

PO-0652

SFRT of the resection cavity in patients with one to three brain metastases

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Purpose or Objective: In patients undergoing surgical resection of brain metastasis local recurrence is about 60%. Whole brain Radiation Therapy (WBRT) can significantly reduce the risk of local relapse but fails to improve overall survival. The most important side effects of WBRT are neurocognitive deficits, which can reduce quality of life. The goal of this study is to evaluate the role of stereotactic fractionated radiotherapy (SFRT) in patients with one to three brain metastases after surgical resection.

Material and Methods: We performed a retrospective single-institutional study in 60 patients undergoing SFRT of surgical cavity after resection of ≤ 3 brain metastases (November 2009 - August 2013). The total irradiation dose was 30 Gy (5Gy/d, BED 45 Gy) after complete macroscopical resection and 35 Gy (5Gy/d, BED 52.5 Gy) in patients with macroscopic residual tumour after surgery. Macroscopic residual tumour was defined as contrast enhancement next to the resection cavity on the postoperative T1-MRI. We investigated local control (LC) as a primary endpoint. Intracranial distant intracranial tumour control (DC), overall survival (OS) and side effects were secondary endpoints.

Results: The median follow-up for 52 patients was 8 months (1 to 32 months). 8 patients were lost to follow-up, due to mortality or morbidity. There were 6 (11.5%) local failures and 29 (55.8%) distant failures. Local control was correlated with age ($p=0.046$). Thirty-seven of 60 (61.7%) patients died during follow-up. Median overall survival was 15 months. Cox regression for survival was significant for KPS score $\leq 70\%$ and size of PTV. No severe side effects were seen. Patients undergoing whole brain radiation therapy (WBRT) as salvage therapy in case of progression had no severe side effects.

Conclusion: SFRT could be an alternative to WBRT after surgical resection of brain metastasis. We had an encouraging rate of local control. Due to the high rate of distant intracranial failure regular follow-up with MRI is mandatory. No Grade 3, 4 or 5 adverse events were reported in patients undergoing WBRT or additional Stereotactic Radiotherapy as salvage therapy in case of intracranial progression. Prospective studies are warranted.

PO-0653

Surgical interventions after previous SBRT of the spine - increased risk for complications?

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Purpose or Objective: Stereotactic body radiotherapy (SBRT) of vertebral metastases has emerged as a promising methodology, offering high rates of symptom relief and local control combined with low risk of toxicity. Nonetheless, local failure or spinal instability may occur, generating the need for subsequent surgery in the irradiated region. This study evaluated whether there is an increased incidence of intra- and post-surgical complications after high-dose radiotherapy.

Material and Methods: Based on a retrospective international database of 704 cases of SBRT for vertebral metastases, 42 patients treated at 7 different institutions were identified who underwent surgery in a previously stereotactic irradiated region. Data regarding surgical characteristics and complications were available for 38 patients.

Results: Twenty women, 13 men, median age 59 years (range 27 to 84 years) underwent SBRT for vertebral metastases followed by surgery. In 18 cases, conventional radiotherapy had been delivered prior to SBRT at a median dose of 30 Gy in median 10 fractions. SBRT was most frequently administered in 1 fraction with a mean prescription dose of 20,9 Gy (mean EQD2/10 = 45,3Gy). The median time until the surgical intervention was performed was 7.5 months after SBRT. The most frequent reason for surgery was progressive pain (n=35) followed by progressive neurological deterioration (N=20) or fracture of the vertebral body (n=16). Therefore, open surgical decompression (n=29) and/or stabilization (n=22) were the most frequently performed surgical procedures. Increased fibrosis complicating the operation was explicitly stated in the surgical report in 5 cases. In 3 patients a durotomy occurred which could be sufficiently sealed during the operation in two cases and required surgical revision in 1 case. Median blood loss was 425 ml, but 5 patients had a blood loss of >1l during the procedure. After the operation, 2 patients suffered from an increased neurological deficit which could be explained by an epidural hematoma in one case. Delayed wound healing was reported in 4 cases. In one patient this lasted for 5 months after surgery until death. One patient died shortly after the surgical procedure due to unknown causes.

Conclusion: In this largest series of surgical interventions following spine SBRT, the overall complication rate was 45%. This appears to be higher when compared to primary surgery without previous SBRT. Therefore, spine surgery after SBRT is technically feasible. However, the decision to perform surgical procedures in these highly complex cases should be made by a multidisciplinary team and their performance in an experienced center may be beneficial.

PO-0654

Hypofractionated StereotacticRS for patients with brain metastases. Outcome evaluation and toxicity

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Purpose or Objective: Hypofractionated Stereotactic radiosurgery (HSRS) delivered in few fractions, up to 5, has been employed in patients with large brain metastases (BM), alone or after surgical resection on tumor bed, as an alternative to whole brain radiotherapy or to single fraction SRS with the aim to reduce late radiation-induced toxicity while maintaining high local control rate. The aim of this study was to evaluate the outcome and toxicity of patients treated for large brain metastases using HSRS, in terms of local control, incidence of distant brain metastases (DBM) and toxicity