

MET-02

NEOADJUVANT FRACTIONATED STEREOTACTIC RADIOTHERAPY FOLLOWED BY SURGERY FOR LARGE BRAIN METASTASIS WITH DIFFICULTY IN EN-BLOCK RESECTION

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BACKGROUND: Large brain metastases which require resection are treated with surgery followed by whole brain radiation therapy or postoperative stereotactic radiosurgery (SRS). Recently a novel strategy using neoadjuvant stereotactic radiosurgery (Na-SRS) followed by surgery was reported, demonstrating lower rates of postoperative leptomeningeal dissemination (LMD) and symptomatic radiation necrosis (sRN). However, local control rate was not significantly improved. We treated with neoadjuvant fractionated stereotactic radiotherapy (Na-frSRT) followed by surgery for large brain metastasis with difficulty in en-block resection.

METHODS: Nine patients received Na-frSRT followed by surgery between July 2019 and June 2020. Na-frSRT dose was based on lesion size and was standard dosing. Surgery generally followed within 7 days after radiotherapy.

RESULTS: The mean age was 64 years (55–78). Eight men and one woman. Median follow-up period was 5.3 months (1.7–12.5). Primary cancers were non-small cell lung cancer 2, esophageal cancer 2, colon cancer 1, melanoma 1, hepato-cellular carcinoma 1 and recurrence of BM from small cell lung cancer and renal cell cancer. The median maximum tumor diameter was 4.3cm (2.6–4.9). The median SRT dose was 30Gy/5fr, and the median time from SRT to surgery was 4 days (1–7). Median PTV was 15.4ml (5.6–49.7), and median GTV was 21.7ml (8.6–61.4). As preoperative adverse event, intracranial hypertension grade2 (CTCAE ver.4.0) was occurred one patient, but controlled with steroid and osmotic diuretics. Grade 3 and more adverse events were not occurred. Gross total resection with intra-tumoral decompression and piece-meal technique was performed in all cases as planning. Event cumulative incidence as follows: surgical site recurrence 0%; local recurrence 11.1%; distant brain failure 11.1%; LMD 0%; and sRN 0%. The median overall survival was not reached.

CONCLUSIONS: Na-frSRT followed by surgery is safety and feasible, and may have therapeutic value for large brain metastasis. Further prospective investigations in multi-institutional settings are warranted.

MET-04

A CASE OF BRAIN METASTASES WITH REPEATED BLEEDING FROM ESOPHAGEAL CARCINOMA

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Brain metastases from esophageal cancer is rare and the incidence has been reported at approximately 5%. We report a case of brain metastases with repeated bleeding from Esophageal carcinoma. The case is a 76-year-old man. Three years ago he was diagnosed with small cell carcinoma of the esophagus by endoscopic biopsy. Metastasis was found only in the cervical lymph node, but the condition was stable by chemoradiotherapy and no metastases were found throughout the body before 1 month. He was admitted to the hospital because of a sudden convulsion, and CT scan revealed cerebral hemorrhage in the right frontal lobe. We performed conservative treatment, but rebleeding was observed from the same site repeatedly after 1 month and 2 months. Due to the influence of bleeding, it was difficult to distinguish cerebral hemorrhage from brain tumor by contrast MRI. After surgery, the cause of bleeding was diagnosed as metastatic brain tumor of esophageal small cell carcinoma. Postoperative radiation therapy was performed in another hospital, but rebleeding was observed 3 months after the operation. A reoperation was performed at another hospital, and a recurrence of metastatic brain tumor was diagnosed. In the case of highly malignant metastatic brain tumors, it was considered necessary to frequently follow the images.

MET-05

CLINICAL INVESTIGATION OF TREATMENT RESULTS AND RECURRENCE PATTERNS OF METASTATIC BRAIN TUMORS FROM THE VIEWPOINT OF POSTOPERATIVE IRRADIATION

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While whole brain radiation therapy (WBRT) had been the standard postoperative radiation therapy for metastatic brain tumors for long time,

recently local radiation therapy (LRT) has become to be a new standard due to the accumulation of clinical evidences. Treatment results and pattern of recurrence were retrospectively analyzed from view point of postoperative radiotherapy. In this study, totally 69 patients were included and they were divided into WBRT group or LRT group. We analyzed the number of lesions, treated era, overall survival after diagnosis of metastasis (OS), recurrence free survival after RT (RFS), and patterns of recurrences. The subjects consisted of 37males and 32 females and average age was 61.7 years old. There were 49 cases in the WBRT group and 20 cases in the LRT group. While all cases before November 2017 had WBRT performed, LRT was adopted mainly in cases with a small number of metastases since December 2017. Although there was a difference in the observation period between the two groups, OS tended to be longer in the LRT group (P=0.08), while RFS tended to be shorter in the LRT group (P=0.08). Radiological recurrence after RT was observed in 7 cases in both groups, and in WBRT group, all cases were local recurrence, whereas in LRT group, all cases were new lesions or disseminated recurrence. Although there are biases such as the difference in observation period between the two groups and the tendency to adopt WBRT in cases with a large number of metastases, there is a possibility that postoperative LRT is not inferior to WBRT, especially for cases with a small number of metastases. However, we have experienced some cases of disseminated recurrence, and so it is necessary to consider the resection fashion such as whether en-bloc resection or piece meal resection when selecting postoperative RT.

MET-08

AIR IN CISTERN OR VENTRICLE AFTER BRAIN METASTASIS SURGERY IS A PREDICTOR OF EARLY POSTOPERATIVE INTRACRANIAL RECURRENCE

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INTRODUCTION: The operations of brain metastasis are on the increase as a result of more routine diagnostic imaging and improved extracranial systemic treatment strategies. Opening of the cistern or ventricle during tumor resection may promote local recurrence and cerebrospinal fluid dissemination. We investigated whether the air found in the cistern/ventricle on postoperative Computed tomography (CT) was a predictor of postoperative recurrence.

METHODS: Between 2012 and 2019, 27 patients with single brain metastasis were treated with gross total resection at our hospital. The patients in which air was found in the cistern or ventricle of the head CT on the day after surgery was designated as air(+) group, and the patients without air was designated as air(-) group. The primary outcome was the local recurrence, as diagnosed with neuroimaging. The death due to other than brain metastasis was defined as competing risk.

RESULTS: CT air(+) group was 17 patients, whereas CT air(-) group was 10 patients. There was no significant difference between the two groups, such as age and sex. Estimated 1-year brain tumor recurrence rate was 70% in the air(+) group and 5.9% in the air(-) group. (p = 0.004). On the other hand, no significant difference was observed in estimated 1-year competing risk between in the air(+) group (10%) and in the air(-) group (2.4%).

CONCLUSION: En bloc resection of brain metastasis is effective, but there was no report on the risk of opening the cistern or ventricle. Our results indicate that postoperative air presence in the cistern or ventricle could be a predictor of early postoperative recurrence. In metastatic brain tumor removal, the cistern and ventricle should not be opened, and close follow-up should be done if air in the cistern or ventricle is detected on postoperative CT.

MET-09

PROGNOSIS PREDICTION STUDY OF USING SUSCEPTIBILITY-WEIGHTED IMAGING IN METASTATIC BRAIN TUMORS

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BACKGROUND AND PURPOSE: MRI is a very useful tool especially for metastatic brain tumor. It can grasp the status of treatment and progress of primary lesion. In this study, we investigated the prognosis by using SWI (Susceptibility-weighted imaging) or T2 *sequences in MRI. **MATERIALS AND METHODS:** The study includes 69 patients who took a surgical treatment at our hospital from March 2014 to June 2020. Grade ranged from 0 to 2, with 0 defined as high signal intratumor, 1 defined as within 10 dark spots, 2 as almost consists with dark spot intratumor. **RESULTS:** The median age of the patients was 66 years and 38 males (55%). The primary tumors were lung cancer in 28 cases (40.7%), breast cancer in 12 cases (17.4%), gastrointestinal cancer in 11 cases (15.9%), kidney cancer in 5 cases (7.2%), and others in 13 cases (18.8%). The SWI or T2 star images showed that