Impact of palliative care consultation on aggressive end-of-life care in advanced cancer patients at a cancer center

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Introduction

- Early integration of palliative care (PC) with oncological care is associated with better quality of life and symptom control, as well as less aggressive end-of-life (EOL) care.
- Indicators of aggressive EOL care include, in the last 30 days of life:
  - Emergency room (ER) visits
  - Hospital admission
  - Hospital death
  - Intensive care unit (ICU) admission
  - Chemotherapy use
- The Cross Cancer Institute (CCI) in Edmonton is a tertiary cancer center for the northern half of the province of Alberta.
- The Edmonton Zone (EZ) PC Program provides specialist PC consultation, in the CCI, hospitals, and home.
- Objective: The objectives of our study were to examine the impact of 1) occurrence and 2) timing of specialist PC consultation on indicators of aggressive EOL care in advanced cancer patients receiving care at the CCI.

Methods

- Design: Retrospective
- Population: Advanced cancer patients who lived in the EZ, received care at the CCI, and died between April 1, 2013 and March 31, 2014
- Data sources:
  - Alberta Cancer Registry: Dates of death, demographics, cancer types
  - Hospital database: Aggressive EOL care indicators
  - Electronic medical records: Dates of diagnosis of advanced (incurable) cancer
  - EZ PC Program database: Occurrence and dates of PC consultation
- A composite aggressive EOL care score was calculated by assigning one point for each of the following indicators in the last 30 days of life: ≥ 2 ER visits, ≥ 2 hospital admissions, hospitalization > 14 days, ICU admission, death in hospital, and chemotherapy use.
- A multivariate logistic regression analysis adjusted for age, sex, income, cancer type, and PC consultation was performed for predictors of ≥ 1 aggressive EOL care indicator.

Table 1. Patient characteristics (N = 1414)

Patient characteristics	No PC consultation (n = 303)	PC consultation (n = 1111)	p-value [a]
Age in years, mean	71.5	69.1	0.003
Female sex (%)	139 (45.9)	539 (48.5)	0.45
Married (%)	178 (58.7)	669 (60.2)	0.69
Income (%)			
Lowest Quintile	68 (22.4)	243 (21.9)	0.98
Highest Quintile	53 (17.5)	199 (17.9)	
Cancer type (%)			
Respiratory	117 (38.6)	316 (28.4)	p < 0.001
Hematological	42 (13.9)	64 (5.8)	
Gastrointestinal	40 (13.2)	301 (27.1)	
Genitourinary	29 (9.6)	116 (10.4)	
Breast	17 (5.6)	100 (9)	
Other	58 (19.1)	214 (19.3)	
Months between advanced cancer diagnosis and death, median (interquartile range)	6 (2 - 17.5)	9 (4 -21)	0.11
Months between advanced cancer diagnosis and first PC consultation, median (interquartile range)	NA	4 (1 - 15)	NA
Months between first PC consultation and death, median (interquartile range)	NA	2 (1 - 5)	NA

[a] p-value determined using t-test for continuous, normally distributed variables and Pearson's χ^2 test for categorical variables.

Figure 1. Frequencies of aggressive EOL care indicators within last 30 days of life, based on *occurrence* of PC consultation (N = 1414)

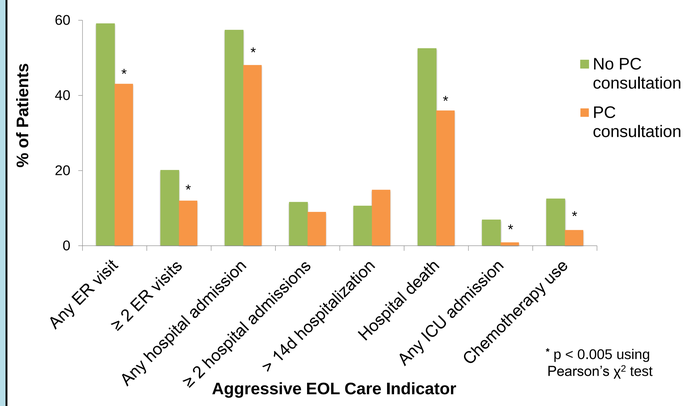

Figure 2. Frequencies of aggressive EOL care scores, based on occurrence of PC consultation (N = 1414)

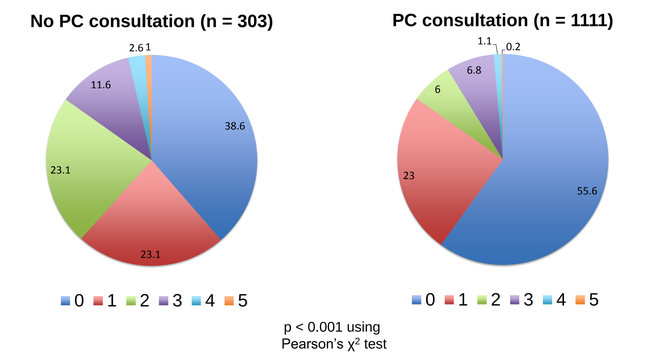

Figure 3. Frequencies of aggressive EOL care indicators within last 30 days of life, based on *timing* of first PC consultation (N = 1111)

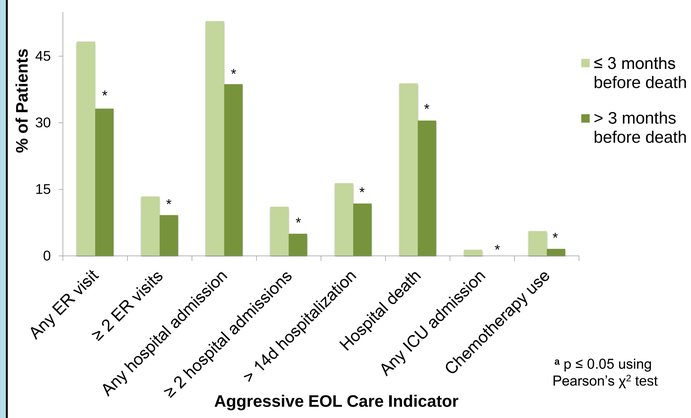

Table 2. Multivariate analysis for ≥ 1 aggressive EOL care indicator (N = 1414)

Effect	OR	Lower CI	Upper CI	p-value
Age	0.97	0.97	0.98	< 0.001
Female sex *	0.61	0.48	0.79	< 0.001
Hematological cancer [+]	1.69	1.06	2.69	0.02
PC consultation	0.42	0.32	0.57	< 0.001

* Relative to male sex
[+] Relative to respiratory cancer
OR non-significant for breast, gastrointestinal, genitourinary, gynecological, head & neck, nervous system, and other cancers, relative to respiratory cancer, and for income quintiles 2-5, relative to lowest quintile

Results

- 78.6% of eligible EZ advanced cancer patients received PC consultation, a median of 2 months before death (Table 1).
- Patients who received PC consultation were younger, and had a different distribution of cancer types, than those who didn't (Table 1).
- Patients who received PC consultation had a lower frequency of aggressive EOL care indicators (Figure 1), and lower composite aggressive EOL care scores (Figure 2), than those who didn't.
- Patients who received PC consultation > 3 months before death had a lower frequency of aggressive EOL care indicators than those who received PC consultation ≤ 3 months before death (Figure 3).
- In multivariate logistic regression analysis, PC consultation was independently associated with a lower odds of aggressive EOL care (Table 2).

Discussion

- Our findings add to a growing body of evidence suggesting that early PC consultation contributes to less aggressive, and possibly better quality, EOL care in patients with advanced cancer.
- An alternative explanation for the results is that patients who receive more aggressive EOL care are also less likely to be referred for PC consultation.
- Limitations of this study include its retrospective design, inclusion of only patients who had been seen at a tertiary cancer center, and inability to account for other factors that may influence aggressiveness of EOL care (e.g., patient preferences for care).

Conclusions

- The occurrence and earlier timing of specialist consultation within a comprehensive integrated PC program was associated with less frequent aggressive EOL care for advanced cancer patients.
- Our results should encourage ongoing research and development of comprehensive integrated PC programs providing access to specialist consultation early in the trajectory of advanced cancer.

Acknowledgments

- The authors wish to thank Dr. Konrad Fassbender for providing access to statistician support.
- Viane Faily was funded by the Dorothy Jean Usher Memorial Summer Research Award