Original Article

Impact of Applying Palliative Care on Symptoms and Survival of Patients with Advanced Chronic Disease Admitted to the Emergency Department

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Abstract

Introduction: In the emergency department, there is a need to provide palliative care; however, they are not usually administered. The present study evaluates the evolution of the intensity of the symptoms when applying palliative care, in adult patients with advanced chronic disease admitted to the emergency room, and compares survival between those who receive this care and those who do not. **Materials and Methods:** A clinical intervention study was conducted including patients older than 18 years with advanced chronic disease admitted to the emergency room with an indication of palliative support according to the Supportive and Palliative Care Indicators Tool 2015. Three hundred and seven patients were studied (74 in the intervention group and 233 in the group not intervened). In the intervention group, the intensity of pre- and postintervention symptoms was compared (Wilcoxon test). The survival of both the groups were then compared (logrank test). **Results:** There was a significant decrease in pain and dyspnea at 24 and 48 h postintervention ($P < 0.01$), respectively, while drowsiness increased significantly at 24 h ($P < 0.01$) but did not change at 48 h ($P = 0.38$). Excluding patients with better functional status, there was less survival at 3 months in the intervention group ($P = 0.01$). **Conclusions:** Dyspnea and pain decreased with the application of palliative care but not drowsiness. Survival in the intervention group was lower than in the nonintervention group. However, the reason for providing palliative care is to relieve suffering at the end of life.

Keywords: Emergency department, palliative care, terminal care, terminally ill

Introduction

Palliative care is a holistic intervention to improve the quality of life of the patient with serious health problems related to oncological and nononcological diseases, especially near the end of life, providing physical, psychological, social, and spiritual support to the patient and family, by a multidisciplinary team.[1-3] In the world, accessibility to palliative care is not equitable and depends on the development of the local or regional health system.[1,4]

Patients who go to the emergency department of referral hospitals are increasingly complex, and as far as it is known, there is little information on the proportion of need for palliative care.[5-9] In Latin America, there is a disparity regarding the training of health personnel (probably including emergency personnel or intensive care) in palliative care.[10,11] This causes procedures to be performed on patients with advanced chronic disease without clear benefits that often prolong their suffering.[4,10,12,13]

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In Europe, North America, and Oceania, the benefit of palliative care programs in institutionalized, outpatient and home follow-up patients has been demonstrated.[2,14-19] Unlike other programs where the patient is followed to the end, in an emergency, the patient is sought to detect palliative care and direct him to the other programs, but in our country, this is still deficient.[11] Therefore, the objective of this study is to evaluate the evolution of the intensity of symptoms when applying multidisciplinary palliative care in adult patients with

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advanced chronic disease admitted to the emergency room, as well as comparing survival between those who receive this care and those who do not.

Materials and Methods

Quasi-experimental clinical intervention study with two asynchronous groups of patients over 18 years of age with advanced chronic disease admitted to the emergency department of a tertiary hospital. Patients who had (in the history of admission) advanced cancer, advanced chronic noncancer disease, or total functional dependence were included in the study; those who had no indication for palliative support (Supportive and Palliative Care Indicators Tool 2015, adapted and validated in Spanish)[20] and those in whom no informed consent was obtained (from the patient or caregiver) were excluded from the study.

One group received the intervention and the other did not. In the nonintervened group, verbal informed consent was obtained and its evolution was observed with conventional treatment. In the intervention group, an informed consent signature was requested, and during their stay in the emergency room, palliative care was provided by a trained multidisciplinary team (three physicians, six nurses, a psychologist and a social worker), following clinical practice guidelines.[21,22]

In both the groups, clinical-demographic variables, functional status with Spanish Palliative Performance Scale (PPS) V2,[23] and symptoms (dyspnea, pain, and drowsiness) according to the Edmonton Symptom Assessment System[24] were measured on emergency admission, and it was survived at 3 months. In the intervention group, symptom intensity was also measured at 24 and 48 h after admission. The evaluations were carried out by one of seven medical specialists (four internists and three emergency physicians) and the doubts were resolved in consensus with the principal investigator.

A sample size was not calculated *a priori*, recruiting all patients who met criteria for 3 consecutive months, and for the intervention group, all possible patients according to available resources [Figure 1]. Recruitment of the nonintervened group began in February 2017 and the intervention group in July 2017. There was no randomization or blinding for ethical reasons.

STATA 14 software (STATACorp., LLC, TX, USA) with a 0.05 level of significance was used, performing a comparison analysis of the study groups, evaluating difference of medians with Mann–Whitney U-test and proportions with Chi-square test. The evolution of the intensity of symptoms of the intervention group was compared using Wilcoxon test. Excluding patients with PPS >50, survival was compared in the study groups (logrank test).

A power analysis was made, concluding that it was suitable for pre and post comparison in the intervention group as well as for comparing survival functions between both the groups. Approval was obtained from the ethics committee of the respective hospital.

Results

Of the total number of patients assigned after applying the criteria and exclusion, losses in follow-up (10.1%) included those readmitted to the emergency room or who changed their intention to participate in the study. For the analysis, those who died within the first 24 h of admission (5%) and those with incomplete data (6.5%) were not considered [Figure 1].

In the total number of patients studied, the age varied between 20 and 100 years. Those with PPS >50 in the control group and in the intervention group constituted 20% and 8%, respectively [Table 1]. The most frequent symptoms were pain, dyspnea, and drowsiness, with a higher percentage of dyspnea in the intervention group (41%) compared to the control group (24%) [Table 1]. The most frequent oncological etiologies in both the groups were genitourinary and gastrointestinal cancer (41% and 35%, respectively), while in noncancer patients, they were dementia, stroke sequelae, and liver cirrhosis (38%, 26%, and 20%, respectively).

Regarding the intensity of symptoms identified in the intervention group, there was a statistically significant difference between pain at admission and at 24 h ($P < 0.01$) and also at 48 h ($P < 0.01$) [Table 2]. The same happened with dyspnea ($P < 0.01$) [Table 2]. In addition, there was a significant difference between drowsiness at admission and 24 h ($P < 0.01$) but not with drowsiness at 48 h ($P = 0.38$) [Table 2]. When looking at the graphs, there is a tendency to decrease between admission and follow-up in the case of pain and dyspnea but not in the case of drowsiness [Figure 2].

When comparing patients with PPS ≤50, it is observed that between the groups, there is no statistically significant difference in the proportions of the PPS categories ($P = 0.22$); however, the oncological disease was more frequent in the intervention group ($P = 0.02$) [Table 3]. In addition, there was a statistically significant difference in patient survival between both the groups ($P = 0.01$) at 3 months of follow-up, with cumulative survival being greater in the nonintervened group (0.30) and lower in the intervention group (0.19).

Discussion

Palliative care has been shown to improve the quality of life at the end of life in patients with advanced cancer,[25] evidence of their benefit in noncancer diseases (such as dementia and heart failure) has also been published;[26,27] however, most studies on palliative care have been developed in cancer patients.[28] Underreporting of symptoms in patients with chronic diseases is frequent.[29] In the present study, it was observed as the main finding that dyspnea and pain decrease with the use of palliative care.

Pain is the best known symptom in palliative care. Here, it was presented in a similar proportion to the admission in both the study groups, which were similar to that found in a previous study in the same hospital[12] but smaller than foreign reports where only critical cancer patients were

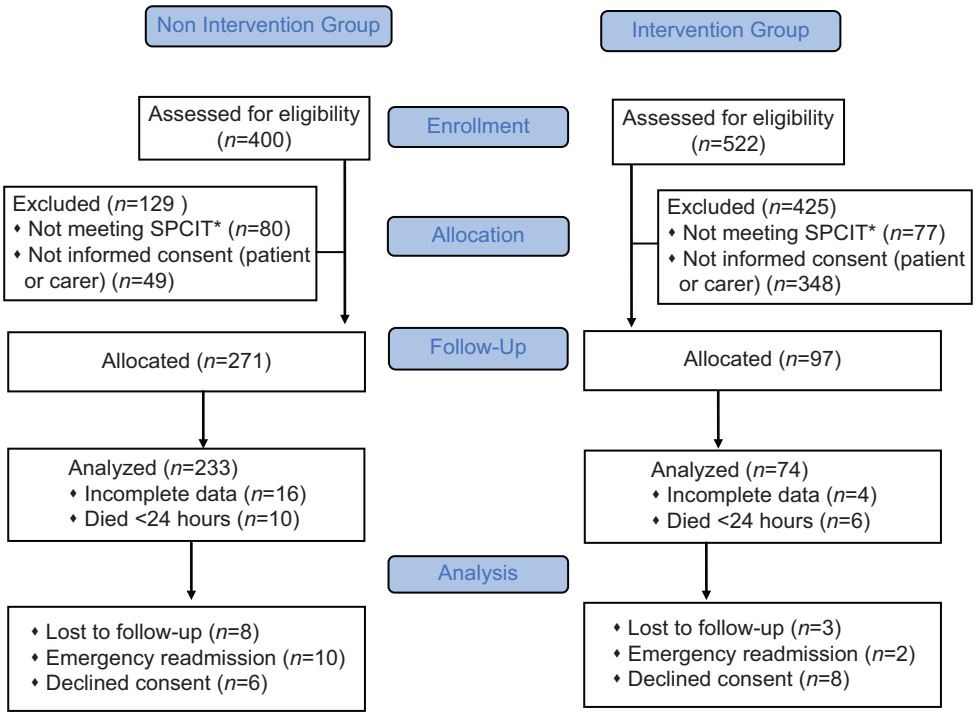

Figure 1: Flow diagram of selection of patients with advanced chronic disease admitted to the emergency room of a tertiary hospital

Table 1: Comparison of baseline characteristics of patients with advanced chronic disease admitted to the emergency room of a tertiary hospital, according to the study group

Characteristic	Nonintervention group (*n*=233), *n* (%)	Intervention group (*n*=74), *n* (%)	*P*
Age (years)[&]	77 (66.5-87.5)	77 (66-88)	0.963*
Sex, female	137 (58.8)	44 (59.5)	0.920**
Oncologic disease	99 (42.5)	41 (55.4)	0.052**
Functionality PPS			
<40	96 (41)	38 (51)	0.047**
40-50	90 (39)	28 (41)	
>50	47 (20)	5 (8)	
Place of admission			
Shock trauma	103 (44)	32 (43)	0.607**
Medicine	117 (50)	36 (49)	
Surgery/traumathology	13 (6)	6 (8)	
Symptoms			
Pain	64 (27)	21 (28)	0.879*
Dyspnea at rest	55 (24)	30 (41)	<0.005*
Drowsiness	61 (26)	22 (30)	0.549*

[&]Median (percentile 25-percentile 75), *Mann-Whitney U-test, **Chi-square test. PPS: Palliative Performance Scale

evaluated.[30,31] The median intensity did not vary after the intervention, but the 75th percentile did so with respect to admission, which represents a decrease in pain intensity between admission and after the intervention, this decrease being statistically significant [Table 2]. The majority of patients studied were older adults, which is a factor that could induce undertreatment of pain in an emergency department and is consistent with reports of less opioid use in this population.[32] It has been published that there is a greater pain relief in patients who approach the end of life if they are treated for palliative care.[33]

Dyspnea on admission is the most frequent symptom in our intervention group and was greater than in the nonintervened group. In turn, in the intervention group, this was similar to a previous report of the same service[12] but larger than other reports in cancer patients.[30,31] The intensity of dyspnea decreased with the intervention according to publications that mention that the use of low doses of strong opioids (e.g., morphine) is effective and safe for oncological and nononcological patients with dyspnea.[34,35]

Drowsiness was another frequent symptom in this study, greater than admission in the intervention group than in the

comparison group. In turn, this initial drowsiness was greater than in other reports.[12,30] An increase in its intensity was found with the intervention and may be associated with adverse effects of treatments used as opioids.[36,37]

After matching the value of PPS in both the groups, a predictor of survival,[38] the lower survival of the intervention group could be explained by the higher proportion of cancer patients in the intervention group (which have a lower survival than the nononcological) and the highest proportion of dyspnea in that group, which is reported as an indicator of the arrival of the end of life in oncological and nononcological patients.[39] Palliative care controls symptoms and suffering of the patient and family, also avoiding futile measures and therapeutic obstinacy, without accelerating the time of death but also not prolonging the suffering.[3,21,22,40]

Table 2: Evolution of the intensity of the most frequent symptoms reported in the intervention group, according to the Edmonton Symptom Assessment System, in patients with advanced chronic disease admitted to the emergency room of a tertiary hospital

Symptom intensity	*n*	Median	P_{25}-P_{75}	*P*
Pain				
Upon admission	49	0	0-8	
At 24 h	49	0	0-3	<0.001*
At 48 h	39	0	0-2	<0.001**
Dyspnea				
Upon admission	50	5,5	0-9	
At 24 h	50	3	0-5	<0.001*
At 48 h	40	1	0-4	<0.001**
Drowsiness				
Upon admission	50	0	0-4	
At 24 h	50	2	0-6	<0.001*
At 48 h	40	2	0-3.5	0.385**

*Wilcoxon test comparing values between admission and 24 h.
**Wilcoxon test comparing admission values and 48 h

The main limitation of the present study included sample size calculation; however, the power analysis to respond to the objectives of the study shows that the number of patients studied was adequate. In addition, it was not possible to compare the effects of the intervention with the evolution of the nonintervened group because there were no follow-up measurements in this; however, the information obtained is useful for future studies.

On the other hand, due to the limited personnel specialized in palliative care in our environment, there could have been difficulties for the collection of information and the administration of the intervention; however, the staff was trained and international guides were tried.[21,22] Regarding the selection of the study subjects, patients who had no indication of palliative care could have been inadvertently included; however, a validated instrument was used.[20]

Conclusions

In adult patients with advanced chronic disease admitted to the emergency department, dyspnea and pain decrease with the application of palliative care but not drowsiness. Survival in the intervened group was lower than in the nonintervened group, probably because the intervened

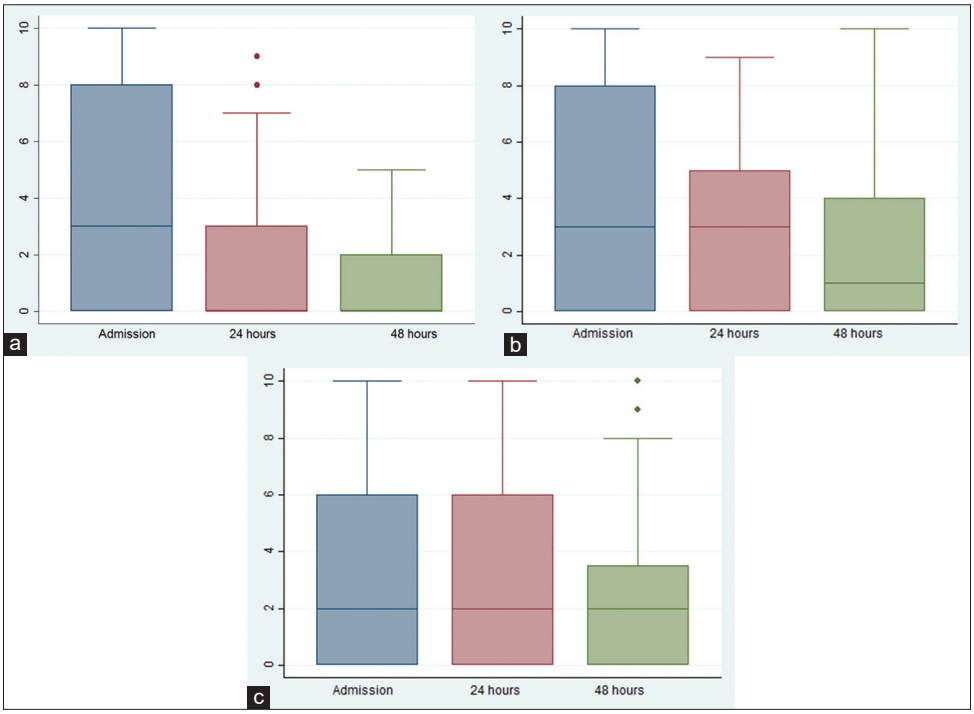

Figure 2: Evolution of the intensity of symptoms in patients with advanced chronic disease admitted to the emergency room of a tertiary hospital, who received multidisciplinary palliative care. (a) Pain, (b) dyspnea at rest, and (c) drowsiness (according to the Edmonton Symptom Assessment System)

Table 3: Comparison of baseline characteristics of patients with advanced chronic disease admitted to the emergency room of a tertiary hospital, according to the study group and excluding patients with Palliative Performance Score >50

Characteristic	Nonintervention group (*n*=186), *n* (%)	Intervention group (*n*=69), *n* (%)	*P*
Functionality PPS			
10-30	96 (52)	38 (55)	0.221**
40-50	90 (48)	31 (45)	
Age (years)[&]	79.5 (65-94)	77 (66.5-87.5)	0.465*
Sex, female	111 (60)	42 (61)	0.863**
Oncologic disease	69 (37)	37 (54)	0.017**
Place of admission			0.514**
Shock trauma	92 (50)	30 (44)	
Medicine	86 (46)	34 (49)	
Surgery/traumathology	8 (4)	5 (7)	
Symptoms			
Pain	45 (24)	17 (25)	0.941*
Dyspnea at rest	39 (21)	28 (41)	0.002*
Drowsiness	39 (21)	20 (29)	0.177*

[&]Median (percentile 25-percentile 75), *Mann-Whitney U-test, **Chi-square test. PPS: Palliative Performance Score

group had a worse prognosis despite having excluded those who had better functional status at the start of the study. However, the goal of palliative care is to alleviate suffering in this last stage of life.

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Conflicts of interest

There are no conflicts of interest.

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