients under 65 years of age. It has been reported that at least 80% of hospitalizations for CHF occur in patients over 65 years of age (12). Among our patients, 82.7% were older than 65 years.

Babayan et al. (13) found that gender was not a differential factor for morbidity in HF. In our study, 57 (54.8%) patients were female and 47 (45.2%) were male. There was no significant difference between both sexes regarding readmission or total hospitalization days (p=0.91; p=0.50).

None of the patients in our study were actively working: 59 (56.7%) were unemployed and 45 (43.3%) were retired. This suggests that the high average age of the patients also played a role.

No significant correlation was found between educational status and rehospitalization or total length of hospitalization. The rates were lower than those reported in the HAPPY study (10). There was no association between the provider of home care and readmission or total length of stay.

Studies have shown that depending on the course of the disease and age, 20% to 55% of individuals with HF are re-hospitalized after discharge, often within the first 3-6 months (13-15).

In 44 patients with multiple hospitalizations, the interval between the last and previous hospitalization ranged from 5 to 360 days, with a mean of 77.10±79.87 days. This was

consistent with previous studies (11-15). In our study, 42.3% of our patients were hospitalized more than once and were re-hospitalized shortly after discharge. We hypothesize that this may be explained by their educational level and socioeconomic status.

There was a significant difference between alcohol use and the number of hospitalizations (p=0.006) and total days (p=0.001). Patients who used alcohol were hospitalized significantly more often and had a significantly longer total length of hospitalization than patients who did not use alcohol. Alcohol use is one of the causes of decompensation in chronic compensated HF (16,17). In the chronic HF survey conducted by Yılmaz et al. (18) the rate of alcohol use was 33.2%. The rate in our study was 10.6%, which is well below this.

There was no significant difference in readmission associated with DM comorbidity (p=0.087), and no significant difference in total length of stay (p=0.717). The Framingham Heart Study reported that the risk of developing HF among individuals with diabetes was increased twofold in men and fivefold in women (19).

There was no significant association between CRF comorbidity and rehospitalization (p=0.170), but there was a significant difference in total hospitalization days (p=0.003). Patients with CRF were hospitalized significantly longer than others.

The second prospective randomized study of ibopamine on mortality and efficacy showed that in patients with advanced HF, impaired renal function was a stronger predictor of mortality than left ventricular dysfunction or poor HF status (20).

The mean body mass index of the subjects in the study was 27.85±6.19, and this finding was similar to that reported for the Turkish version of the Chronic Heart Failure Questionnaire (18).

Our study found no association between obesity and the frequency of hospitalization or total hospitalization days (p>0.05). Nevertheless, we found that 61.5% of patients were overweight.

The etiology of HF was as follows: ischemic heart disease in 50 (48.1%) patients, HT in 43 (41.3%) patients, RHVD in 5 (4.8%) patients, cardiomyopathy in 2 (1.9%) patients, and other causes in 4 (3.8%) patients. Two separate studies found ischemic causes to be the primary etiology of HF (21,22).

They found multiple risk factors for CHF among hypertensive patients in a 20-year follow-up of participants in the Framingham Heart Study. A previous myocardial infarction was present in 34% of hypertensive women and in 52% of men with CHF. Thus, HT was associated with a five-to-six fold increased risk of CHF (23).

According to NYHA, class I was detected in 4 (3.8%) patients, class II in 48 (46.2%) patients, class III in 26 (25.0%) patients, and class IV FC in 26 (25.0%) patients. These data indicate that 52 patients (50%) were in the advanced stages (class III and class IV). A significant correlation was found between patients' FC and both total hospitalization duration and readmission (p<0.001, for both).

FC is graded according to the NYHA system, and the patient's perception generally carries greater weight in the evaluation. Although NYHA is a subjective measure, it is a crucial, established predictor of mortality and morbidity. In general, mortality doubles with each class, resulting in an eightfold higher mortality in class IV compared with class I. According to data from extensive studies such as SUPPORT, FRAMINGHAM, and IMPROVEMENT, many clinicians use the following practical mortality estimates: 5% for NYHA class I, 10% for class II, 15-20% for class III, and 40% for class IV. These values show significant changes under the treatments we use today, which substantially increase life expectancy. It has been shown that, with optimal treatment, these values can be reduced to 12% in class III, class IV patients (24). The study found no significant difference between EF and readmission (p=0.333), or between EF and total length of hospitalization (p=0.933).

In the study, most patients (80%) were admitted to the hospital for dyspnea. Studies conducted with patients with chronic HF found that patients were admitted to the hospital mostly due to increased complaints of dyspnea and fatigue (25).

In our study, 76 patients (73.1%) used the diuretic furosemide. A significant difference in the day of rehospitalization was observed with respect to diuretic use (p=0.024), whereas no significant difference was observed for total days (p=0.183). Diuretics relieve signs and symptoms of pulmonary and systemic venous congestion in patients with HF (26).

In patients with NYHA class II, class III CHF, the maximal response to diuretics is one-third to one-quarter of that in individuals without CHF, and the response decreases further as CHF progresses (27).

The result we reached in our study may be explained by the fact that a significant proportion of the patients were class II, class III, class IV, according to NYHA, and this group used diuretics more frequently because their symptoms were more severe and more difficult to control with diuretics.

In our study, 19 patients (18.3%) used calcium channel blockers. No significant difference was found between calcium channel blocker use and readmission or total hospitalization days (p=0.083 and p=0.068, respectively). Calcium-channel blockers are generally not recommended in HF with systolic dysfunction. Diltiazem and verapamil type calcium antagonists are not recommended in HF with systolic dysfunction, and combining them with beta-blockers is contraindicated (28). Our study found that the use of calcium channel antagonists did not affect either the number or the duration of hospitalizations.

In our study, 44 patients (42%) used aldosterone antagonists. A significant association was observed between aldosterone use and the number of hospitalizations (p=0.048), but not with total hospitalization days (p=0.186).

A single large randomized controlled trial of the aldosterone antagonist spironolactone in patients with severe HF (Randomized Aldactone Evaluation Study) was conducted (29). A 30% relative risk reduction (RRR) in deaths was observed at a median of 2 years following initiation of spironolactone treatment. A 35% RRR in hospitalizations for worsening HF was achieved. In our study, the significantly higher number of hospitalizations in the aldosterone-user group compared with the non-user group may be because aldosterone was used primarily in patients with a high functional class.

In our study, 22 patients (20.2%) used digoxin. There was no significant association between digoxin use and rehospitalization (p=0.643), nor was there a significant difference in total length of stay (p=0.950). In the Digitalis Investigation Group trial, NYHA class II, class IV patients with left ventricular EF ≤45% were randomized to placebo or digoxin (0.25 mg once daily) in addition to diuretic and ACE-I treatment (30).

In our study, 54 patients (51.9%) were using beta-blockers. There was no significant difference between beta-blocker use and readmission (p=0.053), nor between beta-blocker use and total length of stay (p=0.775). Beta-blocker therapy improves ventricular function and the patient's general health status, reduces hospitalizations for worsening HF, and positively affects survival. In three pivotal trials (Cardiac Insufficiency Bisoprolol Study II, Carvedilol Prospective Randomized Cumulative Survival, and Metoprolol Extended-release International Trial in HF), nearly 9,000 patients with mild to severe symptomatic HF were randomized to receive placebo or a beta-blocker (bisoprolol, carvedilol, or metoprolol succinate controlled release). In these three trials, beta-blocker treatment was associated with reduced mortality (RRR of approximately 34% in all trials) and reduced hospitalizations for worsening HF (RRR of 28-36%) within approximately one year of treatment (31).

In our study, 27 patients (26.0%) were on ACE-I. There were no significant differences between ACE-I use and readmission, nor between ACE-I use and total length of stay (p=0.648 and p=0.216). In two major randomized controlled trials (consensus and SOLVD treatment), approximately 2,800 patients with mild to severe symptomatic HF were randomized to receive either placebo or enalapril (32,33). In each of these studies, ACE-I therapy was shown to reduce mortality. The SOLVD treatment trial also showed a 26% RRR in hospitalizations for worsening HF.

In our study, 8 (7.7%) patients used ARBs. There was no significant difference between ARB use and readmission (p=0.208), nor between ARB use and total length of stay (p=0.130). In the two leading randomized, placebo-controlled trials (Val-HeFT and CHARM-added), ARB treatment reduced the risk of hospitalization for worsening HF (24% of patients in Val-HeFT and 17% in CHARM-added), but did not reduce all-cause hospitalizations (34,35).

Study Limitations

This study has several limitations that should be acknowledged. First, it is a single-center, retrospective analysis with a relatively small sample size (n=104), which may restrict the external validity and generalizability of the findings. Second, the study population predominantly consisted of elderly patients, thereby limiting the applicability of the results to younger individuals with heart failure. Third, the data were collected between 2010 and 2012, and thus may not fully reflect current standards of care or contemporary guideline-directed medical therapy. Finally, medication use and comorbid conditions were not randomized or prospectively controlled, so the influence of residual confounding on the observed associations cannot be excluded.

CONCLUSION

The prevalence of HF increases among patients older than 65 years. The average age of hospitalized patients with HF is high. There is no correlation between duration and frequency of hospitalization and the following variables: patient age over 65 years, gender, care methods, smoking status, history of previous CVE, concomitant COPD, AF, DM, EF, or levels of beta-blockers, ACE, calcium channel blockers, digoxin, and ARB. 42.3% of patients were readmitted to the hospital approximately 2.5 months after discharge. Among patients hospitalized for HF, the number of overweight and obese patients and their education levels were low. Alcohol

use, higher FC class (NYHA), diuretic use (furosemide), and spironolactone use are associated with increased frequency and prolonged duration of hospitalization. Accompanying CRF does not increase the frequency of hospitalization or prolong its duration.

The most common presenting symptom in patients with HF is dyspnea. In patients presenting with dyspnea, HF should be carefully considered in the differential diagnosis.

According to our findings, it is crucial to control HT, reduce alcohol consumption, improve monitoring and treatment, decrease the FC, and lower the incidence of chronic renal insufficiency. This is important for reducing the frequency and duration of hospital admissions for renal disease in our country. We propose that additional parameters that we found to be ineffective for the duration and frequency of hospitalization in our study should be investigated in other studies involving a larger patient population.

FOOTNOTES

Authorship Contributions

Concept: Ş.A.H., Design: Ş.A.H., Data Collection or Processing: E.B., Analysis or Interpretation: E.B, Literature Search: E.B., Writing: E.B.

Conflict of Interest: No conflict of interest was declared by the authors.

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