

~50 patients have been seen with excellent patient satisfaction response and reduced time to treatment. ~20% patients had major change in treatment plan following multi-disciplinary evaluation. Additional efforts to develop a central BM database along with clinical and translational research programs are on-going. **CONCLUSIONS:** Establishment of a multi-disciplinary BMC to facilitate care and centralize research programs addresses a critical need for coordinated patient-centered BM management. This endeavor has enhanced patient experience through multi-specialty collaboration. Our program demonstrates the feasibility and effectiveness of a dedicated BMC in the treatment of this complex patient population.

MLTI-11. IMPLANTABLE POLYMERIC BCNU AS AN ADJUNCT TO SURGERY FOR METASTATIC INTRACRANIAL DISEASE

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SUMMARY: One hundred and thirty cases of craniotomy for tumor utilizing BCNU implantable chemotherapy were performed by the authors between including 23 cases for metastatic intracranial disease. The series included 12 women and 11 men with an average age of 56.9 years. The diagnoses were as follows: non-small lung carcinoma (13), breast cancer (6), small-cell lung cancer (1), colon cancer (1), unknown primary (2). Patients undergoing resection plus implantable chemotherapy following whole brain radiotherapy (5 patients) or following stereotactic radiosurgery (5 patients) were the most common. Only patient developed possible local recurrence (3%). Complications included two cerebrospinal fluid leaks with associated complications requiring reoperations (11%) both following whole brain radiotherapy and 3 patients (17%) with thromboembolic episodes (3 deep venous thromboses, one with a pulmonary embolus and sudural hematoma). In this challenging population, local implantable chemotherapy appears relatively safe and a reasonable consideration as a surgical adjunct.

MLTI-12. TIMING OF SYSTEMIC THERAPY ADMINISTRATION RELATIVE TO STEREOTACTIC RADIOSURGERY AND DEVELOPMENT OF RADIATION NECROSIS IN PATIENTS WITH BRAIN METASTASES

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PURPOSE: The mainstay of oncologic therapy for patients with brain metastases involves brain-directed radiation, increasingly given via stereotactic radiosurgery (SRS), and systemic therapy for extracranial disease control. We sought to investigate the association between the timing of systemic therapy and SRS administration on development of radiation necrosis among patients with brain metastases. **METHODS:** We retrospectively identified 429 patients treated at Brigham and Women's Hospital/Dana-Farber Cancer Institute with SRS for newly-diagnosed brain metastases between 2001–2015. Systemic therapy was tiered into 4 categories: chemotherapy, immunotherapy, hormonal therapy, and targeted therapy. All images were manually reviewed by two radiation oncologists specializing in brain tumors to assess the presence versus absence of radiographic necrosis. Patients with radiographic necrosis who harbored associated neurologic symptoms or were managed with steroids/bevacizumab/resection were considered to have symptomatic radiation necrosis. Data were analyzed using univariable Cox regression in SAS v9.4. The median follow-up in surviving patients was 1.79 years. **RESULTS:** In total, 252/429 and 361/429 patients received systemic therapy pre and/or post SRS, respectively. Patients receiving systemic therapy ≤ 5 days before SRS displayed higher rates of radiographic (HR 2.48, 95% CI 1.06–5.81, $p=.04$) and symptomatic (HR 3.74, 95% CI 1.08–12.98, $p=.04$) necrosis; a similar association was seen in patients receiving systemic therapy ≤ 5 days after SRS (HR 1.72, 95% CI 0.84–3.53, $p=.14$ and HR 4.42, 95% CI 1.75–11.14, $p=.002$, respectively). Trends towards increased necrosis risk were noted when comparing systemic therapy administration 1–5 days versus 6–10 days before/after SRS. The above 4 associations were significant when restricting the cohort to patients receiving targeted systemic therapy (HR-range 3.57–21.49, p -range 0.01–0.04). **CONCLUSIONS:** Our results suggest that a reasonable delay between SRS and systemic therapy administration may reduce rates of radiation necrosis, even among patients receiving targeted therapies. Validation in an independent data set would lend further support to this concept.

MLTI-13. RESPONSE ASSESSMENT OF MELANOMA BRAIN METASTASES TREATED BY STEREOTACTIC RADIOTHERAPY OR IMMUNOTHERAPY OR BOTH: A COMPARISON OF RECIST 1.1, RANO AND IRANO CRITERIA

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BACKGROUND: The evaluation of response for brain metastases (BM) may be challenging in the context of treatment by stereotactic radiotherapy (SRT) or immunotherapy or both. **METHODS:** We reviewed clinical and neuroimaging data of 62 melanoma patients with newly diagnosed BM treated by the combination of immunotherapy and SRT ($n=33$, group A), immunotherapy alone ($n=10$, group B) or SRT alone or in combination with other systemic therapies ($n=19$, group C). Response was assessed using RECIST 1.1, RANO or iRANO criteria. **RESULTS:** BRAF mutations were noted in 26 patients. 54 patients (87%) had 1–3 metastases. The median DS-GPA was 3. After a median follow-up of 30.5 months, 39 patients have experienced CNS progression, 16 (48.5%) in group A, 9 (90%) in group B, 14 (73.5%) in group C. Median PFS was 129.5 days (range 82–532) in group A, 75 days (range 35–203) in group B, 136 days (range 59–514) in group C. Forty-seven patients (76%) had died at the time of the analysis, 22 (66.5%) in group A, 7 (70%) in group B, 18 (94.5%) in group C. Median OS was 345 days (range 65–1824) in group A, 174.5 days (range 50–1361) in group B, 409 days (range 102–1244) in group C. 52 MRI scans were available for central review: pseudoprogression was documented in 9 patients (29%) in group A, 0 (0%) in group B, 5 (29.5%) in group C. Response rates were similar with all three sets of response criteria. Progressive disease was less often called when applying iRANO to assess SRT target lesions. **CONCLUSIONS:** Despite the retrospective nature and the small sample size, these data may indicate that the omission of SRT from first-line treatment may compromise outcome. Pseudoprogression is uncommon with immunotherapy alone; pseudoprogression rates were similar after SRT alone or in combination with immunotherapy or other systemic treatment.

MLTI-14. A SYSTEMATIC REVIEW OF TREATMENT PARADIGMS FOR PATIENTS WITH BREAST CANCER AND ONE OR MORE BRAIN METASTASES

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BACKGROUND: Upwards of 50% of patients with advanced breast cancer are diagnosed with brain metastases (BM). Treatment options for these patients have been rapidly evolving due to increased understanding of the tumor pathophysiology and its genetic underpinnings. This systematic review of randomized controlled trials (RCTs) aims to clarify the evidence guiding the treatment of brain metastases from breast cancer. **METHODS:** MEDLINE, EMBASE, Cochrane Controlled Register of Trials, ClinicalTrials.gov, and Web of Science were searched from inception to October 2018 for RCTs comparing treatments for breast cancer BM. We screened studies, extracted data, and assessed risk of bias independently and in duplicate. Outcomes assessed were overall survival (OS), progression-free survival (PFS), and adverse events (Grade 3+). **RESULTS:** Among 3188 abstracts, only 3 RCTs ($N=412$; mean sample size per group $N=54.7$) meeting inclusion criteria were identified. The studies were phase II or III open-label parallel superiority trials. Inclusion criteria among these trials consisted of age > 18 with radiologic evidence of > 1 BM. Exclusion criteria consisted of poor-performance functional status (ECOG > 2 or KPS < 70). The treatment groups included whole-brain radiation therapy (WBRT) vs WBRT + Temozolomide, WBRT vs WBRT + Efavoxir, and Afatinib vs Vinorelbine vs investigators' choice (86% of these patients received WBRT or SRS prior to study enrolment). While two trials found no significant difference in OS, one trial found significant improvement in OS with Efavoxir in addition to WBRT compared to WBRT alone (HR 0.52; 95% CI 0.332–0.816). No significant differences were found with PFS or rate of adverse events amongst treatment groups. **CONCLUSION:** Considering the high prevalence of breast cancer BM and our improved understanding of genomic/molecular features of these tumors, a greater number of RCTs dedicated to this disease are needed.

MLTI-15. A CASE SERIES OF PRE-OPERATIVE GAMMA-KNIFE RADIOSURGERY FOR RESECTABLE BRAIN METASTASES

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Recent advances in the systemic treatment of various cancers have resulted in longer survival and higher incidence of brain metastases. Phase 3 trials in North America and in Japan have demonstrated that stereotactic radiosurgery will be a standard adjuvant modality following surgery for resectable brain metastases. However, we don't know the optimal sequence of this combination therapy. We hypothesized that pre-operative stereotactic radiosurgery for resectable brain metastases provides favorable rates of local