



Moving toward uniform and evidence-based practice of radiotherapy for management of cervical cancer in Ontario, Canada

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ABSTRACT

PURPOSE: To recognize the practice of radiotherapy for management of cervical cancer in Ontario, Canada, and to use the results of the survey to harmonize and standardize practice across the province.

METHODS AND MATERIALS: An electronic survey (SurveyMonkey) was sent to all 14 provincial cancer centers by Cancer Care Ontario Gynecology Community of Practice (CoP) in 2013. The survey included 72 questions in four different categories: general/demographic, pretreatment assessment, external beam radiotherapy (EBRT), and brachytherapy (BT).

RESULTS: Ten of 14 centers treated cervical cancer patients and had a dedicated BT suite. All 10 centers had a peer review process for quality assurance. EBRT technique was a 4-field box in eight of 10 centers. The dose/fractionation for pelvic EBRT was 45–50 Gy in 1.8–2 Gy/fraction in all but one center. Nine of 10 centers used high-dose-rate BT. Only one center offered interstitial BT. For treatment planning, two centers used CT and MRI, five centers used CT, and three centers used orthogonal x-rays. Groupe Européen de Curiethérapie and the European Society for Radiotherapy & Oncology guidelines were used in four of seven of the centers for target volume delineation and in five of seven centers for organs at risk dose constraints. All but one center prescribed and reported dose to Point A.

CONCLUSIONS: The survey identified areas where practice varied across the province. Gynecology CoP used this information to identify priorities for practice change and implemented several strategies to harmonize the care of women with cervical cancer. This highlights the value of interdisciplinary, grass-roots initiatives such as CoPs to standardize practice in a practical manner that directly benefits patients. © 2018 American Brachytherapy Society. Published by Elsevier Inc. All rights reserved.

Keywords:

Cervical cancer; Brachytherapy; Community of practice

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Introduction

The standard treatment for cervical cancer includes surgery or concurrent external beam radiotherapy (EBRT) and chemotherapy followed by brachytherapy (BT). Concurrent chemoradiotherapy plays an important role in curative management of cervical cancer (1, 2). There is evidence in the literature suggesting that high quality chemoradiation therapy for cervical cancer significantly

improves local/regional control, quality of life, and survival (3–8).

In Canada, there are 10 independent publically funded provincial cancer agencies that have a responsibility for providing comprehensive cancer care to all patients. Cancer Care Ontario (CCO) is the provincial cancer agency in Ontario. It consists of 11 clinical programs one of which is the radiation treatment program. This program has developed Communities of Practice (CoPs) in gynecology, head and neck, lung, physics, and radiation therapy specialties. A CoP can be defined as “a group of people who share a concern, a set of problems or a passion about a topic, and who deepen their knowledge and expertise by interacting on an ongoing basis” (9). The CoP model is increasingly recognized by governmental health organizations, as it provides a practical way to frame the task of managing knowledge, sharing best practices, and ensuring high-quality care with the ultimate objective of advancing health outcomes. The CCO gynecology CoP’s (GYN-CoP) vision is to improve the quality of radiation treatment for patients with gynecological cancer, decrease morbidity, and increase survival for Ontario cancer patients. One of the first GYN-CoP initiatives was to investigate the current state of EBRT and BT for management of cervical cancer in Ontario. The management of cervical cancer currently is evolving at an accelerated pace with the introduction of intensity-modulated external beam techniques and image-guided, interstitial BT.

The purposes of this study were as follows: (1) Document EBRT and BT practice for patients with cervical cancer in 2012 particularly with respect to the availability of these new treatment approaches, (2) identify areas of variability in practice across the province, and (3) develop approaches for harmonizing and standardizing practice around the introduction of new treatment approaches.

Methods and materials

CCO launched the GYN-CoP in 2011 with interdisciplinary engagement of frontline care providers from all cancer centers in the province where gynecological cancers were treated. The GYN-CoP included radiation oncologists, medical physicists, and radiation therapists. They conducted a survey to identify current radiotherapy practice for the management of cervical cancer across the province of Ontario, focusing mainly on women with an intact cervix receiving curative intent treatment.

An expert panel developed a detailed questionnaire (Supplemental Table 1) with 72 questions focusing on four main categories, including general/demographics (22 questions), pretreatment evaluation and simulation (four questions), EBRT planning and treatment (21 questions), and BT (26 questions). An electronic survey (SurveyMonkey) was sent to all 14 provincial cancer centers in 2013. Followup emails were sent to the centers

during a 6-month period to achieve a 100% response rate. A key lead from each center was identified to complete the survey with input from colleagues. Most of the key leads were radiation oncologists (64%); 29% were medical physicists, and 7% were radiation therapists. The centers were instructed to provide answers reflecting their cancer center’s practice and not individual practitioner practice. The data obtained from the questionnaires were tabulated by CCO and analyzed using descriptive statistics.

Results

Ten of 14 regional cancer centers in Ontario treated cervical cancer patients in 2012. The other four centers referred cervical cancer patients diagnosed within their catchment areas to one of the other 10 regional programs. A total of 226 patients were treated with EBRT and 210 patients were treated with BT as part of curative treatment for cervical cancer. Most of these patients were treated in four large cancer centers, each treating 30 to 50 patients typically distributed among three to five radiation oncologists per center. These four centers each had 10–16 operational linear accelerators. Nine of 10 centers had written treatment planning and delivery protocols, and five centers used a specific EBRT plan evaluation protocol for organs at risk (OARs). All of the 10 centers that treated cervical cancer had a peer review process for EBRT quality assurance. All centers used weekly cisplatin chemotherapy concurrently with EBRT in patients with no contraindications.

External beam radiotherapy

The patients received CT simulation for EBRT planning in all of the 10 centers. One center sometimes used MRI simulation as well for EBRT planning. Nine centers always gave instructions with regard to bladder preparation. Eight of 10 centers used a full-bladder protocol for simulation and treatment. Half of the centers also provided instructions aimed at achieving an empty rectum for simulation and treatment.

For contouring the gross tumor volume and clinical target volume (CTV), the radiation therapy oncology group guideline for the definitive treatment of cervical cancer (10) was always used in five centers, sometimes used in two centers, occasionally used in one center, and never used in two centers. For OAR contouring, the radiation therapy oncology group guideline was always used in four centers, sometimes used in three centers, occasionally used in two centers, and never used in one of the centers.

The standard EBRT technique was a 4-field box in eight of 10 centers; one center used intensity-modulated radiation therapy (IMRT) if treating the paraaortic nodes simultaneously, and one center did not respond (Table 1). The dose fractionation scheme to the whole pelvis was 45–50 Gy in

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