TREATED WITH STEREOTACTIC IRRADIATION: DIAGNOSTIC CONTRIBUTION, FUNCTIONAL OUTCOME, AND PROGNOSTIC FACTORS
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BACKGROUND: Stereotactic irradiation (STI) is a primary treatment for patients with newly diagnosed brain metastases. Some of these patients experience local progression, which is difficult to differentiate from radiation necrosis, and difficult to treat. Just a few studies have clarified the prognostic and effectiveness of salvage surgery after STI. We evaluated the diagnostic value and improvement of functional outcomes after salvage surgery.

METHODS: We evaluated patients with brain metastases treated with salvage surgery for local progression from October 2002 to July 2019. These patients had undergone salvage surgery based on magnetic resonance imaging findings and/or clinical evidence of post-STI local progression and stable systemic disease. We employed two prospective strategies according to the eloquency of the lesions. Lesions in non-eloquent areas had been resected completely with a safety margin, utilizing a fence-post method; while lesions in eloquent areas had been treated with minimal resection and postoperative STI. Prognostic factors for survival were analyzed. RESULTS: Fifty-four salvage surgeries had been performed on 48 patients. The median age of patients was 64 years. The median diameter of the enhanced lesions was 35 mm (range 19–58 mm). The median overall survival was 20.2 months from salvage surgery and 37.5 months from initial STI. Primary cancers were breast (31), breast vs. others: HR: 0.17), (breast vs. others: HR: 0.08) and RPA class 1–2 (RPA 1 vs. 3, HR: 0.13), (RPA 2 vs. 3, HR: 0.4) were identified as good prognostic factors for overall survival (OS) in multivariate analyses. CONCLUSION: We insist that salvage surgery leads to rapid improvement of neurological function and clarity of histological diagnosis. Salvage surgery is recommended for large lesions especially with surrounding edema either in eloquent or non-eloquent areas.

11. ASSOCIATION OF TUMOR EXPOSURE TO CEREBROSPINAL FLUID SPACES TO LEPOMENINGEAL DISEASE IN PATIENTS WITH BRAIN METASTASES
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BACKGROUND: Development of leptomeningeal disease in patients with brain metastases is associated with extremely poor survival. Identification of the underlying pathogenesis of leptomeningeal disease is unknown.

METHODS: This retrospective case control study included consecutive adult patients with at least one cerebral metastasis from a known extra-cranial primary solid malignancy and at least 3 months follow up (n=666). Patients were treated with radiotherapy with or without surgical resection and primary outcome was development of leptomeningeal disease. RESULTS: The overall rate of leptomeningeal disease was 15.0%. Rates of developing leptomeningeal disease correlated with the presence of a peritumoral necrosis (6.0% vs. 7.0%, P=0.0005), intraventricular lesion (29.4% vs. 14.3%, P=0.0089), and with intracerebral lesions with sulcal or cortical enhancement (100% vs. 12.9%, P=0.0001). Rates of developing leptomeningeal disease were not independent associated with age at surgery (17.2% vs. 14.2%, P=0.4859), however did occur significantly more often with piecemeal, as opposed to en bloc, resection (31.3% vs. 8.1%, P=0.0138) or when the ventricle was entered (61.5% vs. 18.9%, P=0.0001). CONCLUSIONS: Metastases that are in contact with cerebrospinal fluid spaces are associated with a higher rate of subsequent leptomeningeal disease, with or without surgical resection. Future studies should investigate the use of neoadjuvant radiation, whole brain radiation therapy or adherence to strict surgical technique in high risk brain metastasis patients to mitigate this probability.

12. OUTCOMES AFTER SURGICAL RESECTION OF MELANOMA BRAIN METASTASES IN THE AGE OF CHECKPOINT INHIBITOR TREATMENT
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BACKGROUND: Metastasis of melanoma to the brain is associated with poor outcomes. Recent trials demonstrate improved survival after treatment with immune checkpoint inhibitors. OBJECTIVE: To examine the impact that checkpoint inhibitor treatment has on overall survival (OS) and cen...