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Original Article

The review of admissions of oncologic patients to emergency service: A cross-sectional study

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Abstract

Aim: Oncological emergencies constitute a considerable part of emergency admissions. The early and correct diagnosis of oncological emergencies increases both life quality and decreases mortality rate due to oncologic emergency. In this study, we evaluated the admissions of oncologic patients to emergency service.

Materials and Methods: This study was conducted retrospectively and patients with cancer admitted to emergency service of third degree university hospital between October 2012-2013. Demographic characteristics of the patients, the frequency of admission, admission time, diagnosis, co morbid diseases, and treatment process were investigated.

Results: In the study 1472 admission that belongs to 593 patients are assessed. 59,2 % of patients are male, 40.8 % of patients are female. Mean of age is 62. Repeated admission rate is 55.81%. The two most frequent complaints are dyspnea 14.2% and stomachache 10.4%. The two most common types of cancer were lung (19.73%) and stomach (12.47%) cancer. While 64.90% of patients were discharged, 33.80% of patients are hospitalized. The mortality rate in emergency service was 0.1%.

Conclusions: Distinguishing the oncological from other emergencies will contribute to patients in terms of reducing mortality and morbidity.

Keywords: Cancer; demographic features; emergency service; oncology

INTRODUCTION

Emergency service is easy to access, works permanently and has highest rate for public relation in a hospital and oncologic patients constitute significant proportion of emergency service admissions (1).

Cancer especially in developing countries is one of the most important health problems. Expectations of patients increase due to development of new approaches for diagnosis and treatment and easy reaching and understanding information about diseases (2,3). Mortality and morbidity rates related to oncological emergencies can be reduced by using early diagnosis and treatment methods in cancer patients admitted to emergency (4).

Oncologic emergencies can occur at any period of malignancy. Complaints can change depending on age, diagnosis, metastases, phase of disease, co morbidity and other factors. These symptoms may be completely independent of diagnosis and treatment, such as might be associated with cancer therapy. The reason of effect of cancer related disorders on all systems results from that cancer is a systematic disease (5). Cancer treatments become more complicated with the existence of oncologic urgent disorders and if these disorders do not be cured their prognosis become worse (4). While some oncologic urgent disorders can be hidden and emersion can take plenty of months, some can cause the death in hours.

The benefiting rate of cancer-affected patients from emergency service is higher than expected. Correct and on time diagnosis of problems which occurs during the treatment period of diseases, rearranging of treatment enhances patient's life quality and lifetime (5,6). In this study, we aimed that evaluating the correlation between demographic and clinic features of patients and their admission applied to emergency service and revealing the possible causes of this relationship, together with results.

MATERIALS and METHODS

Study Design and Patients

This study was conducted retrospectively and patients with cancer admitted to emergency service of third degree university hospital in Jan 2012-2013 after obtained from approval of ethics committee of university. Patients with diagnosed former or new cancer were included in the study.

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Former diagnoses were determined by the automation records and patient history. New cancer diagnoses were created from patients clinically diagnosed with cancer after hospitalized from the emergency department. Patients with trauma, older than age 16, and the patients whose automation records were existed but archive files were not reachable or had a disparity (74 patients) were excluded from the study.

Totally 27595 patients' computer records were detected. Cancer diagnoses were identified according to the ICD codes of patients. 593 patients fulfilling the criteria for inclusion and 1472 emergency admissions for these patients were investigated. Patients' gender, age, treatments, diagnosis cancer, metastases, co morbid diseases were assessed according to the patient number, other parameters assessed according to the admission number.

Statistical Analysis

Statistical analyses were performed with SPSS 18.0 software (SPSS Inc., Chicago, IL, USA). Distribution of data was determined by Kolmogorov-Smirnov test. Continuous variables were expressed as mean±std. deviation, categorical variables were analyzed Chi-square test or Fisher's chi-square test, were given as frequency and percent.

RESULTS

One thousand and seventy-two admissions of 593 diagnosed former or new cancer patients admitted to our emergency service in one year were investigated. 262 of 1,472 admissions were single, other 1,210 admission were repeated based on the admission. 331 patients (55.81%) had repeated admission based on patient. 351(59.2%) of 593 patients in study group are male, 242(40.8%) were female. The mean of age were 62.07±.14,07 (min:17-max:98). The majority of the patients who were accepted to study were in geriatric patient (258 patients- 43.7%).

When manners of admission were assessed, direct admission number was found as 1,383 (93.95%) patients, admission number of referred patients from other centers was found as 61 (4,14%), referred from policlinics of university to emergency service was found as 28 (1.90%) patients. The maximum admission number were detected in autumn (394 (26.8%)), minimum admission number was detected in spring season (337 (22,9%)in terms of the analysis according to the seasons of admission to emergency service. There was no seasonal difference between patient admissions.. When hour sections of patients who were applied to emergency service in a day were researched, it determined that admission number between 08:00-18:00 was 890 (60.5%), admission number between 18:00-23:00 (evening) was 429 (29.1%), admission number between 24:00-08:00 was 153 (10.4%).

Distribution of complaint admissions of patients in terms of systems was summarized at Table 1. The most frequent reason for admission complaints considering obtained data were related to GIS (28.5%). If assessment is made in the basis of complaints, while the most frequent complaints are shortness of breath (14.2%), stomachache (10.4%), fever (9.3%), nausea- vomiting (8.7%) and ache (7.4%) respectively, the lowest frequent complaints are palpitation (0.2%), lack of appetite (0.2%), sleeplessness (0.1%), perspiration(0.1%). Besides, a patient applied after suicide attempt.

Table 1. Distribution of admission complaints of cancer patients admitted to emergency service by systems

System	n / %
GIS complaints	420 (28.50%)
Respiratory system complaints	261 (17.70%)
Musculoskeletal system complaints	146 (9.90%)
Infection complaints	116 (7.80%)
Common system complaints	98 (6.65%)
Central nervous system complaints	86 (5.80%)
Urogenital system complaints	60 (4.07%)
Cardiovascular system complaints	51 (3.46%)
Dermatologic complaints	26 (1.80%)
Psychiatric complaints	25 (1.89%)
Wound location complaints	22 (1.50%)
Hematologic complaints	1 (0.06%)
Other	160 (10.86%)

Distribution of cancer patients in terms of diagnosis is given at Table 2. In terms of data acquired, the most frequent two cancer types are lung (19.73%) and stomachache cancer (12.47%) and the lowest frequent cancer types are surrenale gland cancer (0.16%) and vulva cancer (0.16%). In addition, the most frequent seen diagnosis for females are breast cancer, for males are lung cancer in terms of analyze considering gender. While the most frequent metastases location is lung (29.19%), the lowest metastases location is esophagus (0.53%) in terms of location of metastases. The rate of cases with multiple metastases was 19.89%.

Table 2. Distribution of patients admitted to emergency service by cancer types

Cancer types*	n / %
Lung	117 (19.73%)
Stomachache	74 (12.47%)
Breast	56 (9.44%)
Colon	43 (7.25%)
Brain	39 (6.57%)
Larynx	37 (6.23%)
Prostate	34 (5.73%)
Multiple	29 (4.89%)
Others	142 (27.65%)

* There are more than one non-metastatic synchronized primer cancer in a patient

The distribution of co morbid diseases, which are found together within cancer patients, is given at Table 3. Because of these results, there was co morbid disease in 52 patients and the most common co morbid diseases are chronic obstructive pulmonary disease (COPD) (28.84%) and hypertension (26.92%).

Table 3. Distribution of cancer patients admitted to emergency service by co morbid diseases

Co morbid diseases*	n / %
COPD	15 (28.84%)
Hypertension	14 (26.92%)
Diabetes mellitus	9 (17.3%)
Coroner artery diseases	8 (15.38)
Chronic renal failure	7 (13.46%)
Asthma	2 (3.84%)
Chronic hepatitis	2 (3.84%)
Chronic congestive heart failure	1 (1.92%)
Others	8 (15.38%)

*There are more than one co morbid diseases in a patient

The list of performed practices at emergency service to cancer patients admitted to emergency service is given at Table 4. Various attempts except making vascular access to 164 patients had been performed at the emergency service. Except for interventional operations, erythrocyte suspension to 34 patients, fresh frozen plasma to 9 patients, and thrombocyte suspension to 4 patients is given. Furthermore, endoscopy to 1 patient and nephrostomy to 2 patients performed by relevant clinics when patients was under control at our service.

Table 4. Distribution of patients by interventional operations in emergency service

Interventional Operation	n / %
Foley catheter	89 (54.60%)
Nasogastric tube insertion	23 (14.10%)
Paracentesis	15 (9.20%)
Intubation	13 (7.90%)
Wound dressing	13 (7.90%)
Central venous catheter insertion	1 (0.70%)
Other	9 (5.60%)

576 (39.1%) of 1472 patients who admitted to the emergency department are consulted at various clinics. 955 (64.9%) patients were discharged, 495 (33.8%) patients were hospitalized, 15 (1%) patients rejected treatment or had not waited until the end of treatment as a result of their will and signed and declared approval, 2 (0.01%) patients died and 2 (0.01%) patients were referred to another center according to the analysis of the shape of the patients leaving the emergency. The distribution of the patients who were hospitalized to the service is shown at Table 5. Because of these result, the most common hospitalized clinics was oncology (143(36.40%) and determined that 57 (14.50%) patients hospitalized to intensive care. Besides, patients generally were hospitalized due to internal causes and determined that the most common reason among these reasons are general poor health disorder (27.71%), febrile neutropenia (9.6%), oral taking disorder(9.03%), pneumonia(8,4%) and respiratory insufficiency (6.6%).

Table 5. Distribution of cancer patients admitted to emergency service by hospitalization clinics

Clinic	n /%
Oncology	143 (36.40%)
Chest diseases	93 (23.66%)
Internal medicine	36 (9.16%)
General surgery	35 (8.90%)
Neurosurgery	29 (7.37%)
Intensive care	57 (14.50%)

DISCUSSION

Because of longer life duration and increase of diagnosis opportunity, the incidence of oncological diseases and their follow-up have been increased, and these patients have been more occupied than estimated the emergency services. Delay of diagnosis and treatment of these patients can lead to rise in mortality because of co morbid situation and present diseases of cancer patients. In this study, clinic and demographic features of oncologic patients admitted to emergency service was investigated.

Readmissions in cancer patients are an important part of the emergency service admissions. The reasons of readmissions include co morbid diseases, complaints associated with chemotherapy and radiotherapy, as not putting, and more referrals from clinics. In our study, 82% of admissions are readmission. In addition to the previously mentioned reasons, Because of one oncology center in the region was in our hospital, readmission rates were higher.

Admissions relevant to cancer among the reasons for admission to emergency services have been increased and emergency services are important to treatment and follow-up of cancer patients. In study of Swenson et al. (6) found that the rate of admissions of cancer patients is 5%, in study of Bozdemir et al. (7) is 1.34%, and in study of Can et al. (8) is 1.34%. In our study, cancer patients occur 5,3% of patients admitted to emergency service. Most of them are consist of repeated admissions. Repeated admission can be related to progress of disease or complications of treatment and accompanying other diseases as well. Salazar et al. (9) investigated patients that have admission number equal or more than 10, found that 86 patients has 1,263 admissions in a year and admission number mean is equal to 14. Bozdemir et al. (7), in their study they determined that 245 patients have 324 admissions among 24903 admissions in 6 months period.

In this study, 1,210 of 1,472 admissions of 593 patients is repeated admissions and equal or more than 6 admission rate is found as 8.26%. Repeated applications to the emergency room can be due to many reasons. These reasons are emergency services are faster and easier to access than policlinic services, patients do not want to wait in the polyclinic due to fear of infection and fatigue, emergency services to provide uninterrupted service, and patients applying to the emergency room can be hospitalized quickly.

Vast majority of patients applied via direct admission or redirection when admission types are researched. In the study of Kerrouault et al. (10) found that 55% of direct admissions are redirected to emergency service by family physicians. In evaluation types of our patients' admissions, direct admission rate is 93.4% and redirected patients to emergency service 1.9%, which is lower than literature rates. Variations of admission time range depending on variations of racial, geographic and behavior differences for better health seeking. In study of Bozdemir et al. (7) and in Swenson's study (6) found that admission rate was high at daytime. In study of Emet et al. (11), admission rate (54%) is higher between 17:00 and 18:00 o'clock. In study of Tanrıkulu et al. (12) admissions at nighttime is lower and admissions between 08:00 and 17:00 o'clock is more frequent. In this study, hospital does not work with appointment system, instead of appointment patients and their relatives apply in the morning. Another reason for scarcity of admissions at night is that university hospital is outside and far from city center and its location is hard for transportation.

The most common admission complaints are fever, ache, and shortness of breath, stomachache, fatigue and bleeding (13). In study of Yaylacı et al. (14), the most frequent admission complaint was shortness of breath (22%) and in study of Bozdemir et al. (7) was ache. In study of Swenson et al. (6) found that first complaint is related to GIS complaint (48%) while shortness of breath is fourth reason for complaints. In study of Kerrouault et al. (10) found that the most frequent admission complaints are immune suppression and common poor health disorder. In this study, the first most frequent admission complaint is shortness of breath in accordance with literature. The high frequency of lung cancer in malignity diagnosis and increase in secondary pneumonia and respiratory problems in immune suppression can be shown as reasons among the reasons for what shortness of breath is at first place in this study. In this study, the second most frequent admission complaint is stomachache after shortness of breath. Stomachache is generally non-specific, the most common admission reason for GIS related cancer and stomachache can be related to reasons such as constipation, peritonea metastasis, renal colic, pancreatitis, gastroenteritis.

In Turkey, health first three malignity are lung, prostate, urinary bladder for male and breast, thyroid and colorectal for female in all age groups in 2009 in terms of 2014 cancer statistics that published by ministry of. In study of Swenson et al.6 found that the most seen malignity diagnosis consists of GIS and lung tumor (16%). In study of Bozdemir et al. (7) found that the most seen malignity diagnosis is GIS tumor. In study of Tanrıverdi et al. (15) the most frequent cancer type is lung cancer and its rate of metastases is 30%. In this study the most frequent among admission diagnosis is GIS tumors. In addition, emergency service admission usually results from complications of primer tumor but patient admission can be seen as a result of the reasons depending on metastasis. In this study, metastasis frequency determined as 22.4% and the most frequent metastasis location is lung (24.2%).

There are at least three co morbid diseases at patients over age 70 and it increases risk and course of cancer (16). 8.7% of our patients have co morbid diseases and the most frequent co morbid disease is COPD. It is obvious that there is a relation between COPD and coalmines in the region and occupational diseases that is seen on coalmine employees who have worked in these mines.

Oncologic patients can apply with complication of their own diseases or serious situation related to other diseases and sometimes invasive attempt can be necessary. Complaint of admission and invasive attempt convenient to its clinic in emergency service can be performed by emergency physicians or relative major physicians. There is no comprehensive study that classifies interventional operations in depth in literature. The most performed invasive attempt is Foley catheter implementation and intubation rate is determined as 7.9% in this study.

The hospitalization rate and outpatient treatment rate of patient admitted to emergency services are close and especially death rate is pretty high for terminal period patients. In study of Salazar et al. (9) 77.8% of patients were discharged and 18.6% of patients died. In study of Swenson et al. (6) death rate was determined as 10%. In this study 64.9% of patients are discharged, 33.8% of them hospitalized and 0.1% died.

When hospitalization rate in literature is researched, found that hospitalization rate is 37.3% in study of Bozdemir et al. (7) and 40% in study of Salazar et al. (9). In this study, hospitalization rate is 33.8%. The highest value belongs to oncology and breast diseases service according to the hospitalization clinics.

LIMITATIONS

This study has several limitations despite the large number of cancer patients being screened for the emergency department. The first of these is the study is retrospective and access to patient data is difficult and limited. The other is that the symptom classifications for most terminal stage cancer patients are not sufficiently detailed. Lastly, sufficient information is not available on all clinical courses of cancer patients who apply to the emergency department only and have short-term follow-ups or no clink follow-up.

CONCLUSION

As a result, recognition of oncologic symptoms, identifying of history, knowing process of diseases and side effects of cancer treatment by emergency physicians is quite important. Long hospitalization duration of cancer patients in emergency service can be prevented only in this way. For this reason, oncologic patients' detailed history should be accessible on information system. The system should be countrywide and doctors in all hospitals should reach and use it easily. Examining demographic analysis of patients presenting to the emergency department and conducting comprehensive studies in this field will be guidance for management of malignity patients and function of emergency service.

Competing Interests: The authors declare that they have no competing interest.

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