



program in
evidence-based care
a cancer care ontario program

programme de soins
fondé sur des preuves
un programme de action cancer ontario

Radiotherapy Fractionation for the Palliation of Uncomplicated Painful Bone Metastases Practice Guideline Report #13-2

*JS Wu, R Wong, M Johnston, A Bezjak, T Whelan, N Laetsch,
and members of the Supportive Care Guidelines Group*

Report Date: March 14, 2003

SUMMARY

Guideline Questions

1. What is the preferred dose-fractionation of localized radiotherapy for the treatment of uncomplicated painful bone metastases?
2. What is the expected response rate and duration of the pain relief?

Target Population

This recommendation applies to adult patients with single or multiple radiographically confirmed bone metastases of any histology corresponding to painful areas in previously non-irradiated areas without pathologic fractures or spinal cord/cauda equina compression. It does not apply to the management of malignant primary bone tumour.

Recommendation

- For patients where the treatment objective is pain relief, a single 8 Gy treatment, prescribed to the appropriate target volume, is recommended as the standard dose-fractionation schedule for the treatment of symptomatic and uncomplicated bone metastases.

Qualifying Statements

- “*Standard*” refers to what is applicable to the majority of patients, with a preference for patient convenience and ease of administration, without compromising treatment efficacy or morbidity.
- The recommendation does not apply to lesions previously irradiated, or lesions causing cord compression or pathologic fractures, because such patients were mostly excluded from clinical trials examining fractionation schedules.
- Prophylactic anti-emetic agents should be considered when a significant proportion of the gastrointestinal tract is in the irradiated volume.
- Patients and referring physicians should be advised that repeat irradiation to the treated area may be possible.
- There is insufficient evidence at this time to make a dose-fractionation recommendation for other treatment indications, such as long term disease control for patients with solitary bone metastasis, prevention/treatment of cord compression, prevention/treatment of pathologic fractures, and treatment of soft tissue masses associated with bony disease.

Methods

A systematic search of the MEDLINE, CANCELIT, Cochrane Library, and Physician Data Query Clinical Trials databases was performed for the period from 1997 to December 2002. Reference lists and meeting abstracts were scanned for additional citations. Systematic reviews, meta-analyses, or randomized controlled trials comparing two or more dose-fractionation schedules for localized radiotherapy of painful bone metastases were eligible for inclusion in this review of the evidence. Pain relief, quality of life, analgesic consumption, and treatment toxicity were the outcomes of interest.

Evidence was selected and reviewed by four members of the Practice Guidelines Initiative's Supportive Care Guidelines Group. This practice guideline report has been reviewed and approved by the Supportive Care Guidelines Group, which includes palliative care physicians, nurses, radiation oncologists, psychologists, medical oncologists, a chaplain, an anaesthetist, a surgeon, methodologists, and administrators.

External review by Ontario practitioners was obtained through a mailed survey. Final approval of the practice guideline report was obtained from the Practice Guidelines Coordinating Committee.

The Practice Guidelines Initiative has a formal standardized process to ensure the currency of each guideline report. The process consists of periodic review and evaluation of the scientific literature, and, where appropriate, integration of relevant new literature with the original guideline information.

Key Evidence

- Two systematic reviews and 16 randomized controlled trials form the basis of evidence for this practice guideline report.
- Based on intention-to-treat principle, meta-analysis of published data from eight randomized trials of single fraction versus multifraction radiotherapy for the treatment of uncomplicated painful bone metastases did not detect a significant difference in response rate (pain reduction or control) between a single fraction of 8 Gy prescribed to the appropriate target depth and fractionated radiotherapy. Pooled complete response rates were 33% with single fraction and 32% with multifraction (relative risk, 1.03; 95% confidence interval, 0.94 to 1.13, $p=0.5$) and overall response rates were 62% and 59% respectively (relative risk, 1.05; 95% confidence interval, 1.00 to 1.11, $p=0.04$).
- The majority of patients enrolled in the studies were breast, prostate, and lung cancer patients. Other less common epithelial and non-epithelial tumours were often included, but relative efficacy of dose-fractionation schedules cannot be determined in such subgroups.
- Median duration of response was 12 to 24 weeks, with no significant difference between fractionation schedules within individual trials.
- No significant difference in quality of life after radiotherapy (in the few studies assessed), analgesic consumption, or acute adverse effects (vomiting and tiredness) was detected between single- and multiple-fractionation schedules.
- Observed re-irradiation rates were higher with single fraction treatment (11-25%) than with multiple-fraction treatment (3-12%). Indications for re-irradiation were not described.
- One study showed greater remineralization following fractionated radiotherapy (30 Gy/10 fractions) than single fraction (8 Gy). The implication of this finding on prevention of pathologic fracture is unclear.

For further information about this practice guideline report, please contact Dr. Rebecca Wong, Co-Chair, Supportive Care Guidelines Group, Princess Margaret Hospital, 610 University Avenue, Toronto, Ontario, M5G 2M9; TEL 416-946-2919; FAX 416-946-4586; Email: rebecca.wong@rmp.uhn.on.ca

*The Practice Guidelines Initiative is sponsored by:
Cancer Care Ontario & the Ontario Ministry of Health and Long-term Care.*

Visit http://www.cancercare.on.ca/access_PEBC.htm for all additional Practice Guidelines Initiative reports.

PREAMBLE: About Our Practice Guideline Reports

The Practice Guidelines Initiative (PGI) is a project supported by Cancer Care Ontario (CCO) and the Ontario Ministry of Health and Long-Term Care, as part of the Program in Evidence-based Care. The purpose of the Program is to improve outcomes for cancer patients, to assist practitioners to apply the best available research evidence to clinical decisions, and to promote responsible use of health care resources. The core activity of the Program is the development of practice guidelines by multidisciplinary Disease Site Groups of the PGI using the methodology of the Practice Guidelines Development Cycle.¹ The resulting practice guideline reports are convenient and up-to-date sources of the best available evidence on clinical topics, developed through systematic reviews, evidence synthesis and input from a broad community of practitioners. They are intended to promote evidence-based practice.

This practice guideline report has been formally approved by the Practice Guidelines Coordinating Committee (PGCC), whose membership includes oncologists, other health providers, patient representatives and Cancer Care Ontario executives. Formal approval of a practice guideline by the Coordinating Committee does not necessarily mean that the practice guideline has been adopted as a practice policy of CCO. The decision to adopt a practice guideline as a practice policy rests with each regional cancer network that is expected to consult with relevant stakeholders, including CCO.

Reference:

1. Browman GP, Levine MN, Mohide EA, Hayward RSA, Pritchard KI, Gafni A, et al. The practice guidelines development cycle: a conceptual tool for practice guidelines development and implementation. *J Clin Oncol* 1995;13(2):502-12.

**For the most current versions of the guideline reports and information about the PGI and the Program, please visit our Internet site at:
http://www.cancercare.on.ca/access_PEBC.htm
For more information, contact our office at:
Phone: 905-525-9140, ext. 22055
Fax: 905-522-7681**

Copyright

This guideline is copyrighted by Cancer Care Ontario; the guideline and the illustrations herein may not be reproduced without the express written permission of Cancer Care Ontario. Cancer Care Ontario reserves the right at any time, and at its sole discretion, to change or revoke this authorization.

Disclaimer

Care has been taken in the preparation of the information contained in this document. Nonetheless, any person seeking to apply or consult these guidelines is expected to use independent medical judgement in the context of individual clinical circumstances or seek out the supervision of a qualified clinician. Cancer Care Ontario makes no representation or warranties of any kind whatsoever regarding their content or use or application and disclaims any responsibility for their application or use in any way.