Melanoma brain metastases radiosurgery

- Management outcomes for biopsy-proven radiation necrosis in patients with brain metastases in the era of immune-checkpoint blockade
- The Effect of Concomitant Immunotherapy and Stereotactic Radiotherapy, and of Location on Survival in Patients With Brain Metastases From Melanoma
- Reviewed Article: Stereotactic Radiosurgery for Brain Metastasis
- Co-inhibition of Notch1 and ChK1 triggers genomic instability and melanoma cell death increasing the lifespan of mice bearing melanoma brain metastasis
- Development of a recursive partitioning analysis for prediction of radiation necrosis following single-fraction stereotactic radiosurgery for intact brain metastases
- Current Treatment Paradigms for Advanced Melanoma with Brain Metastases
- Post-SRS haemorrhage and oncological outcome of patients with melanoma brain metastases undergoing stereotactic radiotherapy
- Outcomes of concurrent versus non-concurrent immune checkpoint inhibition with stereotactic radiosurgery for melanoma brain metastases

Case series

2018

Kano et al. analyzed 422 consecutive patients (1440 brain metastases) who underwent Gamma Knife radiosurgery (SRS). The median total brain tumor volume was 4.7 cm3 (range 0.3-69.3 cm3), and the median number of metastases was 2 (range 1-32). One hundred thirty-two patients underwent whole brain radiation therapy. Survival times were compared using recursive partitioning analysis (RPA), the Score Index for Radiosurgery (SIR), the Basic Score for Brain Metastases (BSBM), and the Diagnosis Specific Graded Prognostic Assessment (DS-GPA).

The overall survival times after SRS were compared. With the RPA index, survival times were 2.6 months (Class III, n = 27), 5.5 months (Class II, n = 348), and 13.0 months (Class I, n = 47). With the DS-GPA index, survival times were 2.8 months (Scores 0-1, n = 67), 4.2 months (Scores 1.5-2.0, n = 143), 6.6 months (Scores 2.5-3.0, n = 111), and 9.4 months (Scores 3.5-4.0, n = 101). With the SIR, survival times were 3.2 months (Scores 0-3, n = 56), 5.8 months (Scores 4-7, n = 319), and 12.7 months (Scores 8-10, n = 47). With the BSBM index, survival times were 2.6 months (BSBM0, n = 47), 5.4 months (BSBM1, n = 282), 11.0 months (BSBM2, n = 86), and 8.8 months (BSBM3, n = 7). The DS-GPA index was the most balanced by case numbers in each class and provided the overall best prognostic index for overall survival.

The DS-GPA index proved most balanced and predictive of survival for patients with melanoma who underwent SRS as part of management for brain metastases. Patients whose DS-GPA score was ≥ 2.5 had predictably improved survival times after SRS [1].

2017

In a retrospective cohort of consecutive MM patients (pts) with BMs, all systematically upfront treated by Gamma-Knife (GK) at first BM and retreated in case of new BMs, from 2010 to 2015 at the time

when ipilimumab BRAF ± MEK inhibitors and anti-PD1 were introduced in practice. Survival after 1st GK (OSGK1) according to prognostic factors and treatment.

Among 179 consecutive pts treated by GK, 109 received IT and/or TT after the 1st GK. Median OSGK1 was 10.95 months and 1- and 2-year survival rates were 49.5% and 27.4%, respectively, versus a median overall survival (OS) of 2.29 months ($p < .001$) in those who did not receive IT or TT. In pts who initially had a single BM, median OS and 1- and 2-year survival rates were 14.46 months, 66.7% and 43.4%, respectively; in pts with 2-3 BMs: 8.85 months, 46.4% and 31%, respectively; in pts with >3 BMs: 7.25 months, 37.2% and 11.9%, respectively. Multivariate analysis for OSGK1 confirmed that IT and TT were significantly and highly protective. Best OSGK1 was observed in BRAF-wild-type pts receiving anti-PD1 or in BRAF-mutated pts receiving BRAF-inhibitors and anti-PD1 (12.26 and 14.82 months, respectively).

In real-life MM pts with BMs, a strategy aiming at controlling BM with GK together with TT and/or TT seems to achieve unprecedented survival rates [2)].

2016

Wolf et al prospectively collected treatment parameters and outcomes for 80 patients with melanoma brain metastases who underwent SRS. Thirty-five patients harbored the BRAF mutation (BRAF-M) and 45 patients did not (BRAF-WT). Univariate and multivariate analyses were performed to identify predictors of overall survival. The median overall survival from first SRS procedure was 6.7, 11.2 months if treated with a BRAF inhibitor and 4.5 months for BRAF-WT. Actuarial survival rates for BRAF-M patients on an inhibitor were 54 % at 6 months and 41 % at 12 months from the time of SRS. In contrast, BRAF-WT had overall survival rates of 28 % at 6 months and 19 % at 12 months. Overall survival was extended for patients on a BRAF inhibitor at or after the first SRS. The median time to intracranial progression was 3.9 months on a BRAF inhibitor and 1.7 months without. The local control rate for all treated tumors was 92.5 %, with no difference based on BRAF status. Patients with higher KPS, fewer treated intracranial metastases, controlled systemic disease, RPA Class 1 and BRAF-M patients had extended overall survival. Overall, patients with BRAF-M treated with both SRS and BRAF inhibitors, at or after SRS, have increased overall survival from the time of SRS. As patients live longer as a result of more effective systemic and local therapies, close surveillance and early management of intracranial disease with SRS will become increasingly important [3)].

1)
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3)
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