

Re-irradiation for Brainstem Glioma, Diffuse Intrinsic Pontine Glioma (DIPG)

National guidelines for the Swedish Workgroup of Paediatric Radiotherapy (SBRG)

Background

Brainstem glioma (DIPG) is a diagnosis with a very poor prognosis. Current treatment options cannot offer a curative intent. Due to the location, surgery is virtually never possible, and treatment is usually based on local radiotherapy with photons to maximum tolerated brainstem doses, often 1.8 Gy x 30 to 54 Gy.

Re-irradiation

Clinical studies have demonstrated a benefit of re-irradiation for selected DIPG patients, with renewed symptom control and increased survival (1-3). Re-irradiation can be considered for patients if more than 3 months have elapsed since the primary radiotherapy course. Re-irradiation is not an alternative for patients who have developed radiological signs of a radionecrosis in the brainstem after the primary treatment.

Recommendations for re-irradiation of DIPG

- 2 Gy x 10, 5 fractions per week
- GTV + 5 mm PTV-margin
- Conformal treatment technique with VMAT, Tomotherapy or similar alternatives
- No dose restrictions to the brain, including the brainstem, but cumulative doses to certain organs at risk (i.e. chiasm and cochlea) should be assessed.
- Treatment with photon quality is recommended

If more than 12 months have elapsed since the primary radiotherapy treatment, these selected patients, if in overall good performance status, may be considered for re-irradiation to a higher dose of 1,8 Gy x 20 to a total dose of 36 Gy, given with GTV-PTV margins as above (4).

Second re-irradiation

In individual cases, a second re-irradiation may be considered (5). Patients eligible for this should have demonstrated a benefit of the first re-irradiation, and more than 3 months elapsed since the first course of re-irradiation. Treatment is done with a repeated course of 2 Gy x 10, as above. Only tumours located rostrally to the spinal cord, above the foramen magnum, are possible candidates due to the cumulative dose to the spinal cord.

References

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