The Impact of Palliative Care Team Consultation on Quality of Life of Patients with Advanced Cancer in Dutch Hospitals: An Observational Study

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Keywords

Palliative care · Palliative medicine · Referral and consultation · Quality of life · Hospitals · Observational study

Abstract

Introduction: Experimental studies have shown that palliative care team (PCT) involvement can improve quality of life (QoL) and symptom burden of patients with advanced cancer. It is unclear to what extent this effect is sustained in daily practice of hospital care. **Objective:** This observational study aims to investigate the effect of PCT consultation on QoL and symptom burden of hospitalized patients with advanced cancer in daily practice. **Methods:** After admission to 1 of 9 participating hospitals, patients with advanced cancer for whom the attending physician answered “no” to the Surprise Question were invited to complete a questionnaire, including the EORTC QLQ-C15-PAL, at 6 points in time, until 3 months after admission. Outcomes were compared between patients who received PCT consultation and patients who did not, taking into account differences in baseline characteristics. **Results:** A total of 164 patients consented to par-

ticipate, of whom 32 received PCT consultation. Of these patients, 108 were able to complete a questionnaire at day 14, of whom 19 after receiving PCT consultation. After adjusting for baseline differences, EORTC QLQ-C15-PAL scores for pain, appetite, and emotional functioning at day 14 were more favorable for patients who received a PCT consultation. **Conclusion:** PCT consultation decreased patients' symptom burden and tends to have a positive effect on QoL of hospitalized patients with advanced cancer, even if the PCT is consulted late in the patient's disease trajectory.

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Introduction

The evidence that specialist palliative care has positive effects on the quality of life (QoL) and symptom burden of patients with advanced cancer has increased over the past years [1–5]. In a meta-analysis of randomized controlled trials, Kavalieratos et al. [3] concluded that palliative care can lead to significant improvements in patients' QoL and symptom burden after 1–3 months of follow-up. High-quality studies that support this conclusion were

mainly performed in the ambulatory setting or among patients residing at home, with palliative care involvement occurring relatively early in patients' disease trajectory, for example, shortly after the diagnosis of metastatic cancer [6–8]. In another meta-analysis, Gaertner et al. [4] found that multidisciplinary specialist palliative care had a small effect on QoL in patients with advanced illness. They suggest that specialist palliative care might have the most substantial effects for patients with cancer in an earlier stage of their disease. In an older review from 2002, which specifically focused on the effect of hospital-based palliative care teams (PCTs), it was concluded that such teams offer some benefits, although there was a lack of high-quality studies in this area [9].

In the Netherlands, palliative care is an integral part of regular healthcare and not a distinct medical specialty. In case of complex problems, specialist palliative care can be provided by regional or hospital PCTs. The number of hospital PCTs has risen substantially over the past 5 years [10]. Most hospital PCTs can be consulted by medical specialists and nurses working in the hospital. Upon their involvement, PCTs typically provide a detailed holistic assessment of patients' symptoms and their physical, emotional, social, and spiritual problems, prioritize these and propose an advice on how to address them [11]. The extent to which PCTs provide care themselves or only advise the primary caregivers varies. Further, there are substantial differences between teams regarding the disciplines represented in the teams, the procedures followed, and the frequency of consultations [12].

In 2015, PCTs provided consultations in 0.6% of all hospital admissions [12]. This percentage is low when compared to other countries, for example, the United States, where a percentage of 4.4% was found [13]. The Dutch Federation of Oncological Societies has set standards for PCTs in hospitals, but these do not include standards regarding the timing of consultation [14], despite the fact the evidence indicates that specialist palliative care might have a more substantial effect in patients with cancer in an earlier stage of their disease [4].

Evidence on the effects of PCT consultation in hospitals mainly comes from experimental studies in outpatient clinics. It is unclear to what extent this effect is sustained in the daily practice of hospital inpatient care. We performed a longitudinal, observational study to investigate the association between PCT consultation and survival, QoL, and symptom burden of hospitalized patients with incurable cancer in the Netherlands.

Materials and Methods

The study protocol has been described in detail elsewhere [11]. We provide a summary here.

Patients and Setting

Patients were included after having been admitted to a medical oncology ward in 1 of 9 participating hospitals between February 2013 and March 2015. Seven hospitals had a PCT. Two hospitals without a PCT were included to ensure sufficient comparable patients for whom no PCT was involved but who were in principle eligible for the study and would be recruited.

Eligible were patients with cancer aged 18 years or older for whom the attending physician answered “no” to the Surprise Question: “Would you be surprised if this patient would die in the next year?” [15, 16] and who were expected to stay in the hospital for at least 3 days. After identification by the attending physician, patients received an information letter and were asked to participate by an attending nurse. Patients who consented were included within 3 days after admission. All patients were followed for 3 months after inclusion, regardless of where they stayed.

Questionnaires

Patients filled in questionnaires at days 1, 4, 14, 30, 60, and 90 after inclusion. The attending physician was asked to fill in a questionnaire about the patient's diagnosis, WHO performance status, comorbidity, treatment status, and life expectancy. In the patient questionnaire, QoL was assessed with the EORTC QLQ-C15 PAL [17].

This is an abbreviated version of the EORTC QLQ-C30 that consists of 14 questions on symptoms and functioning that can be answered on a numerical scale from 1 (not at all) to 4 (very much), and one question on global QoL, which is rated from 1 (very poor) to 7 (excellent) [18]. The main outcome for our study was QoL as assessed by the EORTC-QLQ-C15 PAL at day 14 after inclusion.

We also measured QoL with the Palliative Outcome Scale (POS) [19] and the EuroQol-5D [20, 21]. The POS is a questionnaire for patients with advanced cancer that covers physical symptoms and QoL, as well as emotional, social, psychological, and spiritual aspects. The EuroQol 5 dimensions questionnaire (EQ-5D) assesses mobility, self-care, usual activities, pain/discomfort, and anxiety/depression on a three-level scale (no problems, some problems, and extreme problems) [22].

PCT Consultation

All PCTs in our study adhered to the standards of the Dutch Federation of Oncological Societies [14]. Standards are for instance that PCTs should include at least 2 medical specialists and a nurse, who should meet at least weekly. If needed, members of the PCT should also have the possibility to consult other disciplines with expertise in palliative care. Upon their involvement in patients' care, PCTs typically provide a detailed holistic assessment of patients' symptoms and their physical, emotional, social, and spiritual problems, prioritize these and propose an advice on how to address them. Although all PCTs adhered to the SONCOS standards, consultation in itself was not a standardized intervention, and PCTs differed regarding, for example, disciplines represented in the teams and working procedures. An overview of characteristics of PCTs that participated in this study is provided in the online supplementary appendix 1 (see www.karger.com/doi/10.1159/000508312).

Data Analysis

We analyzed the association of PCT consultation with EORTC-QLQ-C15 PAL QoL scores in a linear regression analysis, while adjusting for baseline QoL scores and baseline differences in patient characteristics. Baseline characteristics that were both associated with the receipt of PCT consultation ($p \leq 0.3$) and with QoL on day 14 ($p \leq 0.3$) were considered potential confounders and were included in the analysis. Since the residuals in the linear regression were not normally distributed, we used bootstrapping to calculate 95% confidence intervals (CIs).

Table 1. Baseline characteristics of patients with and without PCT consultation ($n = 164$)

	Patients without PCT consultation ($n = 132$)	Patients with PCT consultation ($n = 32$)	p value
Age, years	68 (60–74)	69 (56–76)	0.98 ^a
Female gender	66 (50)	18 (56)	0.53 ^b
Type of cancer			
Gastrointestinal cancer	56 (43)	14 (45)	0.70 ^b
Urogenital or gynaecological cancer	20 (15)	7 (23)	
Breast cancer	19 (15)	3 (10)	
Lung cancer	19 (15)	5 (16)	
Other	17 (13)	2 (7)	
Comorbidities			0.85 ^b
No comorbidities	52 (39)	11 (34)	
1 comorbidity	44 (33)	11 (34)	
>1 comorbidities	36 (27)	10 (31)	
Time since diagnosis, years	2 (1–10)	3 (0–13)	0.62 ^a
Estimated life expectancy, months			0.08 ^b
6–12	43 (33)	5 (16)	
3–6	42 (32)	9 (28)	
1–3	37 (28)	12 (38)	
<1	10 (8)	6 (19)	
WHO performance status			0.03 ^b
Able to carry out all normal activity without restrictions	11 (8)	1 (3)	
Restricted in physically strenuous activity but ambulatory and able to carry out light work	45 (34)	6 (19)	
Ambulatory and capable of all self-care but unable to carry out any work; up and >50% of waking hours	37 (28)	6 (19)	
Capable of only limited self-care; confined to bed or chair >50% of waking hours	33 (25)	15 (47)	
Completely disabled; cannot carry out any self-care; totally confined to bed or chair	6 (5)	4 (13)	
Number of hospital admissions due to current disease	2 (1–4)	2 (1–2)	0.11 ^a
Current hospital admission was			0.31 ^b
Planned	22 (17)	3 (10)	
Unplanned	106 (83)	28 (90)	
Treatment status at the time of admission:			<0.01 ^b
Patient received anti-tumor therapy	62 (47)	9 (28)	
No options for anti-tumor therapy left	41 (31)	21 (66)	
Other	29 (22)	2 (6)	

Values are presented as median (interquartile range) or n (%). ^a Mann-Whitney U test. ^b χ^2 test.

Results

Baseline Characteristics

Between February 2013 and March 2015, a total of 164 patients were included in the study, of whom 32 received PCT consultation. Hospitals with a PCT recruited between 2 and 6 patients who received PCT consultation for the study. Among patients with PCT involvement, 56% were female, compared to 50% among patients without PCT involvement; the median age was 69 and 68 years, respectively. In both groups, gastrointestinal cancer was the most common diagnosis (Table 1).

There were significant differences in patients' health status between both groups. Patients' life expectancy as estimated by the physician was more limited for patients with PCT involvement compared to patients without PCT involvement; 57% of the patients with PCT in-

volvement had an estimated life expectancy of <3 months, compared to 36% of the patients without PCT involvement (Table 1). WHO performance status was also worse for patients with PCT involvement: 60% of the patients with PCT involvement were only capable of limited self-care or completely disabled, compared to 30% of the patients without PCT involvement. Patients with PCT involvement more often had a non-planned hospitalization (90 vs. 83%). Furthermore, for patients with PCT involvement, the physician more often indicated that there were no more options for anti-tumor therapy (66 vs. 31%). Baseline EORTC QoL scores of patients with PCT involvement were worse compared to scores of patients without PCT involvement (38.5 vs. 50.9), as were scores for physical functioning, fatigue, nausea and vomiting, pain, constipation, and appetite loss (Table 2).

Table 2. QoL scores at baseline of patients with and without PCT consultation ($n = 164$)

	Patients without PCT consultation, n	Score	Patients with PCT consultation, n	Score
EORTC QLQ C15 Pal				
Physical functioning*	125	40.8	28	32.4
Emotional functioning*	124	71.1	28	71.4
Fatigue*	124	63.1	30	78.5
Nausea and vomiting*	125	25.3	30	44.4
Pain*	126	48.0	30	67.8
Dyspnea*	126	34.4	30	33.3
Insomnia*	126	41.0	30	41.1
Appetite loss*	126	46.8	30	57.8
Constipation*	123	29.0	30	50.0
Global health status*	127	50.9	29	38.5
EQ-5D**				
Dutch EQ-5D Summary Score	121	0.54	30	0.45
POS				
Physical***	124	3.0	28	4.2
Psychological***	124	6.7	30	8.0
Information***	124	1.9	29	2.2
Total score†	116	11.6	27	14.3

* EORTC QLQ C15 PAL: range 0–100. For physical functioning, emotional functioning, and global health status higher score implies better status. For individual symptoms, higher score implies a severe burden of symptoms (worse status). ** EQ-5D: range –0.33 to –1, a higher score implies better QoL. *** Palliative Outcome Scale (POS) subscales: POS physical scale 0–12, POS psychological scale 0–20, POS information scale 0–12; a higher score implies worse outcome. † POS total scale 0–40; a higher score implies worse outcome.

Table 3. Follow-up of patients with and without PCT consultation ($n = 164$)

	Patients without PCT consultation ($n = 132$)	Patients with PCT consultation ($n = 32$)	p value
Duration of hospital admission, days	8.0 (5–13)	8.5 (6–18)	0.97 ^a
Discharge destination			0.08 ^b
Home	105 (81)	21 (65)	
Hospice	16 (12)	5 (16)	
Other	5 (4)	5 (16)	
Deceased during hospital admission	4 (3)	1 (3)	
Patients surviving 3 months of follow-up, %	72 (55)	10 (31)	0.02 ^b
Survival after 3 months follow-up	90 (47–90)	53 (28–90)	0.03 ^a

Values are presented as median (interquartile range) or n (%). ^a Mann-Whitney U test. ^b χ^2 test.

Survival and Follow-Up

Out of 164 included patients, 108 patients filled in a questionnaire at day 14, of whom 19 patients received PCT consultation. At day 30, 84 patients filled in a questionnaire, of whom 11 were PCT patients. There was not only a difference in estimated life expectancy, but also in actual survival between the 2 groups (Table 3): 69% of the patients with PCT involvement did not survive 3 months of follow-up, compared to 45% of the patients without PCT involvement.

Quality of Life

The analysis of the association between PCT consultation and QoL at day 14 was adjusted for patients' age, sex, baseline scores for QoL, WHO performance status, life expectancy, treatment status, and whether the hospitalization was planned. Patients with PCT consultation had significantly better scores for pain (difference of 17.6 points, 95% CI –30.6 to –4.6), appetite loss (difference of 23.3 points, 95% CI –43.9 to –4.6) and emotional functioning (difference of 10.6 points, 95% CI 0.0–20.6) as

Table 4. QoL scores of patients with and without PCT consultation at baseline and 14 days of follow-up ($n = 108$)

QoL		Without PCT	n	With PCT	PCT effect β (95% CI)
<i>EORTC QLQ C15 PAL</i>					
Physical functioning*					
Baseline QoL	83	41.8	17	34.9	10.96 (−0.12 to 22.89)
14 days QoL	83	37.2	17	37.3	
Emotional functioning*					
Baseline QoL	86	72.7	17	69.1	10.56 (0.02 to 20.55)
14 days QoL	86	74.8	17	83.3	
Fatigue*					
Baseline QoL	83	60.9	19	83.0	−7.01 (−18.97 to 4.91)
14 days QoL	83	57.4	19	65.5	
Nausea and vomiting*					
Baseline QoL	85	25.7	19	48.2	−1.08 (−15.93 to 14.26)
14 days QoL	85	15.8	19	17.5	
Pain*					
Baseline QoL	87	45.2	19	68.4	−17.56 (−30.57 to −4.58)
14 days QoL	87	34.1	19	30.7	
Dyspnea*					
Baseline QoL	87	33.3	18	38.9	4.82 (−8.24 to 21.20)
14 days QoL	87	26.8	18	35.2	
Insomnia*					
Baseline QoL	87	40.6	18	42.6	−9.40 (−24.57 to 5.99)
14 days QoL	87	31.4	18	22.2	
Appetite loss*					
Baseline QoL	86	48.8	18	62.9	−23.30 (−43.90 to −4.68)
14 days QoL	86	44.2	18	29.6	
Constipation*					
Baseline QoL	85	25.8	18	57.4	6.78 (−15.18 to 26.87)
14 days QoL	85	18.8	18	38.9	
Global health status*					
Baseline QoL	85	51.7	16	30.2	12.05 (−2.59 to 25.98)
14 days QoL	85	58.0	16	60.4	
<i>EQ-5D</i>					
EQ-5D**					
Baseline QoL	79	0.55	18	0.44	0.10 (−0.12 to 0.29)
14 days QoL	79	0.54	18	0.52	
<i>Palliative Outcome Scale (POS)</i>					
POS total**					
Baseline QoL	77	11.80	16	14.62	−2.21 (−5.21 to 0.51)
14 days QoL	77	10.92	16	10.56	
POS physical**					
Baseline QoL	85	3.09	18	4.28	−0.15 (−1.04 to 0.83)
14 days QoL	85	2.36	18	2.83	
POS psychological**					
Baseline QoL	84	6.69	18	8.22	−0.83 (−2.25 to 0.58)
14 days QoL	84	5.99	18	6.10	
POS information**					
Baseline QoL	82	1.87	18	2.39	−0.68 (−1.98 to 0.71)
14 days QoL	82	2.32	18	2.11	

Adjusted for baseline score, age, sex, life expectancy, treatment status, WHO performance status, and type of admission. For all analysis, the group of patients without PCT consultation is the reference group. * EORTC QLQ C15 PAL: range 0–100. For physical functioning, emotional functioning, and global health status higher score implies better status. For individual symptoms, higher score implies a severe burden of symptoms (worse status). ** EQ-5D: range −0.33 to −1; a higher score implies better QoL.

compared to patients without PCT consultation. Patients with PCT consultation also had better scores for physical functioning (difference of 11.0 points, 95% CI -0.1 to -22.9) and global health status (EORTC QLQ C15 PAL, difference of 12.1 points, 95% CI -2.6 to 26.0). PCT involvement was not associated with QoL as measured by the EQ5D or the (subscales of the) POS (Table 4).

Discussion

In this observational study, PCT consultation seems to have a beneficial effect on symptoms and tends to have a positive effect on the QoL of hospitalized patients with advanced cancer after 2 weeks of follow-up. Experimental studies mostly found effects after 3 months of follow-up; due to the limited number of included patients and the loss to follow-up, we were not able to assess the effect of PCT involvement beyond 14 days of follow-up.

In this study on real-life clinical practice, it was difficult to include and follow patients: only 32 patients who received PCT consultation participated in our study, and many patients were lost to follow-up. At baseline, patients for whom the PCT was consulted had a higher symptom burden, were more often admitted unplanned, and had a shorter life expectancy compared to patients who did not receive PCT consultation. Consultation seems to occur late in patients' disease trajectory: about two-thirds of the patients with PCT consultation had no options for anti-tumor therapy left and did not survive 3 months of follow-up. While it seems likely that patients' health status often precluded participation in our study, especially in the PCT group, gatekeeping, which is the phenomenon that physicians protect eligible patients from participation in a study, may also have contributed to the low number of included patients [23]. Furthermore, the high intensity of this study may have contributed to the low recruitment rate. Another issue is that in some hospitals, the PCT was established relatively recently and did not yet have many consultations during the study period. Overall, the referral rates to PCT consultation in Dutch hospitals is low [12].

Due to the high workload of physicians in the participating hospitals and wards, we were not able to collect reliable information on the response rate, which can be considered as a weakness of this study.

Despite the low number of patients, we found significant improvements in patients' scores for pain, appetite loss, and emotional functioning. In their meta-analyses of randomized clinical trials that assessed the effects of specialist palliative care in hospitals, both Kavalieratos et al. [3] and Gaertner et al. [4] reported significant but small improvements in QoL and inconclusive results for symptom burden. An explanation for these small effects may

be the approach that is used in many trials, in which specialist palliative care is provided to all patients with a certain diagnosis, even if they did not have explicit palliative care needs. Further, patients in the control groups in these trials could also have received symptom treatment and palliative care from their primary caregivers.

Compared to the experimental studies that were included in both meta-analyses, the population in our observational study had a substantially shorter life expectancy. This suggests that in real life, PCTs are consulted rather late in patients' disease trajectory. Earlier involvement of PCTs may further increase their beneficial effects.

Conclusion

This observational study shows that the beneficial effects of specialist palliative care involvement are only partly occurring in the real-life clinical inpatient setting. In daily practice, PCTs are typically consulted rather late in the disease trajectory. However, our finding of significant beneficial effects even in our small group of very ill patients confirms that it is worthwhile to invest in PCT consultation in hospitalized patients. It could be desirable to use a routine structured screening instrument to ensure that all hospitalized patients with complex palliative care needs have access to specialist palliative care. Furthermore, increased involvement of a PCT and advanced care planning discussions earlier in the course of the disease, for example, at the outpatient clinic, could possibly prevent unplanned and unwanted hospitalizations in the last months of life.

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Statement of Ethics

The research protocol was submitted to the Medical Ethical Research Committee of Erasmus MC (MEC-2012-259), which stated that there were no objections to performing this study. Written informed consent was obtained from all patients before participating in the study.

Disclosure Statement

All authors declare that they have no conflicting interests. The study was conducted independently from the funders. All authors have full access to all data (including statistical reports and tables) in the study and take responsibility for the integrity of the data and the accuracy of the analysis.

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Author Contributions

A.V.H and A.B.-S. designed the study. A.B.-S. drafted the article. Y.V. gave advice regarding the statistical analysis. All authors paid significant contributions to the interpretation of the data and revised it critically for important intellectual content. All authors have approved the final manuscript.

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