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Radiotherapy for Newly Diagnosed Malignant Glioma in Adults Practice Guideline Report #9-3

N Laperriere, J Perry, L Zuraw, and members of the Neuro-oncology Disease Site Group

ORIGINAL GUIDELINE: September 19, 2000
MOST RECENT LITERATURE SEARCH: June 2004
NEW EVIDENCE ADDED TO GUIDELINE REPORT: June 2004
New evidence found by update searches since completion of the original guideline is consistent with the original recommendations.

SUMMARY

Guideline Questions

What is the role of radiotherapy in adult patients with newly diagnosed malignant glioma? If radiotherapy is offered, what are the optimal radiotherapy characteristics?

Target Population

These recommendations apply to newly diagnosed adults with histologic confirmation of the following diagnoses: glioblastoma multiforme, malignant astrocytoma, malignant astrocytoma grade 3, malignant astrocytoma grade 4, malignant glioma, or gliosarcoma.

Recommendations

- Post-operative external beam radiotherapy is recommended as standard therapy.
- The high-dose volume should incorporate the enhancing tumour plus a limited margin (e.g. 2 cm) for the planning target volume, and the total dose delivered should be in the range of 50-60 Gy in fraction sizes of 1.8-2.0 Gy.
- Radiation dose intensification and radiation sensitizer approaches are not recommended as standard care.

Qualifying Statements

- A randomized study has established the equivalence of 60 Gy in 30 fractions to 40 Gy in 15 fractions in older patients (≥ 60 years).
- Since the outcome following conventional radiotherapy is so poor in older patients with a poor performance status, supportive care alone is a reasonable therapeutic option in these patients.

Methods

A systematic search of MEDLINE (1966 through June 2004), CANCERLIT (1983 through October 2002), the Cochrane Library (2004, Issue 2), and relevant conference proceedings was undertaken. Reference lists were also scanned for additional citations. Randomized trials and meta-analyses comparing various aspects of radiotherapy were eligible for inclusion. Where no

randomized trials were available, non-randomized studies were reviewed. The outcome of interest was survival. Abstracts published in the proceedings of the annual meetings of the American Society of Clinical Oncology (1997 to 2004) were systematically searched for evidence relevant to this practice guideline report.

Evidence was selected and reviewed by three members of the Practice Guidelines Initiative's Neuro-oncology Disease Site Group and methodologists. This practice guideline report has been reviewed and approved by the Neuro-oncology Disease Site Group, which comprises medical and radiation oncologists, neuro-oncologists, neurosurgeons, a neuroradiologist, an oncology nurse, and a patient representative.

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

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

Key Evidence

- Five of six randomized studies demonstrated that post-operative radiotherapy improves survival compared with no radiation in patients with malignant glioma.
- Seven of eight randomized studies of hyperfractionated versus conventionally fractionated radiotherapy demonstrated no significant survival benefit of hyperfractionated radiotherapy. No randomized trials have examined survival following doses in the 50–60 Gy range.
- A high-dose volume incorporating the enhancing tumour plus a limited margin (e.g. 2 cm) has achieved similar survival to volumes incorporating whole brain for part or all of the treatment in two randomized studies.
- Radiation dose intensification and radiation sensitizer approaches have not demonstrated survival rates superior to those seen with conventionally fractionated doses of 50-60 Gy in randomized studies.

Future Research

- In view of the poor results with conventional radiotherapy in this disease, patients should be encouraged to participate in properly conducted experimental studies.
- It is strongly recommended that future studies in patients with brain tumours include measures of toxicity and quality of life.

Related Guidelines

- Practice Guideline Initiative Practice Guideline Report #9-2 *Adjuvant Systemic Chemotherapy, Following Surgery and External Beam Radiotherapy, for Adults with Newly Diagnosed Malignant Glioma.*

*For further information about this evidence summary, please contact Dr. James Perry, Chair, Neuro-oncology Disease Site Group, Sunnybrook and Women's College Health Science Centre, Rm A-402, 2075 Bayview Avenue, Toronto, Ontario, Canada,
tel: (416) 480 4766; fax: (416) 480 5054.*

or

*Dr. Normand Laperriere, co-Chair, Neuro-oncology Disease Site Group, Princess Margaret Hospital, 610 University Avenue, Toronto, Ontario, Canada,
tel: (416) 946-2127; fax: (416) 946-2038*

*The Practice Guidelines Initiative is sponsored by:
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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, whose membership includes oncologists, other health providers, patient representatives, and CCO 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.

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