

Re-irradiation of Central Nervous System Germinoma

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

Background

Germinomas of the CNS in pediatric patients have an, overall, good prognosis with a disease-free survival of 85-90% (1). In the primary treatment of pure germinomas, radiotherapy often consists of 24 Gy in 15 fractions to the ventricles (or CSI to 24 Gy in metastatic disease), and a boost to the tumour bed to a total dose of 40 Gy, 1,6 Gy /fraction.

Re-irradiation

- Re-irradiation can be recommended if the primary treatment was given as 24 Gy to the ventricles with a boost to the primary site intracranially to 40 Gy (1-3).
- More than 6 months should have elapsed since the primary radiotherapy treatment.
- If the patient in the primary treatment received CSI, re-irradiation with CSI may be considered if a long time has elapsed since the primary treatment.
- Toxicity after prior radiotherapy and the age of the child must be taken into consideration before deciding on possible re-irradiation and the size of the target volume.
- Residual tumour after resection should be considered for boost to 40 Gy.

Reirradiation for germinomas:

CSI: 1.6 Gy x 15 to 24 Gy

If residual tumour:

a subsequent boost of 1,6 Gy x 10 to a total dose of 40 Gy to GTV should be considered.

Dose constraints at re-irradiation (cumulative doses)

See National Guidelines (SBRG), for re-irradiation for Ependymomas

References

1. Tsang DS, Lapierre NJ, Reirradiation for pediatric tumors. Clin Oncol(R Coll Radiol). 2019;31(3):191-8
2. Hu Y.W, et al. Salvage treatment for recurrent intracranial germinoma after reduced volume radiotherapy: a single-institution experience and review of the literature. Int J Radiat Oncol Biol Phys. (2012) 84(3):639-647
3. Callec, L., Lardy-Cleaud, A., Guerrini-Rousseau, L., Alapetite, C., Vignon, L., Chastagner, P., Frappaz, D., and Faure-Contier, C. (2020). Relapsing intracranial germ cell tumors warrant retreatment. European Journal of Cancer (1990), 136, 186–194. <https://doi.org/10.1016/j.ejca.2020.06.012>