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Original Article

Hospice Units as a requirement for terminal stage patients in need of intensive care in Turkey

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Abstract: Background: Intensive care units (ICUs) are special units providing intensive observation, monitoring and supportive treatments, which can be applied as standardised and continuous patient care. Patients at the terminal stage of illness require monitoring in special units that are staffed by a multi-disciplinary team, which are known as a "hospice unit". In this study, we determined whether or not there is a need for a 'hospice unit'. Material and method: In this retrospective study, data for demographic characteristics, diagnoses, comorbidities, examination and laboratory findings were obtained from the emergency department patient records for each patient. Predicted mortality (PM) rates were calculated for each patient using the Acute Physiology and Chronic Health Evaluation (APACHE) II score and the Simplified Acute Physiology Score (SAPS) II score. The Surveillance, Epidemiology and End Results (SEER) grading score was used for grading the patients diagnosed with cancer. Results: We reviewed the records of patients presenting at the emergency department over a 1-year period and found that the majority (63.8%) of patients for whom tertiary level IC monitoring was recommended were over the age of 60 years, 20% had a diagnosis of advanced stage cancer and the predicted mortality rate was almost 60%. Conclusion: The establishment of hospice units in regional reference center would reduce the load on ICU and could be considered to partially resolve the problem of bed unavailability in ICUs.

Keywords: Hospice care, palliative care, cancer, APACHE II, SAPS II

Introduction

The terminal stage is defined as the time period of weeks or months within which death is expected. As the age group in which terminal-stage diseases are most often seen is the geriatric patient population, repeated hospital stays, infection and invasive interventions can lead to serious complications [1, 2]. High mortality rates are seen in this patient group after presentation at the emergency department, and close monitoring and treatment under intensive care (IC) conditions may be necessary [3, 4]. IC units (ICUs) are not designed for improving the quality of life for individuals living their final days but for the monitoring and treatment of diseases which cannot be done under clinic conditions. ICUs are multidisciplinary units intended to continuously maintain medical care within a planned period. Unfortunately, owing to current deficiencies in bed numbers, ICUs are functioning as palliative care centres for terminal-stage patients [5].

In many developed countries, terminal-stage patient care has been separated from the IC system with management through palliative care, home care services and hospices [6]. In Turkey, the concept of hospice is being newly understood and there is no institutional structure or regulation of the functions. Apart from a few institutions providinghome support service and a limited number of palliative treatment units, there is as yet no system which can be

Table 1. Age and gender distribution of the study population

		n	%
Age	<40	26	9.1
	40-49	21	7.3
	50-59	52	18.1
	60-69	69	24.0
	70-79	67	23.3
	80-89	45	15.7
	90+	7	2.4
Gender	Female	125	43.6
	Male	162	56.4

Table 2. Distribution of groups

Group	*Total*
	n (%)
Cancer	*134 (100)*-(46.7)
*Grade I-II	*20 (14.9)*-(6.9)
*Grade III	*51 (38.1)*-(17.7)
*Grade IV	*63 (47.0)-(21.9)*
●Lung	45 (33.6)
●Urogenital	18 (13.4)
●Hematologic	17 (12.7)
●Hepatobiliary	12 (9.0)
●Breast	11 (8.2)
●Oesophagogastric	10 (7.5)
●Colorectal	8 (6.0)
●Brain	4 (3.0)
●Nasopharynx	4 (3.0)
●Others	5 (3.7)
Internal reasons	86 (30.0)
Neurological reasons	33 (11.5)
Cardiological reasons	26 (9.1)
Infectious reasons	4 (1.4)
Others	4 (1.4)
Total	287 (100)

completely described as hospice. Instead, home care services are provided by public hospitals, local authorities, civil societies and private companies [7]. Few studies concerning this topic in Turkey are available in literature [8].

The aim of this study was to determine whether a hospice unit was needed in our hospital. Throughout a 1-year period, patients who presented at the emergency department and were recommended for tertiary level IC monitoring were evaluated regarding age, sex, diagnosis and terminal-stage disease diagnosis and mortality.

Method

Approval for the study was granted by the Clinical Research Ethics Committee of Istanbul University Cerrahpaşa Medical Faculty (Chairman- Prof Dr Altıntas, October 2010, 5089). We retrospectively examined 46,000 patients who presented at the Istanbul University Cerrahpaşa Medical Faculty Emergency Department during 2010-2011. The study also included 287 patients with IC indications evaluated by the emergency ICU. Patients were excluded if they were younger than 18 years, if they were trauma patients, if they required postoperative ICU or if the necessary data for the calculation of prognostic scoring were not available.

The data related to patient age, sex, complaints on presentation, findings recorded in the emergency department and pre-existing diseases were obtained from the emergency department patient records. A record was made of the demographic characteristics of the patients, diagnoses, comorbidities, examination findings, haemodynamic monitoring, vasopressor support, respiratory support, therequirement for renal replacement therapy and laboratory findings (leukopenia, anaemia, thrombocytopenia and hepatic and renal panels). Using the worst and most critical physiological and laboratory parameters from the first 24 h in the emergency department, predicted mortality (PM) rates were calculated for each patient using the Acute Physiology and Chronic Health Evaluation (APACHE) II score and the Simplified Acute Physiology Score (SAPS) II score.

Patients previously diagnosed with cancer according to the ICD-9 diagnostic codes for malignant neoplasm (ICD 140) or malignant neoplasm-cancer (ICD 200) and histologically confirmed were grouped under the diagnosis of cancer. Diagnoses of chronic renal failure, chronic obstructive pulmonary disease, or multiple organ failures were grouped under internal reasons; intracranial aneurysm rupture, intracranial and intraventricular haemorrhage, widespread cerebral ischaemia and infarct under neurological reasons; acute myocardial infarct with ejection fraction <15%, decompensated congestive cardiac failure, and pulmonary hypertension under cardiological reasons; urosepsis, pneumosepsis or intra-abdominal sepsis under infectious reasons; and anaphylaxis and intoxication (comprising <1% of the total

Table 3. Distribution of cancer grades according to age

		Grade I-II	Grade III	Grade IV
Age (years)	<40	3 (42.9%)	2 (28.6%)	2 (28.6%)
	40-60	7 (15.9%)	19 (43.2%)	18 (40.9%)
	>60	10 (12%)	30 (36.1%)	43 (51.8%)
Total		20 (24.9%)	51 (38.1%)	63 (47.0%)

patients) under other reasons. The Surveillance, Epidemiology and End Results (SEER) grading score was used for grading of patients diagnosed with cancer [9]. A record was made of patients with indications for IC but for whom there was no available bed and so were transferred to external IC centres.

Descriptive statistics were used to describe continuous variables (mean, standard deviation, minimum, maximum, median). Comparison of two independent and normally distributed continuous variables was performed by Student's t test. Comparison of two independent and not normally distributed continuous variables was performed by Mann-Whitney U test. In order to examine the relationship between categorical variables. Chi-square Test (or Fisher exact test where appropriate) were used. The correlation between two continuous variables which do not fit the normal distribution was examined by Spearman Rho Correlation Coefficient. Statistical significance level was set at 0.05. Statistical analyzes were performed using the MedCalc Software version 12.7.7 (MedCalc Software bvba. Ostend. Belgium; http://www.medcalc.org; 2013).

Results

A retrospective examination was made of the records of 287 patients for whom emergency consultations were requested and were evaluated as third-stage IC indication in the emergency ICU of Istanbul University Cerrahpaşa Medical Faculty during a 1-year period of 2010-2011. The patients comprised 125 (43.6%) women and 162 (56.4%) men with an age range of 18-98 years. The mean age of the entire patient group was 63.90 ± 16.68 years: 65.0 ± 17.33 (range, 19-98) years for women and 63.05 ± 16.16 (range, 18-98) years for men (**Table 1**).

Approximately half of all patients (46.7%) had a diagnosis of cancer (**Table 2**); the mean age of these patients was 62.22 ± 14.55 years for women and 64.07 ± 13.06 years for men. Of the patients who presented with a diagnosis of cancer, 47% were determined as SEER grade IV (**Table 3**). Only 73 patients (25.43%) could be admitted to the ICU at our hospital. Twelve patients (4.3%) died in the emergency department, and 202 (70.27%) were transferred to an external IC centre as there were no beds available in our ICU. Of the 73 patients admitted to our hospital, 55 were lost at an advanced stage and thus mortality was determined as 75.34% of the hospitalised patients. Of the transferred patients, 52.8% had a diagnosis of cancer and of these 47% were determined as GradeIV and 38% Grade III.

For prognostic evaluation, the mean APACHE II score of all patients was calculated as 25.34 ± 9.38 for a PM of 51.09% ± 24.3%. The mean SAPS II scores were calculated as 51.76 ± 20.57 for a PM of 42.75% ± 26.06%. There was statistically significant difference between PM values ($p<0.001$). When the APACHE II and SAPS II scores were examined according to diagnosis, the highest mortality values for both parameters were in the patient group presenting with a diagnosis of cancer ($p<0.001$) (**Table 4**).

Cardiopulmonary resuscitation was applied to 32 patients (11.1%) evaluated in the emergency department.

Discussion

In this study of patients presenting at the emergency department with indications for third-stage IC, based on the high mortality determined using prognostic models of patients over 60 years of age in a terminal stage, it was concluded that follow-up in external IC units which could be supported with palliative approaches would be appropriate.

Iglehart [10], reported that 18% of ICU patients aged over 65 years could return home. Patients who returned home did not wish to be re-admitted to the ICU and wanted to die at home with their loved ones. The patients examined in the current study had a general mean age lower than those in the Iglehart study (63.90 ± 16.68 years), and only 63.8% were aged over 60 years. As the majority of patients (70.27%) were transferred to external IC centres because of

Table 4. Mean values of the scores according to the groups

Group	APACHE II	PM	SAPS2	PM
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Cancer	27.14±9.24	55.38±24.03	58.69±19.03	51.67±24.79
Grade I	23	46	52	34.6
Grade II	26.10±9.65	50.63±23.85	51.54±20.88	41.34±30.28
Grade III	25.41±7.92	51.14±22.60	57.86±17.47	49.39±23.32
Grade IV	28.93±9.96	59.59±25.05	61.67±19.45	57±23.29
Internal	22.44±7.46	44.17±20.54	43.25±16.04	31.72±20.15
Neurological	26.39±10.29	53.54±25.36	51.75±21.2	43.08±27.89
Cardiyological	26.27±12.13	53.32±30.53	50.07±25.95	40.45±31.26
Infectious	15±7.48	24.7±16.6	23.00±30.76	14.43±27.06
Others	23±6.73	47.5±24.17	43.75±15.15	23.4±13.14
CPR	41.13±7	88.06±9.68	84.03±15.37	80.31±14.02
Ex	43.08±6.88	90.73±10.95	91.5±10.82	86.44±10.7

unavailablity of beds, the discharge rate of hospitalised patients was 24.66%.

With an increase in living standards, healthcare services extending to remote regions and an increase in the level of knowledge of the general population, it is now possible to diagnose more individuals with cancer. It has been reported that in the last 10 years the number of hospitalised cancer patients has doubled. In Turkey, deaths related to cancer are secondary only to those related to cardiovascular diseases [11]. However, in this study, the patients with the most need for IC were those presenting with a diagnosis of cancer. Contrary to what was expected, the cardiac reasons in the current study ranked fourth after internal and neurological reasons, but this was attributed to the proximity of cardiology hospitals in the local area.

The APACHE II and SAPS II scores, which describe the severity of the disease using changes in physiological measurements, can be used to define the prognosis of the disease and to help the patient's relatives make decisions about palliative care [12]. However, the use of these scores in critical decision-making such as the selection of patients to be admitted to ICU and the termination of treatment remains uncertain [13].

General prognostic scoring systems used for ICU patients may not be appropriate for calculating the PM of cancer patients admitted to an ICU [14, 15]. In Turkey, 396,000 patients with cancer were reported in the period 2000-2006. Each year, 150,000 new cases are diagnosed and 140,000 patients die because of cancer [16].

In a study at Gazi University (Ankara, Turkey) which evaluated 83 terminal-stage patients with no hope of recovery admitted to an internal ICU, 77% of patients were diagnosed with cancer, 19.3% with cardiac diseases, 26.5% with internal diseases and 12% neurological diseases. Mortality rate was 82% (68 patients), the mean APACHE II score was 24 (range, 19-30) and PM was 49.7% [17]. Therefore, in a study which compared cancer-specific models such as the ICU Cancer Mortality Model (CMM) with general models such as APACHE II and SAPS II, it was shown that the patient outcome was better predicted by CCM in patients who died and by APACHE II and SAPS II in patients who were discharged from hospital [18].

In another study which compared the efficacy in cancer patients of 3 different widely used prognostic scoring systems (APACHE II, SAPS II and Sequential Organ Failure Assessment [SOFA]), 126 patients diagnosed with cancer were observed over a 3-year period, and all 3 scoring systems yielded extremely close results regarding mortality (APACHE II, P=0.17; SAPS II, P=0.14; SOFA, P=0.22). It was reported that these scoring systems were extremely sensitive in the prediction of mortality in critical cancer patients in the ICU [19].

In the current study, the mean APACHE II score was calculated as 25.34 ± 9.38 and the mean SAPS II score as 51.76 ± 20.57. When PM was

examined in all the patient groups, PM according to APACHE II was higher than that according to SAPS II ($P<0.05$). However, in comparison with the actual mortality, as 70% of the patients were transferred because of unavailability of beds, a robust evaluation could not be made. The mortality data of the transferred patients were not available. The actual mortality (75.34%) of the patients who could be hospitalised was higher than the values calculated by PM with APACHE II (51.09% ± 24.3%) and with SAPS II (42.75% ± 26.06%). The highest PM value calculated with both prognostic scoring systems was in the patient group presenting with a diagnosis of cancer. The reason for this was attributed to 47% of the cancer patients having grade IV cancer and that 51.8% were aged over 60 years. Meta-analyses have reported that the chance of remission is only 15% in grade IV cancer patients and the recovery rate is approximately 7.5% [13].

In the current study, the grade IV cancer patients labelled as terminal stage who had presented at the emergency department and required monitoring and treatment under third-stage IC conditions were determined at a rate of 21.9%. The mean APACHE II value calculated for these patients was 28.93 (PM: 59.59%) and the mean SAPS II value was 61.67 (PM: 57%).

Throughout the study period, the 6-bed emergency ICU was operating at 100% capacity and only 25.43% of the patients with indications for IC could be admitted. Of the patients transferred to external IC centres because of unavailability of beds, 46.1% had a diagnosis of grade IV cancer.

Because issues such as the planning of the existing number of IC beds according to the priority of admittance indications and which procedures are to be applied to continue life support for terminal-stage patients have not been clarified with regulations, only 1 of the 4 patients with indications for IC could be accommodated in our ICU. This situation creates serious problems for the physician, the patients and their relatives. Another limitation of the study was that the diagnoses of the patients admitted to our ICU throughout the year and terminal-stage patient rates were not examined.

Conclusion

The majority of patients presenting at the emergency department with IC indications were over 60 years of age, approximately 20% had a diagnosis of advanced stage cancer and PM was nearly 60%. The establishment of terminal-stage care units in regional reference centres, such as our hospital, would be useful, albeit to a small degree, in resolving the problem of bed space in ICUs and in reducing the load on ICUs, particularly with respect to terminal-stage patients.

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Disclosure of conflict of interest

None.

Authors’ contribution

GK participated in study designing, sequence alignment,data collection and analysesand draftingof the manuscript. SA participated in the data collection and analyses. SOS participated in the data collection and analyses. MB participated in the data collection and analyses and sequence alignment and drafting of the manuscript data. GMK participated in the data collection and analyses. II participated in the data collection and analyses. HO participated in the data collection and analyses. All authors have read and approved the manuscript.

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