

Characteristics of patients with an unplanned admission to an acute palliative care unit

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Abstract The aim of this cohort study is to compare the symptom burden of patients who have an unplanned admission to an acute palliative care unit (APCU) with patients who have a regular planned admission. A consecutive sample of advanced cancer patients who were admitted to an APCU was prospectively assessed. The reasons and the kind of admission were recorded (unplanned, UP, or planned, P). Anticancer treatments, whether patients were on/off treatment or uncertain, previous care setting, and who referred the patient to the unit were also recorded. The Edmonton Symptom Assessment Scale (ESAS) was used at admission and at time of discharge, as well as the Memorial Delirium Assessment Scale. Analgesics and their doses at admission and discharge were recorded. Hospital staying was also recorded. At the time of discharge, subsequent referral to other care settings, and the pathway of oncologic treatment were re-considered. Fifty-five (17.5%) of 314 consecutive admissions recorded in a period of 10 months were UP. UP-patients are more frequently referred from other hospitals ($P = 0.0005$), and are reported by physicians of other units ($P = 0.05$). UP-patients have a longer hospital admission ($P = 0.032$), a higher hospital death rate ($P = 0.025$), and are less frequently discharged home ($P = 0.031$). A significant decrease in intensity of ESAS items was observed in both groups, with no differences in symptom burden either at

admission and time for discharge. At discharge, opioid doses are higher in UP-patients. An APCU may admit UP-patients at any stage of disease, providing effective treatment outcomes, as reported with P-patients. This study suggests that patients referred from other settings or hospitals may provide specialist advice and rapid symptom control. Although symptom burden is similar, these patients have longer hospital admission, higher hospital death rate, and are less frequently discharged home, suggesting the need for more complex treatments. Such units in a comprehensive cancer center might improve symptom control and pose as referral centers for non-cancer hospitals, emergency departments, or the territory.

Keywords Cancer · Early palliative care · Symptom control · Emergency · Unplanned admission

Introduction

Cancer patients may develop concurrent complications or uncontrolled symptoms during the course of disease, and, in many cases, are admitted to inpatient oncological units [1]. Palliative care is commonly provided in settings such as home, hospice, or occasionally with a mobile team in hospitals when available. Unfortunately, even in developed countries, specialized palliative care is often provided only in the last weeks of life [2–4], with a survival time of 6–7 weeks [5]. It has been reported that in the last months of life, most patients spend about 1/3 of this period in hospital, with half of them receiving chemotherapy or aggressive treatments in the last month of life [6, 7]. Timing for palliative care seems to be inappropriately late for patients who commonly present clinical problems early during the course of disease. Evidence suggests that there is

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utility in starting palliative care in supportive/palliative care units to provide appropriate time and resolution of palliative care issues. An early referral to a palliative care unit provides effective symptom relief, treatment of drug-induced toxicities, education, and advice on the future therapeutic pathways [8–14].

In the past number of years, an increased number of acute palliative care units (APCU) has been developed in comprehensive cancer centers to meet the global needs of cancer patients at any stage of disease, during both the active treatment, or the advanced stage of disease [8–20]. Access to these units, however, cannot always be planned for different reasons. In the acute palliative care unit at La Maddalena Cancer center, patients are reported by different professionals and referred from different settings. Cancer patients are at a significant risk of requiring unscheduled care and admission [21]. A high unplanned readmission rate has been reported among advanced cancer patients. The risk factors identified appear to be related to severity of illness and open up opportunities for improving coordination with primary care physicians, oncologists, and other specialists to manage comorbidities, or perhaps transition appropriate patients to palliative care [22].

Generally, unplanned admissions are due to emergencies from other settings or transfer from other inpatient units. It has been hypothesized that patients admitted as an emergency may have different characteristics in terms of symptom burdens and outcomes from those of transferred inpatients [17]. The purpose of this cohort study is to compare the symptom burden of patients who have an UP-admission, because on emergency or transferred by another unit, with patients who have a regular planned admission. The secondary outcome is to assess possible differences in the treatment response.

Methods

This is a secondary analysis of a study assessing the role of an APCU, as crossroad for patients' oncological pathway in a comprehensive cancer center [16]. The institutional review board at the University of Palermo approved the study, and written patients' informed consent was obtained. The study was performed in a unit devoted to research and teaching connected to the University of Palermo. The characteristics of this unit, established 17 years ago, have been described elsewhere [15]. Briefly, APCU is formed by an eight-bed unit with a short admission stay (5–7 days), with a fast turnover allowing more than 400 admissions/year, other than providing consultations for other units. Other than symptom control, toxicities, pain control, end-of-life issues, the goals of this unit are to manage the therapeutic trajectory of advanced cancer patients, limiting

further aggressive treatment and providing an appropriate care setting.

Data collection

A consecutive sample of advanced cancer patients who were admitted to an APCU was prospectively surveyed for a period of 10 months (from January to October 2015). Patients' demographics, including age, gender, primary diagnosis, Karnofsky status, marital status, and educational level were collected. The reasons for admission included pain or opioid-related problems, toxicity from chemotherapy, symptom control, re-assessment, or end-of-life issues. The kind of admission was also characterized as unplanned (UP) or planned (P) admission. Planned admissions were based on a waiting list, symptom priority, and bed availability. Admissions are commonly performed within 24–48 h of request. UP-admissions were those performed on emergency or transferred by another unit on accrual basis. Data regarding people living with the patients were also gathered. Patients' and caregivers' awareness of prognosis was assessed as being complete, partial, absent. Data recorded were also: anticancer treatments, whether patients were on/off treatment or uncertain (when the need of oncologic treatment had still to be established), previous care setting (home care, hospital unit, day-hospital, or other hospitals), and who referred the patient to the unit (home palliative care physicians, oncologists, other units, other hospitals, or general practitioner).

Assessment was performed at admission and at discharge (or the day before death). The Edmonton Symptom Assessment Scale (ESAS) was used for assessing physical and psychological symptoms [23, 24]. ESAS is a valid and reliable assessment tool to assist in the assessment of nine common symptoms experienced by cancer patients and each symptom is scored on a 0–10 numerical rating scale. The empty item is commonly dedicated to sleep disturbances in our clinical practice. The Memorial Delirium Assessment Scale (MDAS) is used to assess the cognitive status of patients. The MDAS is a ten-item, four-point (0–3) clinician-rated scale (possible range 0–30) designed to quantify the severity of delirium in medically ill patients. MDAS is a validated tool to quantify the intensity of delirium in advanced cancer patients [25]. Analgesics and their doses at admission and discharge were recorded. Hospital stay was also recorded. At the time of discharge, subsequent referral to other care settings, and the pathway of oncologic treatment were re-considered.

Statistical analysis

Statistical analysis of quantitative and qualitative data, including descriptive statistics, was performed for all

items. Continuous data were expressed as mean \pm standard deviation (SD), unless otherwise specified. Frequency analysis was performed using the Pearson's Chi-squared test and Fisher's exact test, as needed. The univariate analysis of variance was used for parametric analysis; the paired-samples Student's *t* test was used to compare symptom intensity at the different intervals. Data were analyzed by IBM SPSS Software version 22 (IBM Corp., Armonk, NY, USA). All *P* values were two-sided and $P < 0.05$ was considered statistically significant.

Results

Of 314 consecutive admissions recorded in the study period, 55 (17.5%) were unplanned for emergency, and 13 (4.2%) were transfers from other units. The characteristics of UP-patients are described in Table 1. No differences with P-patients are found, except for education ($P = 0.021$). No differences in "on/off treatment" or uncertain are found between P-patients and UP-patients. UP-patients are more frequently referred from other hospitals (internal medicine or emergency departments) than from home ($P = 0.0005$), and are reported by physicians of other units ($P = 0.05$). Patients who received radiotherapy in the last 30 days had more frequent UP-admissions ($P = 0.02$). UP-patients have a longer hospital admission ($P = 0.032$), a higher hospital death rate ($P = 0.025$), and are less frequently discharged home ($P = 0.031$). A similar amount of patients died at home ($P = 0.812$), or continued anticancer treatment ($P = 0.888$).

A significant decrease in intensity of ESAS items is observed in both groups, with no differences in symptom burden either at admission or at time of discharge. Positive changes are observed in both groups UP- and P-admissions. Similarly, no differences in MDAS between UP-admissions and P-admissions are observed (Table 2). As regards opioid dosing, at admission, P-patients and UP-patients were using a mean of 120 mg (SD 169) and 111 mg (SD 134) of oral morphine equivalents, respectively. At discharge, they were prescribed 92 mg (SD 107) and 134 mg (SD 159) oral morphine equivalents, respectively. The difference is significant ($P = 0.036$).

Discussion

In this secondary analysis of a study assessing the role of an APCU along the patients' trajectory, patients with UP-admissions do not show epidemiological differences with P-admissions. Moreover, no differences in symptom burden are observed. However, some peculiarities are identified. First, more than 20% of admissions are unplanned and

are mostly referred from other units or other external sources. As expected, patients with an UP-admission are more frequently referred from other hospitals (internal medicine or emergency departments) than from home, and are reported by physicians of other units. Moreover, patients with UP-admissions have more frequently received radiotherapy, have a longer hospital admission, a higher hospital death rate, and are less frequently discharged home. Thus, while symptom burden is similar, this finding suggests that these subjects are more fragile, and require more complex treatments to achieve the same outcome, for example, higher doses of opioids. This is confirmed by the mortality rate and the need to discharge to more protected places, rather than home. Of interest, a lower educational level is more frequently associated with UP-admissions. It is possibly that cultural or socio-economic factors may induce relatives to look for an emergency advice, due to a lack of territory resources. Finally, more frequent UP-admissions are observed in patients who have recently received radiotherapy. This could be explained by the need for symptom stabilization, for example pain or toxicity, after a course of radiotherapy.

Data reported in the literature are poor, also underlining differences in admission criteria for emergency, due to internal policies. In a retrospective analysis, patients referred from emergency centers from the same hospital have higher rates of pain, fatigue, nausea, and insomnia, and are less likely to be delirious in comparison with patients transferred from oncological units. Moreover, emergency patients are more likely to be discharged alive than transferred inpatients [21]. However, planned admission criteria were different, as all patients were already hospitalized and transferred from an oncological unit as a routine, possibly after a previous palliative care consultation. In this study, patients are commonly admitted to the APCU while they are not hospitalized (planned hospitalization), and probably they have a certain symptom burden that could not be different from patients who are admitted from other units for competency or from external sources. Data from hospices reported that disease progression (63%) and development of new comorbidities (17%) are the primary readmission causes [22].

Other experiences have been taken into consideration concerning palliative care consultation in emergency clinics. In a retrospective study, referral to palliative care consultation from a hospital emergency center leads to earlier control of symptoms and shorter hospitalization in comparison with inpatients. However, these patients were seen only for consultation rather than being admitted to a specialized inpatient unit [26]. Similar outcomes are reported in a larger number of patients [27]. A low rate of interaction between palliative care and emergency centers has been evidenced by several studies [28]. In this study,

Table 1 Characteristics of patients

	Unplanned (68 pts.)	Planned (246 pts.)	<i>P</i>
Age (years, mean SD)	63.2 (12.4)	66.4 (11.8)	0.053
Gender (F/M)	24/44	108/138	0.215
Karnofsky (mean SD)	44.9 (12.9)	46.3 (10.8)	0.401
Primary tumor			
Lung	14	48	0.215 ^a
Breast	6	45	
Genitourinary	15	34	
Gastrointestinal	11	36	
Liver	5	14	
Pancreas	5	13	
Head–neck	1	12	
Unknown	5	7	
Hematologic disease	3	16	
Other	3	21	
Stage of disease			
Locally advanced	9	40	0.580
Metastatic	56	182	0.200
No evidence of disease	3	24	0.223
People living with the patients (multiple choice)			
Alone	6	21	0.820 ^a
Partner	27	96	
Partner and/or sons/daughters	62	221	
Nursing home	0	4	
Presence of caregiver	55	210	0.841
Education			
No school	1	11	0.021 ^a
Primary	16	87	
Secondary school	19	79	
High level	22	39	
Degree	10	30	
Patient's disease awareness			
Complete	39	126	0.635 ^a
Partial	24	96	
Absent	5	24	
Caregiver's disease awareness			
Complete	57	212	0.896 ^a
Partial	9	27	
Absent	2	7	
Indications for admission (multiple choice)			
Uncontrolled pain	45	186	0.123
Opioid-related toxicity	10	51	0.303
Anticancer toxicity	12	46	0.863
Other symptoms	36	146	0.405
End-of-life care	9	16	0.079
Treatments in the previous 30 days			
Chemotherapy	24	73	0.020 ^a
Chemotherapy + target therapy	1	7	
Chemotherapy + radiotherapy	2	1	

Table 1 continued

	Unplanned (68 pts.)	Planned (246 pts.)	<i>P</i>
Targeted therapy	3	14	
Radiotherapy	4	2	
Hormonal therapy	0	12	
Hormonal + target therapy	1	1	
Surgery	9	20	0.235
Hospital stay (mean SD)	8.5 (11.4)	6.6 (4.0)	0.032
Death	6	6	0.025
Discharge at home	33	155	0.031

^a Chi-squared test with Bonferroni correction for comparison of one independent variable and more levels

about 1/5 of admissions were UP, that is considered as emergency and referred from other hospital units (oncology ward) or from other hospitals. It is evident that different health systems and local resources may influence the decision-making process of admission to an APCU. Of interest, a general low mortality rate has been reported in this unit [15], underlying how a mixed population of cancer patients, from time of diagnosis until death, is admitted along the course of disease. These data also suggest that patients often require specialist treatment at any stage of disease, and that an APCU may provide effective symptom relief, treatment of drug-induced toxicities, education, and advice on the future therapeutic pathways [16]. This study confirms that a symptom improvement may be achieved in a short time, even in patients who are admitted under UP conditions, possibly with more therapeutic efforts. APCU should provide availability for patients who are in territory even in these circumstances, to avoid inappropriate admission in non-specialized acute units in hospital where they could die without any expert advice. In fact, emergency admissions in a non-specialist setting often represent stressful events for the patients and their families because of anxiety, a feeling of discontinuity, and logistic problems. Studies have documented that advanced cancer patients frequently use acute care hospitals for acute problems and symptomatic treatment, particularly older patients with cancer during their last month of life. About two-thirds prefer hospital admission to other places of care, and about one-fourth express that they feel safe in the hospital in the actual situation [29]. Patients with advanced cancer receiving home palliative care may present acute problems. Higher levels of expertise, easier access to medical doctors outside hospital, and better lines of cooperation between hospitals and the primary healthcare services may reduce the need for admission [30]. On the other hand, about 25% of home care patients are admitted to an acute hospital before dying [31]. In this unit, however, most patients were

Table 2 ESAS and MDAS (see text) at admission and at discharge

Symptoms	N	Planned		P	N	Unplanned		P*	P^
		At admission	At discharge			At admission	At discharge		
Pain	64	4.9 (3.3)	2.4 (1.9)	<0.0005	229	5.4 (2.8)	2.7 (2.0)	<0.0005	0.251
Weakness	64	5.5 (3.1)	3.7 (2.8)	<0.0005	229	5.8 (2.7)	3.2 (2.6)	<0.0005	0.652
Nausea	64	2.2 (2.7)	1.1 (1.8)	0.004	229	2.0 (2.9)	0.8 (1.9)	0.002	0.304
Depression	64	2.8 (3.2)	1.5 (2.1)	0.002	229	3.4 (3.1)	1.8 (2.3)	<0.0005	0.256
Anxiety	64	3.3 (3.1)	1.7 (2.2)	0.001	229	3.0 (3.2)	1.7 (2.4)	<0.0005	0.673
Drowsiness	64	4.2 (2.6)	3.3 (2.6)	0.036	229	4.4 (2.8)	2.8 (2.6)	<0.0005	0.450
Dyspnea	64	2.6 (3.1)	1.7 (2.6)	0.036	229	2.4 (3.2)	1.2 (2.1)	<0.0005	0.363
Insomnia	64	4.3 (3.4)	2.5 (2.9)	0.001	229	4.6 (3.2)	2.7 (2.8)	<0.0005	0.394
Appetite	64	5.4 (3.1)	3.3 (2.9)	<0.0005	229	4.6 (3.2)	2.8 (2.7)	<0.0005	0.095
Well-being	64	6.1 (2.4)	3.9 (2.6)	<0.0005	229	5.9 (2.4)	3.6 (2.1)	<0.0005	0.508
ESAS	68	38.6 (17.6)	21.2 (16.1)	<0.0005	229	38.8 (18.6)	19.7 (15.7)	<0.0005	0.726
MDAS	65	5.8 (5.9)	4.6 (5.5)	0.538	227	6.1 (5.2)	5.5 (6.4)	0.143	0.297

* Statistical significance between at-discharge vs at-admission mean values in each group of admission

^ Statistical significance of intergroup comparison of ESAS-change of the planned with the unplanned admissions

referred from internal oncology unit or other hospitals, possibly with low experience in palliative care. Specialized care teams with palliative care physicians, easier access to the family doctor and better lines of cooperation between hospitals and the primary care sector may reduce the need for emergency admissions [29]. Thus, community or primary care plays an important role to avoid UP-admissions.

Of interest, emergency departments are increasingly involved in palliative care. While the evidence of an early palliative care intervention in the emergency department is low in reducing 90-day hospital readmission rate, it possibly produces a reduction in the length of stay [32]. Integration of palliative care with emergency medicine will require active participation of emergency physicians in providing palliative care.

The principal limitation of this study is based on a single-center experience, precluding the general application of these findings. This model, however, suggests a modern concept of supportive–palliative care, providing adequate symptom control and expert advice even with UP-admissions, particularly providing help for patients who were previously admitted to other hospitals without palliative care services or referred from the territory, and could be reproduced in all cancer centers.

In conclusion, no substantial differences are found with P-admissions. Patients with an UP-admission are more frequently referred from other hospitals and, more frequently, have received radiotherapy. Although the symptom burden is similar, these patients have a longer hospital admission, a higher hospital death rate, and are less frequently discharged home. These data suggest that UP-admissions require more complex treatments, including higher doses of opioids.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Statement of human and animal rights Procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national). This was not an experimental study, and animals were not used. Ethical approval from the ethical committees was obtained and reported for the primary study (this is a secondary analysis).

Informed consent Informed consent was obtained and reported for the primary study (this is a secondary analysis).

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