

Original Research

Where Older Patients with Cancer Die? A Retrospective Study

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Abstract

Home is the preferred place of death for most cancer patients. We examined which characteristics of older patients with cancer may have influenced this choice and how important may be relevant an early collaboration between oncologists and palliatives. Hospitalized patients aged ≥ 70 were screened by G8 questionnaire and evaluated by Comprehensive Geriatric Assessment (CGA) to identify frail and unfit ones and define the most appropriate end-of-life setting with palliatives. Using the G8 questionnaire, we screened 135 patients evaluated with the CGA and identified 75 frail, 55 unfit, and five fit. Sixty-six patients died in Hospice: 43 (50%) were male and 23 (47%) female, median age was 78. Forty-two (56%) patients were Frail and 23 (42%) Unfit. Patients with low/no dependence (median score



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ADL/IADL) were 14 (30%), and with high/moderate dependence were 51 (61%). Malnutrition was present in 43 patients (70%), and MMSE was none/low dementia in 28 (36%). Fifty-two patients died at home: 33 (38%) male and 19 (39%) female, median age was 78. Twenty-three (31%) patients were Frail and 27 (49%) Unfit. Patients with low/no dependence (median score ADL/IADL) were 28 (60%), and those with high/moderate dependence were 21 (25%). Malnutrition was present in 27 patients (33%), and MMSE was none/low dementia in 37 patients (48%). Active collaboration with palliatives and early identification of Unfit and Frail patients can allow 38% of patients to die at home. Patients who died at home have a better functional and cognitive status than patients who died in Hospice.

Keywords

Place of death; older patients with cancer; palliative care

1. Introduction

Most cancer patients express the desire to die at home [1, 2]. Their preference during disease does not change if there has been an early integration between oncologists and palliatives and if a good home care service is already planned from the diagnosis [3, 4].

Furthermore, many studies indicate that satisfying the place of death expressed by the patient can improve the quality of end-of-life [5, 6].

Despite this preference, many patients with cancer in European countries still die in hospitals [7].

The factors that influence the patient's place of death, regardless of their preference, are related to the patient (age, sex, social condition, type of tumor), to the caregiver, and also to the early planning of the end of life by oncologists and palliatives [8-10].

In Italy, too, home is the preferred place of death for cancer patients and advanced age. Being a woman and having a high level of education seem to be factors that increase this possibility [8, 11].

In particular, for frail older people with cancer, it is essential to focus on quality of life, avoiding persistent diagnostics, and identifying the most appropriate treatment setting to prevent unnecessary hospitalizations. Frail patients are generally severely functionally and cognitively impaired and have comorbidities with organ failure and geriatric syndromes. Identifying personalized care models for this type of patient is a necessary challenge to improve the end-of-life of patients and their families and the quality of the work of doctors and nurses [12, 13].

With the progressive increase in the incidence of cancer in older patients, it is essential for oncologists to immediately identify frail patients who are not susceptible to active cancer treatments and for whom the best supportive therapies must be guaranteed.

The Comprehensive Geriatric Assessment (CGA) evaluates the following characteristics of older patients: somatic comorbidity, functional status and level of autonomy, cognitive functions, depressive symptoms, nutritional status, polypharmacy, and geriatric syndromes [14, 15]. These characteristics are evaluated through a clinical interview with the patient and his family and the use of validated tests and scales that identify various age-related problems.

The CGA in oncology allows for identifying and managing "frail" older subjects [16, 17].

In this study, we performed a descriptive analysis of the elderly patients' characteristics that may have influenced the place of death, and we described the early collaboration between oncologists and palliative care specialists.

2. Materials and Methods

From February 2019 to March 2021, patients admitted to the Oncology Ward of Carlo Poma Hospital of Mantova, Italy, with age ≥ 70 years and first diagnosis (histological and radiological) of cancer were screened using the G8 questionnaire.

The G8 questionnaire allows the detection of functional limitations, dementia, and the definition of a staging of aging to determine the risk of toxicity, taking on a preventive screening role before a more in-depth evaluation through the CGA—Attached 1.

Patients at risk (score ≤ 14 on the G8 questionnaire) were evaluated with CGA.

The CGA was conducted through the administration of the following validated scales aimed at determinate:

- functional status (ADL, Activities of Daily Living scales, and IADL, Instrumental Activities of Daily Living scales);
- comorbidities (CIRS scale, Cumulative Illness Rating Scale);
- caregiver (CBI scale, Caregiver Burden Inventory);
- cognitive functions (MMSE scale, Mini-Mental State Examination);
- non-cognitive and depressive symptoms (GDS scale, Geriatric Depression Scale 5-items);
- nutritional status (MNA, Mini Nutritional Assessment). [16, 17].

We evaluated the patient's medications and the presence or absence of Geriatric Syndromes.

We assessed the following Geriatric Syndromes:

- Delirium;
- Falls;
- Fragility (muscle weakness, motor slowdown, fatigue, poor physical activity, unintentional weight loss);
- Dizziness;
- Urinary incontinence;
- Syncope.

At the end of the CGA, the patient was defined as Fit, Unfit, or Frail—Table 1.

Table1 Variables used to define patients.

	Geriatric Syndromes		Median Score ADL/IADL		MMSE		Malnutrition		Comorbidity Index	
	Yes	No	None/Low dependence	High/Moderate dependence	None/Low dementia	Severe/Moderate dementia	Yes	No	≤ 2	≥ 3
FIT		X	x		x			x	x	
UNFIT	X	X	x		x		x	x	x	
FRAIL	x			x		x	x			X

ADL, Activities of Daily Living scales. IADL is the Instrumental Activities of Daily Living scale.

MMSE scale, Mini-Mental State Examination

The elderly patient was considered Fit if not at risk after G8 screening or if, after CGA, had a good functional status (independent according to the ADL/IADL score), an intact cognitive group (no dementia according to MMSE) and not affected by geriatric syndromes. The patient was considered Frail after CGA when presented with severe dependence on functional status or severe dementia or comorbidities causing severe organ failure or multiple geriatric syndromes. The patient was deemed Unfit after CGA when we found an operating state of dependence and a cognitive state of dementia mild-moderate, one old syndrome, and no comorbidities determining organ failure incompatible with the administration of active oncological therapies.

Frail patients, not eligible for active cancer treatments, were immediately evaluated together with palliative colleagues to define the most appropriate end-of-life setting.

For ADL and IADL, we used a median score, indicating a functional state (patients with low/no dependence) if high. If common, a mediocre applicable state (patients with high/moderate reliance).

We used the chi-square test to define differences between patients who died at home (with the Home Palliative Care Service), in Hospice (inpatient facility managed by palliative care colleagues), and in a hospital-based on the variables analyzed.

The study was conducted following the World Medical Association Declaration of Helsinki (Helsinki 2013) and the International Conference on Harmonization (ICH) for Good Clinical Practice (GCP). The Institutional Ethical Committee (Comitato Etico Val Padana) approved the study.

3. Results

3.1 Patients Characteristics

Using the G8 questionnaire, we screened all 135 patients evaluated with the CGA. We identified 75 (55%) Frail, 55 (41%) Unfit and 5 (4%) Fit. 86 (64%) males and 49 (36%) females with a median age of 78 (range 70-94 years).

Twenty-six had lung cancers, 15 had gastro-intestinal, 12 had pancreatic one, 11 had genitourinary, 7 had breast, 5 had biliary cancer, and 21 others (hepatocarcinoma, prostate, head-neck, thyroid, pleural mesothelioma).

Metastatic patients were 73 (90%). The main sites of metastasis were lymph nodes, liver, peritoneum, bone, brain, and lung.

For 38 patients, we did not perform biopsies for histological diagnosis because the patients were not candidates for active oncological treatments.

In all these patients, the main comorbidities were cardiac (35%), renal (21%), dementia and depression (15%), diabetes with organ damage (12%), and pulmonary (10%).

Through the CGA, we have identified these primary geriatric syndromes: fragility (97%), urinary incontinence (31%), falls and dizziness (26%), and delirium (14%).

All 75 frail patients were evaluated early with palliative colleagues, and this reduced, after discharge, access to the Emergency Room 7 (9%), subsequent hospitalizations 5 cases, and death during hospitalization 8 (10%).

Among these 135 patients, 66 (49%) died in Hospice, 52 (39%) at home, and 17 (12%) during hospitalization.

In this study, we performed a descriptive analysis of the elderly patients' characteristics that may have influenced the place of death, and we described the early collaboration between oncologists and palliative care specialists.

We used the chi-square test to define differences between patients who died at home (with the Home Palliative Care Service), in Hospice (inpatient facility managed by palliative care colleagues), and in-hospital based on the variables analyzed.

Patients who died at home have a better functional (median ADL/IADL score $p < 0.001$) and cognitive (MMSE score $p < 0.005$) status than patients who died in Hospice.

3.2 Patients Died in Hospice

Sixty-six patients died in Hospice: 43 (50%) were male and 23 (47%) female, median age was 78. 42 (56%) patients were frail, and 23 (42%) were unfit. Patients with low/no dependence (median score ADL/IADL) were 14 (30%), and with high/moderate dependence were 51 (61%). Malnutrition was present in 43 patients (70%), and MMSE was none/low dementia in 28 (36%). Depression and Geriatric Syndromes were present in 30 (54%) and 65 (51%), respectively—Table 2.

Table 2 Patient characteristics.

Variable	Place of Death			Chi-Square	p value
	Hospital (17)	Hospice (66)	Home (52)		
Age (years)	77	78	79	0.713	0.783
Sex					
Male	10(12%)	43(50%)	33(38%)	0.236	0.889
Female	7(14%)	23(47%)	19(39%)		
Patient Type					
Frail	10(13%)	42(56%)	23(31%)	8.542	0.074
Fit	2(40%)	1(20%)	2(40%)		
Unfit	5(9%)	23(42%)	27(49%)		
Malnutrition					
No	10(16%)	27(42%)	27(42%)	2.834	0.242
Yes	5(10%)	43(57%)	27(33%)		
Geriatric Syndromes					
No	3(100%)	0(0%)	0(0%)	20.589	< 0.001
Yes	14(11%)	65(51%)	49(38%)		
Median Score ADL/IADL					
Low/None dependence	5(10%)	14(30%)	28(60%)	15.750	< 0.001
High/Moderate dependence	12(14%)	51(61%)	21(25%)		
Depression					
No	7(14%)	18(36%)	25(50%)	3.910	0.142
Yes	7(13%)	30(54%)	18(33%)		
MMSE					
Severe/Moderate Dementia	2(8%)	19(73%)	5(19%)	10.591	< 0.005
Low/None Dementia	12(16%)	28(36%)	37(48%)		

ADL, Activities of Daily Living scales. IADL, Instrumental Activities of Daily Living scales. MMSE scale, Mini Mental State Examination.

3.3 Patients Died at Home

Fifty-two patients died at home: 33 (38%) male and 19 (39%) female, median age was 78.

23 (31%) patients were Frail and 27 (49%) Unfit. Patients with low/no dependence (median score ADL/IADL) were 28 (60%), and those with high/moderate dependence were 21 (25%). Malnutrition was present in 27 patients (33%), and MMSE was none/low dementia in 37 patients (48%). Depression and Geriatric Syndromes were present in 18 (33%) and 49 (38%), respectively—Table 2.

3.4 Patients Died in Hospital

Seventeen patients died in the Hospital: 10 (12%) were male, 7 (14%) were female, the median age was 77. 10 (13%) patients were Frail, and 5 (9%) Unfit. Patients with low/no dependence (median score ADL/IADL) were 5 (11%), and with high/moderate dependence were 12 (14%). Malnutrition was present in 5 patients (10%), and MMSE was none/low dementia in 12 (13%). Depression and Geriatric Syndromes were present in 7 (13%) and 14 (11%), respectively. Table 2.

4. Discussion

Our descriptive analysis found that patients who died at home had a better functional (median ADL/IADL score $p < 0.001$) and cognitive (MMSE score $p < 0.005$) status than patients who died in Hospice. All 75 frail patients were evaluated early with palliative colleagues, and this reduced, after discharge, access to the Emergency Room 7 (9%), subsequent hospitalizations 5 cases, and death during hospitalization 8 (10%).

Through the CGA, among the 135 patients hospitalized in our Oncology ward, we identified 75 frail patients, almost half 45%. Observational studies conducted so far confirm that the prevalence of frailty is around 42%, and these patients are at increased risk of complications and mortality [18].

Data collected with the CGA can guide oncologists and palliatives to prescribe active oncology therapy or identify frail patients for whom palliative care is the best option [19, 20]. For 38 frail patients, we did not perform biopsies for histological diagnosis because the patients were not candidates for active oncological treatments. Each decision was shared with patients and family members, explaining the assessments completed and the best strategy to ensure a good quality of life.

The data in the literature show that early activation of palliative care improves the quality of life and reduces unnecessary care and hospitalization [21].

The presence of one or more suitable caregivers with adequate social support is closely associated with a greater possibility that the patient will die at home [22]. Conversely, being alone or divorced or having an older caregiver can be a contributing factor to death in hospice [23]. We observed that in the presence of an adequate caregiver and an active collaboration with palliatives, early identification of the frail patient could allow 38% of patients to die at home.

Although some studies indicate that women have a higher chance of dying at home [24, 25], our data do not show significant differences for gender but for functional status and cognitive status. Our descriptive analysis found that patients who died at home had better functioning and mental

quality than patients who died in Hospice. However, CGA was administered only at the beginning. To have more accurate results, we are redefining the CGA administration times, which we think could be after 1 month and 3 months from time zero (taking charge of the patient).

Some studies show the need to initiate personalized programs to improve the quality of life of patients and family members regardless of the place of death [26].

5. Conclusions

This descriptive analysis was done in a particular historical period: the Sars COVID-19 pandemic. Our Oncology Ward only admitted patients with a negative molecular swab. Family members were not allowed to enter, and communications with caregivers took place by telephone, except in rare cases. This certainly did not let us get to know the caregivers and their needs as happens in normal circumstances. The protected discharge with the Home Palliative Care Service was fundamental in filling this gap.

For older patients with cancer, it is essential to increase palliative care services at home and the hospice network to avoid hospital deaths and improve the quality of end-of-life care. Our trial confirms the literature data that early activation of home palliative care reduces emergency room visits and hospitalization because it enhances the patient's quality of life. We have not directly confirmed whether adequate caregiver support may have significantly influenced the possibility of dying at home, as reported in the literature. The parameters that were found to be decisive in allowing death at home were a better functional, cognitive, and nutritional status and the absence of a geriatric syndrome. Furthermore, it is logical to think that these parameters are directly correlated to adequate family and social support and the company of a palliative care service. A better functional, cognitive, and nutritional status could lead to a lower need for intensity of home care and less discomfort for the caregiver, who can better manage the end of life. A limitation of the results of our study is that the ADL/IADL and MMSE parameters were evaluated only at the beginning and not repeated after 1 and 3 months, but precisely for this reason, they can represent an essential prognostic factor and, therefore, indispensable in planning the future palliation of an oncology patient. Spending more time in your home during the end of life can also allow patients and family members to reconnect and say goodbye more peacefully.

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Author Contributions

All authors conceived and designed the study. GL performed analysis. All authors contributed to the interpretation of data and drafting the manuscript. Critical revision were performed by all authors who read and approved the final manuscript.

Competing Interests

None of the authors has conflict of interest with this submission.

Additional Materials

The following additional materials are uploaded at the page of this paper.

1. Attached 1.

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