

■ Research Article

# Admission Complaints and Results of Patients with Solid Organ Malignancy Who Were Applied to the Emergency Internal Medicine Department

## *Acil Dahiliye Polikliniğine Başvuran Katı Organ Maligniteli Hastaların Başvuru Şikayetleri ve Sonuçları*

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### Abstract

**Aim:** In parallel with the increase in the prevalence of cancer, it is inevitable that the frequency of cancer patients presenting to the emergency department will also increase. The aim of this study was to analyze the primary diagnoses, treatments and outcomes of patients with solid organ malignancy admitted to the emergency internal medicine polyclinic.

**Material and Methods:** Patients with solid organ malignancy who were admitted to Cerrahpaşa Emergency Internal Medicine Polyclinic between 01.06.2009-31.05.2010 and whose examinations were completed and a conclusion was reached were included in this prospective observational study.

**Results:** There were a total of 1316 admissions of 930 patients. Among the patients 353(26.8%) were followed up for lung cancer, 161(12.2%) for breast cancer, and 124(11.9%) for colorectal cancer. 511(38.8%), 369(28%) and 266(20.2%) of the admissions were due to shortness of breath, fatigue and fever, respectively. Treatment of 596(45.2%) patients evaluated in emergency polyclinic and discharged; 348(26.4%) were referred to medical oncology polyclinic; 186(14.1%) were hospitalized; 123(9.3%) were admitted to intensive care unit; 30(2.2%) left the emergency department voluntarily during their treatment; 22(1.6%) were transferred to the emergency surgery polyclinic and 3(0.2%) died in the emergency internal medicine polyclinic during their treatment.

**Conclusion:** Increasing emergency admissions in cancer patients with increasing life expectancy necessitates training of healthcare personnel and re-organization of emergency units in this direction. In addition, the creation of separate units with appropriate equipment and space for the care and treatment of these patients for both acute problems and end-stage care may improve the service provided.

**Keywords:** Oncological Emergencies, Emergency Department, Cancer

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## Öz

**Amaç:** Kanser prevalansındaki artışa paralel olarak acil servise başvuran kanser hastalarının sıklığının da artması kaçınılmazdır. Bu çalışmanın amacı acil dahiliye polikliniğine solid organ malignitesi nedeniyle başvuran hastaların primer tanılarını, tedavilerini ve sonuçlarını analiz etmektir.

**Gereç ve Yöntemler:** Kesinleşmiş solid organ malignitesi olan ve 01.06.2009-31.05.2010 tarihleri arasında Cerrahpaşa Acil Dahiliye Polikliniğine başvuran ve tetkikleri tamamlanıp sonuca varılan hastalar prospektif gözlemsel çalışmaya dahil edildi.

**Bulgular:** Toplam 930 hastaya ait 1316 yatış vardı. Hastaların 353'ü (%26,8) akciğer kanseri, 161'i (%12,2) meme kanseri ve 124'ü (%11,9) kolorektal kanser tanısı mevcuttu. Başvuruların 511'i (%38,8) nefes darlığı, 369'u (%28) yorgunluk ve 266'sı (%20,2) ateş nedeniyle yapılmıştı. Acil polikliniğinde değerlendirilen ve taburcu edilen 596 (%45,2) hastanın tedavisi yapılarak taburcu edilmiş, 348 (%26,4) hasta tıbbi onkoloji polikliniğine yönlendirilmişti, 186 (%14,1) hasta hastaneye yatırılmışti; 123 (%9,3) hasta yoğun bakıma alınmışti; 30 (%2,2) hasta tedavileri devam ederken acil servisten kendi isteğiyle ayrılmışti; 22 (%1,6) hasta acil cerrahi polikliniğine transfer edilmişti ve 3 (%0,2) hasta tedavileri sırasında acil dahiliye polikliniğinde hayatını kaybetmişti.

**Sonuç:** Yaşam beklentisinin artmasıyla birlikte kanser hastalarında acil başvuruların artması, sağlık personelinin eğitilmesini ve acil ünitelerin bu yönde yeniden düzenlenmesini gerektirmektedir. Birçok sebeple tekrarlayan acil servis başvurusu olan bu hastaların hem akut sorunları hem de son dönem bakımı için uygun donanım ve mekâna sahip ayrı ünitelerin oluşturulması verilen hizmetin kalitesini artıracaktır.

**Anahtar kelimeler:** Onkolojik acil, acil servis, kanser

## Introduction

While the incidence of cancer is increasing, it is gradually being included in the scope of chronic diseases with the new treatments developed and the life expectancy of patients is prolonged. As this period increases, the incidence of side effects related to the cancer itself or the treatments given also increases. In cancer disease, which requires a coordinated approach between patients and physicians, patients are likely to consult the emergency department with various complaints. These admissions may be oncological emergencies, as well as treatment-related complications and other chronic factors [1]. While some oncological emergencies take months to develop, others develop within hours and may lead to death [2].

Frequent oncological emergencies have been classified into 4 categories: metabolic (tumor lysis syndrome, hypercalcemia, irregular antidiuretic hormone release), hematological (febrile neutropenia, hyperviscosity syndrome), structural (superior vena cava syndrome, pericardial effusion, spinal cord compression) and treatment-related [3]. All these conditions are reversible with timely diagnosis and appropriate treatment. The aim of this study was to investigate the reasons and outcomes of emergency department admissions of patients with a diagnosis of cancer.

## Material and Methods

Patients over 18 years of age who were admitted to Cerrahpaşa

Emergency Internal Medicine Polyclinic between 01.06.2009 and 31.05.2010 and who were diagnosed with solid organ malignancy according to the biopsy results before admission were prospectively included in the study. Approval for this study was obtained from the ethics committee of Istanbul University Cerrahpasa School of Medicine with the number 21451. Informed consent form was obtained from the patients. As a result of the analyses and examinations, the diagnoses of the patients in the emergency department and the follow-up of the patients were evaluated. The study has been conducted in accordance with the Declaration of Helsinki. All people included in the study signed the informed consent form.

Patients whose primary disease diagnosis was unknown at the time of admission, who were referred for malignancy examination from an external center or who presented with non-specific complaints and were referred to internal medicine polyclinics for further examination with a preliminary diagnosis of malignancy, patients who were evaluated in the emergency department and left the emergency department without a definitive diagnosis, and non-solid organ hematological malignancies were not included in the study.

## Statistical Analysis

Data were analyzed with SPSS 21.0 for Windows statistical package program. Normally distributed numerical data were expressed as mean  $\pm$ SDS, non-normally distributed numerical data were expressed as median (minimum-maximum).

## Results

During the 12-months study period, there were 12609 admissions to Cerrahpaşa Emergency Internal Medicine polyclinic and 4068 (32.2%) of these admissions were hospitalized for observation, examination and treatment. In the analyses performed, 1316 admissions of 930 patients with a diagnosis of solid organ malignancy were included in the study. This number constituted 10.4% of all admissions and 32% of observation hospitalizations. Another 523 patients with hematological malignancy were not included in the study. Of the patients included in the study, 481 (51.8%) were male and 449 (48.2%) were female (Table 1).

When the primary diagnoses of 1316 patients with solid organ malignancy were analyzed, 353 were lung cancer (26.8%), 161 were breast cancer (12.2%), 124 were colon cancer (9.4%), 102 were gastric cancer (7.7%) and 576 were other (43.9%) (Table 2). Some of the patients admitted to the emergency department had more than one complaint. When the reasons of admission of the patients who applied to the emergency department for one or more reasons were analyzed, at least 2 or more complaints were present in 1010 applications. When the complaints were analyzed individually, 511 patients presented with shortness of breath (38.8%), 369 patients with fatigue (28.0%), 266 patients with fever (20.2%), 210 patients with abdominal pain (15.9%), 198 patients with nausea and vomiting (15.0%) (Table 3). While 50.8% of the patients presenting with dyspnea had a diagnosis of lung cancer, 49.2% had other cancers. Among patients presenting with cough, 43.3% had a diagnosis of lung cancer and 56.7% had other cancers. It was found that 442 (33.5%) of the total patient admissions were due to complaints related to primary malignancy and its metastasis. As a result of other admissions, 182 pneumonia (6 of which were aspiration pneumonia) (13.8%), 151 hypercalcemia (11.4%), 96 urinary tract infection (7.2%), 91 anemia (6.9%), 90 sepsis (6.8%), 70 hyperpotassemia (5.3%), 54 febrile neutropenia (4.1%) and 140 (11%) other diagnoses have been detected.

Of the 58 patients who were referred from the Medical Oncology polyclinic and admitted to the emergency department; 28 with erythrocyte suspension replacement (48.2%), 9 with platelet suspension replacement (15.5%), 7 with electrolyte disorders (12.0%) [4 with hypercalcemia (6.8%), 3 with hyperpotassemia (5.2%)], 4 with dyspnea (6.8%), 3 were referred for unconsciousness (5.1%), 2 for abdominal pain (3.4%), 2 for ascites drainage (3.4%), 1 for hypoglycemia (1.7%), 1 for headache (1.7%) and 1 for urgent CT scan (1.7%).

Of the total admissions, 596 (45.2%) were treated in the emergency polyclinic and discharged, 348 (26.4%) were

referred to the medical oncology polyclinic, 186 (14.1%) were admitted to the service, 123 (9.3%) were admitted to the intensive care unit, 3 (0.2%) died in the emergency internal medicine polyclinic during their treatment and 60 (4.8%) patients were admitted to other services.

**Table 1.** Clinical and demographic findings of the patients.

| Age (years)                       | Median, (min.-max) | (min.-max) |
|-----------------------------------|--------------------|------------|
|                                   | 58, 24-83          | 24-83      |
| Gender                            | N                  | %          |
| Male                              | 682                | 51.8       |
| Woman                             | 634                | 48.2       |
| Emergency service admissions/year | N                  | %          |
| One                               | 758                | 81.5       |
| >1                                | 172                | 18.5       |
| Results                           | N                  | %          |
| Hospitalization                   | 369                | 28         |
| Treated and discharged            | 944                | 71.8       |
| Death                             | 3                  | 0.2        |

**Table 2.** Cancer localization.

| Localization           | %(n)        |
|------------------------|-------------|
| Lung                   | 26.8% (353) |
| Breast                 | 12.2% (161) |
| Gastrointestinal       |             |
| Colon                  | 9.4% (124)  |
| Stomach                | 7.7% (102)  |
| Pancreas               | 4.7% (63)   |
| Liver                  | 2.9% (39)   |
| Rectum                 | 2.5% (33)   |
| Bile ducts             | 0.9% (13)   |
| Esophagus              | 0.8% (11)   |
| Genitourinary          |             |
| Bladder                | 4.2% (56)   |
| Prostate               | 4.0% (53)   |
| Kidney                 | 2.3% (31)   |
| Testis                 | 0.5% (7)    |
| Gynecological          |             |
| Over                   | 4.1% (54)   |
| Cervix                 | 2.2% (30)   |
| Uterus                 | 1.5% (20)   |
| Head-neck              | 3.2% (43)   |
| Central nervous system | 2.7% (36)   |
| Soft tissue sarcoma    | 1.5% (21)   |
| Bone                   | 1.5% (20)   |
| Mesothelioma           | 0.7% (10)   |
| Malignant melanoma     | 0.6% (8)    |
| Thyroid                | 0.5% (7)    |
| Primary unknown        | 1.5% (21)   |

**Table 3.** Admission complaints.

|                     | % (n)       |
|---------------------|-------------|
| Shortness of breath | 38.8% (511) |
| Weakness            | 28.0% (369) |
| Fever               | 20.2% (266) |
| Stomach-ache        | 15.9% (210) |
| Nausea/vomiting     | 15.0% (198) |
| Dysuria             | 7.3% (97)   |

## Discussion

The proportion of oncology patients with urgent problems among patients admitted to all emergency polyclinics, especially to the emergency polyclinics of training research and university hospitals with oncology centers where malignancy patients are treated, is increasing day by day.

As reported in the studies conducted by Bozdemir et al. [4] at Akdeniz University and Yaylacı et al. [5] at Dokuz Eylül University, emergency admissions may be related to the progression of terminal disease, easier accessibility of emergency service compared to polyclinic service, and admissions of patients whose hospitalization was postponed due to bed occupancy. In these two studies, the frequency of oncological patients in all emergency admissions was given (174 patients (0.65%); 324 patients (1.30%), respectively). Our study, however, only included the frequency of solid organ malignancies among emergency internal medicine emergency department admissions. Since the frequency of malignancies admitted to other emergency polyclinics within our hospital is not known, we could not comment on the total rate of patients with malignancies admitted to the emergency department. However, when compared on the basis of the number of admissions, the number of patients with solid organ malignancies in our study is much higher, although there are emergency polyclinics with similar density.

In our study, 51.8% of the patients were male and the median age was 58 (24-83) years. In two studies from Turkey; Yaylacı et al. [5] had a male patient ratio of 55.7% and a median age of 58 years; Bozdemir et al. [4] had a male patient ratio of 49.7% and a median age of 60 years, with mean age and gender distributions similar to our study. In the study by Kerrouault et al [6], 65% of the patients were male and the mean age was 62 years. When evaluated together with other studies conducted in Turkey, we think that the mean age of the patients may be different due to the different ages of cancer diagnosis, due to effective screening policies in different countries or because access to treatment and supportive therapies vary between countries.

Oncological patients have recurrent emergency admissions. The reason for this may be explained by the fact that patients can reach emergency departments more easily and emergency departments provide 24-hour uninterrupted service and out-of-hours patients apply to emergency departments because they cannot reach their primary physician. In our study, the median number of admissions per patient in a one-year period was 1 (1-6). In the study by Muallaoglu et al. [7] the median number of emergency admissions was 2. The reason for this difference may be related to the fact that patients can reach their primary physicians and find a solution to their emergency problems in this way.

When the distribution according to the diagnosis at presentation was analyzed, it was found that lung cancer ranked first, followed by breast and colorectal cancers. Similar distribution of cancer diagnoses was found in the study by Ferrer et al [8]. The reason for this is that there is a harmonious distribution between the frequency of cancer diagnosis and the cancer diagnoses of patients presenting to the emergency department. The only cancer type that draws attention here is prostate cancer. Although it ranked high in terms of frequency, it was ranked eighth among the patients admitted to the emergency department. We believe that the frequency of application is low because the complaints related to prostate cancer are mostly chronic and these complaints can be solved in polyclinic conditions.

The most common symptoms are general symptoms such as increasing breathlessness, progressive weakness, pain and fever [9]. These symptoms usually become prominent in the later stages of the disease and may be indicators of terminal illness. In the studies by Ferrer A. et al. [8] and Swenson et al. [10] the two most common complaints of patients presenting to the emergency department were fever and shortness of breath, respectively. In our study, shortness of breath ranked first among the complaints, while fever ranked second. The change in the ranking may be explained by the high rate of lung cancer in the patients in our study. In addition, since hematological cancers were not included in our study, patients with febrile neutropenia, which occurs with a frequency of 33% per chemotherapy in this group, were excluded from the study [11]. In the study conducted by Bozdemir et al. [4] 23% of cancer patients admitted to Akdeniz University Faculty of Medicine Emergency Polyclinic were gastrointestinal system cancer, 22% were lung cancer and 18% were breast cancer. Among the patients, 24% presented with pain, 17% with dyspnea and 14% with nausea and vomiting. As seen in

this study, the complaint of shortness of breath is in parallel with the rate of patients with lung cancer. Furthermore, it is important to remember that dyspnea is not always seen in patients with primary lung cancer; it may also occur due to lung or pleural metastases of other cancers.

When the reasons for referral of the patients from the Medical Oncology polyclinic were analyzed, it has been determined that most of the patients (37 patients) were referred for replacement (erythrocyte suspension and thrombopheresis) treatments. It was thought that this may be due to the fact that the procurement of the necessary blood products for the patients for whom replacement was decided during the polyclinic control was delayed until after working hours. It was concluded that referring this group of patients to the emergency polyclinic only when urgent replacement is required with adequate information may be effective in reducing the patient density in the emergency department. In other studies, emergency polyclinic referrals for this reason were not found [4,8-10].

Barrett et al. [9] reported that 23% of patients with lung cancer have been hospitalized. In our study, this rate was 26% (92 patients) and was similar to other studies. Among the patients, 48 were hospitalized in the oncology service, 42 in the adult intensive care unit and 2 in the coronary intensive care unit. Patients admitted to intensive care unit were terminal malignancy patients with respiratory failure and/or infection. Three patients died while they were being treated in the emergency internal medicine polyclinic.

In conclusion, cancer patients are admitted to emergency clinics with more and more complex problems due to the increase in the number of cancer patients, prolonged survival with new treatment protocols and receiving more line treatment. This situation necessitates the training of healthcare personnel and the re-organization of both emergency units and the services and polyclinics serving these patients in this direction. In addition, we think that the creation of separate units with appropriate equipment and space for the care and treatment of these patients for both acute problems and end-stage care may improve the service provided.

### **Ethical Approval**

Approval for this study was obtained from the ethics committee of Istanbul University Cerrahpasa School of Medicine with the number 21451.

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None declared.

### **Conflict of interest**

None declared.

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