Characteristics and Symptom Profiles of Patients Evaluated By A Nurse Practitioner Consultant In A Multidisciplinary Palliative Radiotherapy Clinic.

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Short report

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Abstract

Palliative radiation therapy is an essential but often impromptu service, depending on the patient condition and symptom burden. Radiation oncologists are the usual consultant in this setting, however, there is potential to extend capacity with the addition of advanced providers such as a nurse practitioner.

Purpose: to examine characteristics and symptom profiles of patients individually evaluated by a nurse practitioner with those evaluated by a radiation oncologist in a rapid access, multidisciplinary palliative radiotherapy clinic.

Methods & Materials: Data were retrieved from an ethics-approved, prospective database. Patients were grouped and analyzed based on the consultant.

Results: The nurse practitioner completed consultations for a total of 137 patients, the radiation oncologist for 98. No significant differences were observed in symptom profile, functional status or whether radiotherapy was prescribed. By working as a team, 58% more patients with painful bone metastases were able to access the clinic.

Conclusions: An experienced nurse practitioner can significantly enhance access to consultation in a palliative radiotherapy clinic. We expect this research to inform ways that advanced providers can improve access to timely care and reduce suffering.

Introduction

Approximately half of North Americans will develop cancer [1] and in spite of significant advancements, many malignancies still have a poor prognosis. As disease advances, patients require expert palliative care, careful medication management and radiation therapy (RT) to effectively relieve pain associated with bone metastases [2]. The need for RT is unpredictable and accordingly RT departments are challenged to provide this vital but impromptu service, resulting in reduced access to timely care and increased suffering [3]. Radiation oncologists are the usual care provider, however, there is potential to extend capacity with the addition of advanced providers such as a nurse practitioner (NP). The aim of this study was to examine the characteristics and symptom profiles of patients individually assessed by an NP in comparison to those assessed by a radiation oncologist (RO) in a multidisciplinary palliative radiotherapy clinic.

Methods And Materials

Data were retrieved from the ethics-approved, prospective database for the period 01 January 2008–31 December 2010, identified as NP and RO were consistent providers. Sequential patients referred for pain presumably attributable to bone metastases were included. The only exclusion were patients assessed by a visiting physician or resident, as this was an academic training center. This clinic has been previously described [4] and in brief, was composed of an experienced multidisciplinary team (MDT) including RO,

NP, pharmacist (RX), social worker (SW), registered dietician (RD), and occupational therapist (OT). As many patients in the jurisdiction were required to travel long distances (with associated discomforts and costs) [5] the aim was to provide holistic MDT assessment in addition to palliative RT, ideally within the same day.

Upon arrival, patients underwent systematic assessment with validated tools by a MDT member. Symptoms were evaluated with the Edmonton Symptom Assessment System (ESAS) (0 = none and 10/10 = worst possible [6]). Functional capacity was assessed using Karnofsky Performance Status (KPS) rating 100-0 on the activity level, ability to work, and degree of assistance needed on a daily basis [7]. The consultant NP or the RO then individually and randomly performed the consultation (Fig. 1). Based on case discussions, the RO would prescribe RT as clinically indicated. When appropriate, patients would receive their radiation the same day.

Patients were grouped based on the consultant (NP or RO). Independent T-test evaluated means of ESAS and KPS scores. Proportions of RT prescription were compared using Chi-square test. Analyses were performed using SAS statistical software version 9.3 (Cary, NC) and SPSS Version 15.0 software (Chicago). P-value < 0.05 was set for significance for all tests.

Results

316 patients attended the clinic during the study period. 81 patients were excluded (2 missing data, 79 assessed by visiting physician or resident) thus 235 patients were included. The NP completed consultations for 137 patients, and the RO for 98 patients.

Table 1
Patient Characteristics (n = 316)

	NP	RO
n	137	98
Average Age	71 years (SD 13)	74 years (SD 10)
Gender	M 99 (72%)	M 68 (69%)
Cancer type	N, (%)	
Prostate	59 (43%)	42 (43%)
Lung	33 (24%)	31 (32%)
Gastrointestinal	17 (13%)	6 (6%)
Breast	15 (11%)	8 (8%)
PRUNK	6 (4%)	11 (11%)
Genitourinary	4 (3%)	0
Hematologic	3 (2%)	0

Means (standard deviation) and p-values of ESAS and KPS showed no statistically significant differences. A trend towards worse pain was observed in the NP-assessed group.

Table 2
ESAS and KPS, mean and standard deviation

	NP (n = 137)	RO (n = 98)	p-value
Pain	6.1 (2.8)	5.3 (3)	0.067
Fatigue	5.4 (2.8)	5.7 (2.7)	0.391
Appetite	4.9 (3)	4.7 (3.2)	0.622
Wellbeing	4.2 (3)	4 (2.8)	0.471
Depression	2.8 (2.7)	2.8 (3)	0.953
SOB	2.7 (3)	2.7 (2.8)	0.892
Anxiety	2.6 (2.7)	3.2 (2.9)	0.118
Nausea	1.4 (2.1)	1.8 (2.5)	0.174
KPS	60.4 (17.3)	56.4 (24.4)	0.191

One-hundred and eight patients of the 137 assessed by the NP and 72 of the 98 assessed by the RO received RT, respectively. Chi squared analysis of whether or not RT was prescribed between groups showed no statistical significance.

Table 3
Radiation Prescription

Provider	NP	RO	p
RT yes	108	72	0.643
RT no	29	26	0.402
n	137	98	

Patients with larger lesions may have more distressing symptoms and require larger RT doses [8]. Independent T-test comparison of the average dose was not statistically significant.

Discussion

Palliative RT presents a unique challenge requiring timely assessments and often complex interventions for symptomatic patients in typically busy departments. With the NP and RO working as a team, 58% (137/235) more patients received consultation than if the RO was working alone. The NP contributed further by completing consultation in 28 patients ultimately not eligible for RT, allowing the RO to deploy their specialized skills more efficiently. The symptom burden of both NP and RO patient groups were comparable. Often, the NP role involves facilitating team functioning and care coordination, or “invisible work” [9] making their individual contribution difficult to evaluate. To our knowledge we are the first to describe in detail characteristics and complexity of palliative RT patients individually assessed by a consultant NP.

The American Society of Clinical Oncology recommends palliative care be integrated early in the disease course for patients with metastatic disease or high symptom burden [10]. Adequately assessing the domains of care (physical symptoms, psychosocial issues, cultural considerations, spiritual needs, care coordination, advance care planning, goals of care, ethical and legal issues [11, 12]) requires the RO has sufficient time as well as function well within an effective MDT [5]. Shared knowledge where one member can step in, or ‘backup behavior’ is characteristic of high-functioning and efficient teams [13]. Shared responsibility and professional trust allows the right MDT provider(s) to deliver the right care at the right time to the right patient(s), characteristic of ‘personalized care’ and essential to address the complex symptoms of a palliative RT population.

Strengths And Limitations

There was no formal randomization process determining which provider assessed the patient. The first consultant readily available assessed patients serially, conversely this is a strength as this random approach reflects real-world care delivery.

The consultant NP had more than 25 years of oncology and palliative care experience. The results may have been different with an NP with less experience. This study was completed where the legislated NP scope of practice may be different than other jurisdictions.

Conclusion

We have shown that an NP consultant can significantly enhance efficiency in a palliative radiotherapy clinic. Further work studying the contributions of advanced care providers to patients suffering with complex symptoms is warranted. We expect that such approaches will improve accessibility to timely care and reduce suffering.

Declarations

Ethics approval and consent to participate: This study was reviewed and approved by the Health Research Ethics Board of Alberta project #23653.

Consent for publication: Not applicable

Availability of data and materials: Research data are stored in an institutional repository and will be shared upon reasonable request and ethical review to the corresponding author.

Competing interests: The authors declare that they have no competing interests

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References

1. Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer Statistics, 2021 *CA: A Cancer Journal for Clinicians*. 12 January 2021 <https://doi.org/10.3322/caac.21654>.
2. Lutz S, Berk L, Chang E, et al. Palliative radiotherapy for bone metastases: An ASTRO evidence-based guideline. *Int J Radiat Oncol Biol Phys*. 2011;79:965–76.
3. Danjoux C, Chow E, Drossos A, et al. An innovative rapid response radiotherapy program to reduce waiting time for palliative radiotherapy. *Support Care Cancer*. 2006 Jan;14(1):38–43.
4. Pituskin E, Fairchild A, Dutka J, et al. Multidisciplinary team contributions within a dedicated outpatient palliative radiotherapy clinic: a prospective descriptive study. *Int J Radiat Oncol Biol Phys*. 2010 Oct 1;78(2):527 – 32. doi: 10.1016/j.ijrobp.2009.07.1698.
5. Watanabe S, Fairchild A, Pituskin E, et al. Improving access to specialist multidisciplinary palliative care consultation for rural cancer patients by videoconferencing: report of a pilot project. *Support Care Cancer* 2013 Apr;21(4):1201–7. doi: 10.1007/s00520-012-1649-7.
6. Bruera E, Kuehn N, Miller MJ, et al. The Edmonton Symptom Assessment System (ESAS): A simple method for the assessment of palliative care patients. *J Palliat Care*. 1991;7:6–9.
7. Schag CC, Heinrich RL, Ganz PA. Karnofsky performance status revisited: Reliability, validity, and guidelines. *J Clin Oncol*. 1984;2:187–93.
8. Squires JE, Asad S, Demery M, et al. Behavioral Determinants of Canadian Radiation Oncologists' Use of Single Fraction Palliative Radiation Therapy for Uncomplicated Bone Metastases. *Int J Radiat Oncol Biol Phys*. 2021 Feb;109(2)(1):374–86.
9. DiCenso A, Bryant-Lukosius D, Martin-Misener R, et al. Factors enabling advanced practice nursing role integration in Canada. *Nurs Leadersh*. 2010 Dec; 23 Spec No 2010:211 – 38. doi: 10.12927/cjnl.2010.22279.
10. Ferrell BR, Temel JS, Temin S, et al Integration of Palliative Care Into Standard Oncology Care. American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol*. 2017 Jan;35(1):96–112. doi: 10.1200/JCO.2016.70.1474. Epub 2016 Oct 28.
11. Ferrell BR, Twaddle ML, Melnick A, Meier DE. National Consensus Project Clinical Practice Guidelines for Quality Palliative Care Guidelines, 4th Ed. *J Pall Med* 21(12) Special doi.org/10.1089/jpm.2018.0431.
12. Koffman J, Higginson IJ. Assessing the Effectiveness and Acceptability of Inter-professional Palliative Care Education. *J Pall Care*. 2005;21(4):262–9.
13. Huang F, Driga A, LeGuerrier BE, et al. Supporting Patients With Incurable Cancer: Backup Behavior in Multidisciplinary Cross-Functional Teams. *J Oncol Pract*. 2016 Nov;12(11):1123–34.

Figures

Figure 1

The consultant NP or the RO then individually and randomly performed the consultation (Figure 1). ESAS: Edmonton Symptom Assessment System; KPS: Karnofsky Performance Status; Hx: history; ROS: review of systems; PE: physical examination