CME-T34. IMPROVEMENT OF LEPTOMENINGEAL DISEASE FOLLOWING INFECTIONOUS MENINGITIS
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INTRODUCTION: The incidence of leptomeningeal disease (LMD) is increased following bacterial meningitis. Early intervention might improve systemic disease control. However, many of the systemic therapies do not cross the blood brain barrier (BBB) and, despite treatment with radiation and/or intrathecal (IT) chemotherapy, median survival is approximately 4-6 months in solid tumors complicated by LMD. Repeated IT injections increase the risk of CNS infection. Preclinical models have shown that infectious meningitis transiently modifies the BBB. METHODS: Our series consisted of 6 LMD patients (5 breast cancer primary, 1 lung cancer primary) treated on IT chemotherapy at MD Anderson Cancer Center between 2013 and 2018, who subsequently developed infectious meningitis. Three patients had a history of parenchymal metastases in addition to LMD and four had a history of radiation to brain and/or spine. LMD was confirmed by cytology and/or imaging. All were treated with IT toposetac. RESULTS: CSF cultures were positive for Propionibacterium acnes in three patients, Pseudomonas aeruginosa in two, and Raouletella ornithinolytica in one, who died shortly thereafter. Antibiotic regimens were variable. Three patients went on to receive IT chemotherapy post-infection. One patient who developed meningitis after Ommaya placement was never initiated on IT chemotherapy, still cleared his CSF of malignant cells. Excluding the patient who died shortly after meningitis diagnosis, the average time from meningitis diagnosis to death was 10.7 months (range 5.6 – 14 months). The average median (LM) diagnosis to death was 14 months. CONCLUSION: Our findings support further evaluating the safety and timing of IT chemotherapy with active infectious meningitis and the potential synergistic benefit of increased immunogenicity and chemotherapy in LMD.

CME-T35. COMPETING RISKS ANALYSIS OF FACTORS INFLUENCING DEVELOPMENT OF LEPTOMENINGEAL METASTASIS IN BREAST CANCER PATIENTS RECEIVING STEREOTACTIC RADIOSURGERY FOR LIMITED BRAIN METASTASES
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Leptomeningeal metastasis (LM) is a late stage manifestation of advanced breast cancer frequently managed with whole brain radiotherapy (WBRT) and/or intrathecal chemotherapy. A subset of LM patients who undergo stereotactic radiosurgery (SRS) for limited brain metastases (BM) ultimately develop LM. We hypothesized that this subset of high-risk patients may be identified by patient, disease, and/or treatment parameters. Clinical records from 133 breast cancer patients from Cleveland Clinic between 2013 and 2018 who subsequently developed leptomeningeal metastases were either stable (n=7) or had regressed (n=3), and the remaining (n=123) had an OS median follow-up duration was 97 days (range 79 – 180 days) during which all brain metastases were either stable (n=7) or had regressed (n=3), and the remaining (n=123) had an OS median follow-up duration was 97 days (range 79 – 180 days) during which 123 patients undergo clinical evaluation as part of ETA, which included gene mutations, gene expression, and mass cytometry. Freshly biopsied tumor tissue (primary / lymph node / liver) and peripheral blood of patients were used for integrational multi-analyte investigation of tumor and systemic biology. Clinical outcomes. Freshly biopsied tumor tissue (primary / lymph node / liver) and peripheral blood of patients were used for integrational multi-analyte investigations as part of ETA, which included gene mutations, gene expression, and in vitro chemosensitivity profiling of viable tumor cells. Based on ETA, patients received individualized therapy recommendations. All patients underwent a PET-CT scan as well as MRI scan prior to treatment start. In the current test version, the proportional hazard model was utilized to determine differences in OS. RESULTS: Eighty-four percent of patients received local therapy that included either surgery, stereotactic radiosurgery, or whole brain radiation therapy. In BRAF wild-type patients, 40 received ICI and 38 received standard therapy with median survival (5.6 vs 7.1 months) and 2-year survival (28% vs 32%), respectively (p=0.64). Of the BRAF mutant patients, 33 received ICI and 38 did not with a median survival (17.1 vs 9.0 months) and 2-year survival (36% and 19%), respectively (p=0.014). When controlling for age, KPS, ECM, and brain metastases, BRAF mutant BM patients treated with ICI compared to non-ICI had an OS hazard ratio, HR=0.4 (95% CI=0.21 – 0.78, p=0.0069). CONCLUSION: ICI therapy in BRAF mutant BM patients results in improved OS compared to those with non-ICI systemic therapy. No such difference was observed in the BRAF wild-type cohort.

CME-T36. IMMUNOTHERAPY VERSUS STANDARD OF CARE IN MELANOMA BRAIN METASTASES WITH KNOWN BRAF STATUS
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INTRODUCTION: Of the BRAF mutant patients, 33 received ICI and 38 did not with a median survival (17.1 vs 9.0 months) and 2-year survival (36% and 19%), respectively (p=0.014). When controlling for age, KPS, ECM, and brain metastases, BRAF mutant BM patients treated with ICI compared to non-ICI had an OS hazard ratio, HR=0.4 (95% CI=0.21 – 0.78, p=0.0069). CONCLUSION: ICI therapy in BRAF mutant BM patients results in improved OS compared to those with non-ICI systemic therapy. No such difference was observed in the BRAF wild-type cohort.

Brain metastasis in solid organ cancers is associated with adverse prognostic features which is further aggravated by limited systemic treatment options. Such patients are often also excluded from clinical trials since their poor prognosis is perceived to be at higher risk of developing LM and may benefit from stronger consideration of WBRT, intrathecal chemotherapy, and/or brain-penetrating systemic therapy.

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