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Evaluation of Cancer and Non-Cancer Patients Receiving Palliative Care Service in Terms of Hospitalization Times and Overall Survival During Hospitalization

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Ziya KALKAN[1a*], Senar EBİNÇ[1b], Tuğba TEZER KALKAN[2c], Zuhat URAKÇI[1d], Zeynep ORUÇ[1e]

1. Department of Medical Oncology, Dicle University Medical Faculty, Diyarbakır, Turkey.

2. University of Health Scıences Diyarbakır Gazi Yasargil Training and Research Hospital Department of Internal Medicine, Diyarbakır, Turkey.

Orcid ID: [a]0000-0001-7858-8180 [b]0000-0002-0878-6525 [c]0000-0002-5971-998X [d]0000-0003-3878-988X [e]0000-0002-7931-2941

Abstract

Objective: *In the last 20 years, palliative care has gained a place within the health system worldwide. Our aim is to review the demographic characteristics of patients hospitalized in palliative care centers, to investigate the factors influencing hospitalization times of patients with cancer and non-cancer diagnoses and the median in-hospital survival.*

Results: *A total of 428 patients, comprising 237 (55.4%) males and 191 (44.6%) females were included in the study. Median patient age was 75 (18-105) years. In terms of hospitalization times, there were no significant differences between genders (p=0.79) and diagnoses (malignant/non-malignant); however, there was a statistically significant difference between survival statuses (died/discharged) and patients who died had longer hospitalization times (16 days versus 12 days) (p=0.008). When age, gender, hospitalization type and diagnosis were compared with regard to median in-hospital survival in multivariate analysis, the diagnosis (non-malignant/malignant) was an independent factor indicating median in-hospital survival (HR:2.08, 95% CI:(1.47-2.94), p<0.001).*

Conclusion: *Among the patients receiving inpatient treatment in the palliative care center, those who died had a longer hospitalization time compared with those who were discharged. Also, patients with a malignant diagnosis had a shorter overall survival during hospitalization compared with those with non-malignant disease.*

Keywords: Palliative care, cancer, hospitalization time, survival

* Corresponding author: E-mail: zyklkn7221@gmail.com

Introduction

Palliative care (PC) is an approach that aims to effectively prevent or correct the life-quality, physical and psychosocial problems of patients who encountered problems stemming from life-threatening diseases and their relatives through early detection.[1] The goal of PC is to help the patient live as well as possible in this period before their death, increase the quality of the death process and, particularly, to provide the best care during death. This process is the most difficult and intense aspect of palliative care in cancer patients.[2] While PC is a form of basic care that should be offered since the diagnosis for the quality of life, it is needed more for terminal stage cancer patients during the final days of life.[3] Cancer was reported to be the second most common cause of death after cardiovascular diseases in Turkey and worldwide. Every year, 7.9 million individuals die because of cancer and it is estimated that 12 million individuals will lose their lives in the year 2030.[4] Reviewing the literature, there exist numerous factors that influence hospitalization times and median in-hospital survival in palliative care centers (PCC) such as decubitus ulcers, cerebrovascular disease, diabetes mellitus, hypertension, nutritional state, systemic infections and malignancy. Our aim in this study is to review the demographic characteristics of the patients hospitalized in a tertiary PCC, to investigate the factors influencing hospitalization times and the median in-hospital survival.

Materials and Methods

Patients aged 18 years or older who received inpatient supportive treatment in the palliative care service of Health Sciences University, Gazi Yasargil Training and Research Hospital between August 2018-July 2019 were included in the study. In this retrospective, descriptive study, last hospitalizations of patients with repetitive hospitalizations were considered. Sociodemographic characteristics, hospitalization diagnoses, hospitalization times, discharge statuses, hospitalization dates, discharge dates and dates of death of the 428 patients who met the inclusion criteria were obtained from patient records. The study was approved by the Health Sciences University, Gazi Yasargil Training and Research Hospital Ethics Committee (05.03.2021-692). All of the ethical considerations had been strictly followed in accordance with the Helsinki declaration.

Data were analyzed using Statistical Package for the Social Sciences 18.0 (SPSS Inc, Chicago, IL, USA). As descriptive statistics; number of units (n), percentage (%), mean ± standard deviation ($\bar{x}\pm ss$), minimum value (min), maximum value (max), median were provided. Descriptive statistics were used in order to evaluate patient characteristics and the frequency of parameters, Student's t-

test for normally distributed variables, Mann-Whitney-U test for the analysis of non-parametric variables. Survival analysis (OS) was conducted using Kaplan-Meier analysis. The Cox regression test was used for multivariate analyses. A p-value below 0.05 was considered statistically significant.

Results

A total of 428 patients receiving inpatient treatment in our palliative care center, comprising 237 (55.4%) males and 191 (44.6%) females were included in the study. Median patient age was 75 (18-105) years [77 (18-105) years in females, 74 (25-95) years in males]. There were 207 (48.4%) patients hospitalized due to a non-malignant disease diagnosis and 221 (51.6%) patients hospitalized due to malignant disease. At hospitalization, median age of patients with non-malignant disease was 79 (27-101) years, median age of patients with malignant disease was 70 (18-105) years. The diagnoses of the 211 patients with malignant disease and their frequencies were as follows: lung cancer 43 (10%), colorectal cancer 40(9.3%), gastric cancer 35(8.2%), pancreatic cancer 21(4.9%). Other cancer frequencies are listed in Table 1.

Of the patients, 344 (80.4%) were hospitalized from the emergency service polyclinic and 84 (19.6%) from normal polyclinics. Of the patients, 265 (61.9%) were discharged, 163 (38.1%) died during hospitalization.

Median hospitalization time was 9 (1-78) days in males and 8(1-110) days in females. Hospitalization times were 9 days (1-78) in those with non-malignant disease, 7 (1-110) days in those with malignant disease. Hospitalization times in those with malignant diseases were median 6 (1-52) days in lung cancer, median 9 (1-81) days in colorectal cancer, median 5 (1-64) days in gastric cancer, median 7 (1-53) days in pancreatic cancer, median 6 (2-49) days in hepatobiliary cancer, median 10 (3-50) days in malignant neoplasm of the brain, median 12.5 (6-38) days in head-neck cancers, median 11.5 (4-38) days in mesothelioma, median 12.5 days (6-45) in renal cell cancer, median 11.5 (2-84) in breast cancer, median 10 (3-39) days in bladder cancer, median 6 (1-17) days in prostate cancer, median 2 (1-7) days in skin cancers, median 30 (29-42) days in ovarian cancer, median 82 (54-110) days in cervical cancer, median 9 (1-25) days in other cancers.

Median hospitalization times were 8 (1-84) days for patients hospitalized from the emergency service, 10 (1-110) days for patients hospitalized from the polyclinic. Discharged patients had a median hospitalization time of 8 (1-81) days, patients who died during hospitalization had a median hospitalization time of 10 (1-110) days. Basic characteristics of the patients are specified in Table 1.

When the patients were compared with regard to hospitalization times based on gender (male/female) and diagnosis (malignant/non-malignant), there were no significant differences across the groups. Male patients had a median hospitalization time of 13 days and females had a median hospitalization time of 14 days (p=0.79). Patients with a malignant diagnosis had a median hospitalization time of 13 days and patients with a non-malignant diagnosis had a median hospitalization time of 14 days (p=0.29). When those who were discharged during hospitalization and patients who died during hospitalization were compared, the hospitalization time of those who died was found to be higher at a statistically significant level (16 days versus 12 days) (p=0.008).

When the survival times of the patients during hospitalization were evaluated according to clinical parameters; no statistically significant differences were found based on age (p=0.49), gender (p=0.53) and hospitalization type (emergency department/polyclinic) (p=0.74). Median survival time during hospitalization was 34 days in patients hospitalized due to non-malignant disease and 20 days in patients hospitalized due to malignant disease, with a statistically significant difference [Hazard ratio (HR):1.94, 95% CI: 1.40-2.68, p<0.001].

When the patients were compared in Cox regression analysis with regard to the median survival time during hospitalization based on age, gender, diagnosis, type of hospitalization; only the primary diagnosis (malignant/ non-malignant) was found to be an independent prognostic factor indicating median in-hospital survival [HR:2.08, 95% CI: 1.47-2.94, p<0.001]. Univariate and multivariate analysis results are specified in Table 2.

Table1*: Baseline characteristics of patients*

	n (range vs %)	**Length of stay (median days/rance)**
	n=428	
Age	75 (18-105)	
Female	77 (18-105)	
Male	74 (25-95)	
Gender		
Female	191 (44,6)	8 (1-110)
Male	237 (55,4)	9 (1-78)
Diagnosis		
Non-malignant diseases	207 (48,4)	9 (1-78)
Malignant diseases	221 (51,6)	7 (1-110)
Lung cancer	43 (10)	6 (1-52)
Colorectal cancer	40 (9,3)	9 (1-81)
Stomach cancer	35 (8,2)	5 (1-64)
Pancreatic cancer	21 (4,9)	7 (1-53)
Hepatobiliary cancer	16 (3,7)	6 (2-49)
Brain malign neoplasia	11 (2,6)	10 (3-50)
Head and neck cancer	8 (1,9)	12,5 (6-38)
Mesothelioma	6 (1,4)	11,5 (4-38)
Renal cell cancer	6 (1,4)	12,5 (6-45)
Breast cancer	6 (1,4)	11,5 (2-84)
Bladder cancer	5 (1,2)	10 (3-39)
Prostate cancer	5 (1,2)	6 (1-17)
Skin cancer	3 (0,7)	2 (1-7)
Ovarian cancer	3 (0,7)	30 (29-42)
Cervical cancer	2 (0,5)	82 (54-110)
Other cancers	11 (2,6)	9 (1-25)
Hospitalization Type		
Emergency department	344 (80,4)	8 (1-84)
Polyclinic	84 (19,6)	10 (1-110)
Final situation		
Discharged	265 (61,9)	8 (1-81)
Died	163 (38,1)	10 (1-110)

Table 2: Factors affecting survival during hospitalization - results of univariate and multivariate analysis

	Univariate Analysis			Multivariate Analysis		
	HR	**95% CI**	**P value**	**HR**	**95% CI**	**P value**
Age	0.99	0.98-1.00	0.49	1.00	0.99-1.01	0.41
Gender	0.90	0.66-1.23	0.53	0.82	0.60-1.13	0.23
Type of hospitalization (Emergency department /Polyclinic)	1.06	0.73-1.55	0.74	0.95	0.65-1.39	0.82
Diagnosis (Non-malignant /Malignant)	1.94	1.40-2.68	**<0.001**	2.08	1.47-2.94	**<0.001**

Discussion and Conclusion

In our study, the median age of the 428 patients hospitalized in a tertiary palliative care center over a 1-year period was determined to be 75; the median age of our patients with non-malignant disease was 79 years and the median age of the patients with malignant disease was 70 years. In a study performed by Munch and colleagues, the mean age was found to be 60 years.[5] In a study conducted by Senel Ozalp and colleagues on cancer patients, the mean age of the patients was reported as 61 years.[6] In a similar study done by Yuruyen and colleagues, the mean age of the patients was reported as 71,0±15.8 years.[7] The mean age was 74.55±16.71 years in a study by H. Cinar and colleagues[8], the mean age of the patients diagnosed with cancer in a palliative care study performed by Lee HS. and colleagues was 62 years.[9] The age of the patients in our study was similar to some studies in the literature and differed from some others.

In a study by Ozalp and colleagues, the patients hospitalized in the PCC the most commonly were patients diagnosed with cancer and within this patient group, patients with gastrointestinal cancers were found to be the most frequent.[6] Similarly, in a study conducted by Menezes VH. and colleagues with 502 patients, patients diagnosed with cancer were hospitalized in the PCC most commonly.[10] In a study by Uysal and colleagues, the three cancers hospitalized the most commonly in the PCC were gastrointestinal tract cancers, lung cancer and hepatobiliary/pancreatic cancers.[11] In our study, the patients hospitalized the most commonly in the PCC were patients diagnosed with cancer. In particular, patients diagnosed with gastrointestinal cancer ranked first, in compliance with the literature. The likely cause of this situation is that patients with gastrointestinal cancer frequently show nutritional problems, which we reason increases the need for palliative care.

In our study, hospitalization times were median 10 (mean 13 days) days in cancer patients and median 9 (mean 14.6 days) days in non-cancer patients. In a study performed by Yuruyen and colleagues, the mean hospitalization time was determined to be 15.4±15.7 days.[7] In a different study, the mean duration of hospitalization in the PCC was 27.2 days, while in another study, this duration was found as 14.50 ± 12.03 days.[12,13] Reviewing the literature, the hospitalization times of the inpatients in PCCs show variability and this is because the hospitalization time is influenced by a multitude of factors. Although studies investigating the factors that influence hospitalization times in PCCs are scarce, hospitalization times of patients diagnosed with cancer were shorter in two studies performed in Turkey.[14,7] In the research by Allman RM. and colleagues, cancer appeared to be a negative factor for hospitalization in the PCC, while cerebrovascular disease, hypertension and diabetes mellitus were determined to be positive factors. With regard to conditions such as advanced decubitus ulcers, it was described that these could be treated once detected, however, that they certainly influenced the hospitalization time.[15] Again, in the research by Dincer, factors such as age, hypoxic brain, cancer, infection were proven to affect the hospitalization times of inpatients in the PCC.[16]

Meanwhile, in our study, patients with non-malignant diagnoses had a longer hospitalization time compared with patients with malignant diagnoses; however, there was no statistically significant difference between these two groups. When evaluated in terms of survival status (discharged/died), patients who died had longer hospitalization times than discharged patients, with statistical significance [(16 vs 12 days), (p=0.008)]. We reason that this may be because patients at a terminal stage wished to spend their end-of-life period in the hospital. In our study, factors that influenced the duration of hospitalization in the palliative care service were evaluated; no statistically significant differences in hospitalization times were determined across genders (female/male), diagnoses (malignant/ non-malignant), hospitalization types (emergency department/polyclinic).

The limitations of our study include the heterogeneity of the patient population, presence of comorbidities, differences across the patients' diagnoses.

In conclusion; upon evaluating the hospitalization times of patients who received inpatient care in a palliative care center and their survival times during hospitalization, we determined that the patients who died in the hospital had longer hospitalization times and that the median survival time during hospitalization was shorter in patients with malignant diagnoses when compared with patients with non-malignant diagnoses.

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