Original research / Orijinal araştırma

Comorbidity status of patients with lung cancer

Akciğer kanserli hastaların komorbidite durumu

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Abstract

Aim: In this study, we aimed to investigate the associations between comorbidity status and age, gender, stage and histopathological type of tumors in patients with lung cancer. **Methods:** Age, gender, smoking status, stage, accompanying diseases, and histological types of 148 patients were recorded. The Charlson comorbidity index was used for definition and grading of comorbidity. **Results:** In 44.6% of our patients, there was at least one comorbid disease. When associations between Charlson comorbidity index and demographic variables, smoking status, histological type and stage of the tumor were investigated, following results were found: 45.5 % of men, 46.7% of the smokers, 56.3 % of undifferentiated and 52.6% of patients with squamous cell carcinoma, 48.2% and 49.2 % of widespread and advanced stages of lung cancers, respectively, had medical comorbidities. **Conclusions:** In our study, medical comorbidity was more common in men than in women, in smoker than in non-smokers, in undifferentiated and squamous cell carcinomas than in the other histological types. The relationship between comorbidity status and stage of the tumor supports the hypothesis of camouflage.

Keywords: Comorbidity, lung cancer, smoking

Özet

Amaç: Bu çalışmada amacımız akciğer kanseri hastalarında komorbiditenin yaş, cinsiyet, evre ve histopatolojik tipi ile olan ilişkisini incelemekti. **Yöntem:** Yüz kırk sekiz akciğer kanserli hastanın yaşları, cinsiyetleri, sigara içme durumları, hastalık evreleri, eşlik eden hastalıkları ve histolojik tipleri kaydedildi. Komorbiditenin tanım ve derecelendirilmesinde Charlson komorbidite indeksi kullanıldı. **Bulgular:** Hastalarımızın

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%44,6'sında en az bir komorbid hastalığı vardı. Charlson indeksine göre komorbidite derecesinin cinsiyet, sigara içme durumu, histolojik tip, evre ile olan ilişkisi değerlendirildiğinde erkeklerin %45,5'inde, sigara içme öyküsü olanların %46,7'inde, squamöz hücreli karsinomların %52,6'sında, tiplendirme yapılamayanların 56,3'ünde, yaygın ve ileri evreye sahip akciğer kanserli olguların sırasıyla %48,2 ve % 49,2'sinde medikal komorbidite tespit edildi. **Sonuçlar:** Bulgularımıza göre komorbidite, erkeklerde kadınlara göre, sigara içenlerde içmeyenlere göre, tiplendirilmeyen ve skuamöz hücreli karsinomu olanların diğer histolojik tipleri olanlara göre daha fazladır. Hastalarımızın komorbidite ve evre ilişkisi kamuflaj hipotezini desteklemektedir.

Anahtar sözcükler: komorbidite, akciğer kanseri, sigara içme

Introduction

Lung cancer is one of the most important diseases in respiratory medicine with an increase in smoking addiction (1). Worldwide, lung cancer is responsible for 12.8% of cancer cases and 17.8% of cancer deaths (2). It only caused death of more than one million people in 2001 (1, 3). Lung cancer often develops in subjects with comorbidities related to advanced age and smoking, because it is seen in people who are in advanced age and have smoking habit.

Since patients with advanced age and comorbidities are often excluded from studies, it is not easy to predict the prevalence of comorbidites (4); however, recently, several studies noted the importance of effect of comorbidites on the 5-year survey of patients with lung cancer (4, 6-8). The Charlson comorbidity index is the most widely accepted, validated method, currently used to quantify such comorbidities (5). It predicts the one-year mortality for a subject suffering from a range of comorbid conditions like heart disease, AIDS, or cancer (a total of 19 conditions). Each condition is assigned with a score of 1, 2, 3 or 6 depending on the risk of dying related to this condition. Then the scores are summed up and given a total score which predicts mortality. For a physician, it's helpful in knowing how aggressively to treat a condition, since in some patients, the costs and risks of the treatment outweigh the short term benefit from treatment of the cancer.

The aim of this study was to evaluate the relationship of comorbidities with age, gender, and stage and histological type of lung cancer.

Material and methods

Of 148 patients admitted to our service for the diagnosis and treatment of lung cancer, medical records that were available to the investigators were retrospectively evaluated after obtaining approval of the local ethics committee. Age, gender, smoking status, clinical stage and histological types of lung cancer, and comorbidities were recorded. Comorbidities were defined and graded according to Charlson comorbidity index (5). Nineteen conditions were defined as significantly influencing survival in the study population and were given a weighted score based on the relative mortality risk (Table

1). The sum of the weighted scores of all of the comorbid conditions present in cancer patients was then scaled to establish the Charlson comorbidity index. The weights range from 1–6 (0 if the comorbidity is absent) and four Charlson comorbidity index classes were defined as 0, 1–2, 3–4 and ≥5.

Table 1. Scoring of comorbidity according to Charlson index.

Score	Condition
1	Coronary artery disease Congestive heart failure Chronic pulmonary disease Peptic ulcer disease Peripheral vascular disease Mild liver disease Cerebrovascular disease Connective tissue disease Diabetes Dementia
2	Hemiplegia Moderate-to-severe renal disease Diabetes with end-organ damage Any prior tumor (within 5 yrs of diagnosis) Leukemia Lymphoma
3	Moderate-to-severe liver disease
6	Metastatic solid tumor AIDS (not only HIV positive)
This summary method produces an individual score. The weights range from 1–6 (0 if the comorbidity is absent) and four Charlson comorbidity index classes were defined as 0, 1–2, 3–4 and ≥5.	

Percentage, mean and standart deviation and min and maximum of variables were calculated as appropriate.

Results

Of 148 patients included in this study, 134 (90.5%) were male and 14 (9.4%) were female. Mean age of study population was 58±42 with a range of 24–78. The ratio of smokin addiction was 89%. Histologic types of lung cancer were 38.5% squamous cell cancer, 28.3% adenocarcinoma, 10.8% undifferentiated, and 22.2% small cell lung cancer (SCLC). The ratio of comorbidity was 44.6% in this study population, and cardiovascular disease and chronic obstructive pulmonar disease (COPD) were more common. In some patients, there were more than one comorbities such as coronary artery disease, COPD, hypertension, diabetes mellitus, congestive heart failure, connective tissue disease, and peptic ulcus. According to the Charlson index, there were 1-2, 3-4, and ≥5 comorbities in 32.4%, 10.8%, and 1.3% of the study subjects. Clinical stages of lung cancer were advanced (3B-4) in 49.3% in non-small cell (NSCLC) and extensive in 19.5% in small cell histologic types of lung cancer.

Table 2 presents comorbidity scores of patients according to gender, history of smoking, histologic type and clinical stages. Comorbidites were present in 45.5% of males, 46.7% of subjects with smoking addiction, 52.6% of subjects with squamous cell lung cancer, 56.3% of patients with undifferentiated tumors, advanced (3B-4) in 48.2% in NSCLC and extensive in 49.2% of subjects with SCLC histological types of lung cancer.

Table 2. Comorbidity scores of patients according to gender, history of smoking, histologic type and clinical stages.

Parameters	Total number of cases (n=148)	Grade of comorbidity according to Charlson index			
		Grade 0 (n=82)	Grades 1-2 (n=48)	Grades 3-4 (n=16)	Grade ≥5 (n=2)
Gender					
Female	14(9.4%)	9 (64.1%)	3 (21.4%)	2 (14.2%)	0
Male	134 (90.5%)	73 (54.5%)	45 (33.6%)	14 (10.4%)	2 (1.5%)
History of smoking					
Yes	131 (89.6%)	70 (53.4%)	44 (33.6%)	15 (11.5%)	2 (1.6%)
No	17 (11.4%)	12 (70.6%)	4 (23.5%)	1 (5.9%)	0
Histological type					
Squamous cell	57 (38.5%)	27 (47.4%)	21 (36.8%)	7 (12.3%)	2 (3.5%)
Adenocarcinoma	42 (28.3%)	29 (69.0%)	10 (23.8%)	3 (7.1%)	0
Small cell	33 (22.2%)	19 (57.6%)	10 (30.3%)	4 (12.1%)	0
Undifferentiated	16 (10.8%)	7 (43.8%)	7 (43.8%)	2 (12.5%)	0
Clinical stages of NSCLC*					
Early (1-3A)	42 (28.3%)	27 (64.2%)	11 (26.2%)	4 (9.5%)	0
Advanced (3B-4)	73 (49.3%)	37 (50.7%)	26 (35.6%)	8 (10.9%)	2 (2.7%)
Clinical stages of SCLC**					
Limited	4 (8.3%)	3 (75.0%)	1 (25.0%)	0	0
Extensive	29 (19.5%)	15(51.7%)	10 (34.4%)	4 (13.8%)	0

*Non-small cell lung carcinoma, **Small cell lung carcinoma.

Discussion

Forty four percent (44.6%) of the patients with lung cancer involved in the study had at least one comorbid disease. It has been reported that up to two third of the patients with malignant tumors had medical comorbid diseases (4, 8-13). Özgün et al. (4) reported that 87.4% of patients with lung cancer had comorbid diseases. Janssen-Heijnen et al. (9) reported that 64% of the men younger than 70-years and 87% of the men older than 70-years had medical comorbidities, whereas, these rated were 56% and 75% in women, respectively. Mehiç et al. (11) found that 87% of the patients with lung cancer had medical comorbidities. The most important factor related to the low rate of medical comorbidity status in patients with lung cancer in our study might be underreporting of comorbid diseases in the medical files of the patients.

The most common comorbid diseases in our study were cardiovascular diseases and COPD. Janssen-Heijnen et al. (9) and Mehiç et al. (11) reported that the most common comorbid diseases associated with lung cancer were cardiovascular diseases, COPD, hypertension and diabetes mellitus. The findings of our study were consistent with the findings of previous studies.

In our study, 45.5% of the males, 46.7% of the patients with smoking history, 56.3% of the patients with undifferentiated lung cancer and 52.6% of the patients with squamous cell carcinoma had medical comorbidities. It has been reported that comorbidity status in patients with lung cancer is associated with smoking status. COPD, cardiovascular diseases, pulmonary diseases and other system malignancies occur more commonly than general population (14). The frequent occurrence of these diseases in males and the patients with squamous cell cancer that is closely associated with smoking has been attributed to the high probability of cigarette use in these groups (15-17). In another study, people using cigarettes have been reported to consume more amounts of sugar and saturated fat and less amounts of fruits and vegetables than people who do not smoke; therefore, patients with lung cancer associated with smoking had diabetes and cardiovascular diseases more common than general population (18). In our study the rate of cigarette use was 89.6% and the most common comorbid diseases were cardiovascular diseases and COPD. These diseases were associated with smoking status as previously reported.

In our study, medical comorbidity was more common in patients extensive and advanced lung cancer than patients with limited and early lung cancer (48,2% and 49,2%; 25,0% and 35,7%, respectively). Janssen-Heijnen et al. (9) explains the association between comorbidity status and disease stage by scanning and camouflage hypotheses. According to the scanning hypothesis, patients with chronic diseases visit doctors more commonly than normal population; therefore, this results in earlier diagnosis of lung cancer. On the other hand, according to the camouflage hypothesis, pulmonary diseases like COPD may cause symptoms similar with those caused by lung cancer; as a result, the symptoms of lung cancer may be masked by comorbid diseases and the diagnosis could only be made in the advanced stages of the cancer. The findings of our study support the camouflage hypothesis.

In conclusion, medical comorbidity was more common in males than females, in the patients who smoke than the patients who do not and in the patients with and undifferentiated and squamous cell carcinomas than the patients with other histological types of lung cancer. The association between the comorbidity status and the stage of the lung cancer supports the camouflage hypothesis.

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