Renal cancer brain metastases

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Until 50% of patients with renal cancer or melanoma, develop brain metastases during the course of their disease. Stereotactic radiotherapy has become a standard of care for patients with a limited number of brain metastases. Given the radioresistant nature of melanoma and renal cancer, optimization of the fractionation of stereotactic radiotherapy is needed.

The purpose of a retrospective study of Lesueur et al., from Caen, France, was to elucidate if hypofractionated stereotactic radiotherapy (HFSRT) impacts local control of brain metastases from radioresistant tumors such as melanoma and renal cancer, in comparison with radiosurgery (SRS).

Between 2012 and 2016, 193 metastases, smaller than 3 cm, from patients suffering from radioresistant primaries (melanoma and renal cancer) were treated with HFSRT or SRS. The primary outcome was local progression free survival (LPFS) at 6, 12 and 18 months. Overall survival (OS) and cerebral progression free survival (CPFS) were secondary outcomes, and were evaluated per patient. Objective response rate and radionecrosis incidence were also reported. The statistical analysis included a supplementary propensity score analysis to deal with bias induced by non-randomized data.

After a median follow-up of 7.4 months, LPFS rates at 6, 12 and 18 months for the whole population were 83, 74 and 70%, respectively. With respect to fractionation, LPFS rates at 6, 12 and 18 months were 89, 79 and 73% for the SRS group and 80, 72 and 68% for the HFSRT group. The fractionation schedule was not statistically associated with LPFS (HR = 1.39, CI95% [0.65-2.96], p = 0.38). Time from planning MRI to first irradiation session longer than 14 days was associated with a poorer local control rate. Over this time, LPFS at 12 months was reduced from 86 to 70% (p = 0.009). Radionecrosis occurred in 7.1% for HFSRT treated metastases to 9.6% to SRS treated metastases, without any difference according to fractionation (p = 0.55). The median OS was 9.6 months. Six, 12 and 18 months CPFS rates were 54, 24 and 17%, respectively.

Fractionation does not decrease LPFS. Even for small radioresistant brain metastases (< 3 cm), HFSRT, with 3 or 6 fractions, leads to an excellent local control rate of 72% at 1 year with a rate of 7.1% of radionecrosis. HFSRT is a safe and efficient alternative treatment to SRS [1)].

1)

Lesueur P, Lequesne J, Barraux V, Kao W, Geffrelot J, Grellard JM, Habrand JL, Emery E, Marie B,

Thariat J, Stefan D. Radiosurgery or hypofractionated stereotactic radiotherapy for brain metastases from radioresistant primaries (melanoma and renal cancer). Radiat Oncol. 2018 Jul 28;13(1):138. doi: 10.1186/s13014-018-1083-1. PubMed PMID: 30055640.