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 local recurrence compared to 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-fSRT) followed by surgery for large brain metastasis with difficulty in en-block resection.

METHODS: Nine patients received Na-fSRT followed by surgery between July 2019 and June 2020. Na-fSRT 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, hepatocellular 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 FTV was 15.4mL (3.6–49.7), and median FTV was 23.7mL (1.3–61.4). An intraoperative adverse event, intracranial hypertension grade2 (CTCAE ver.4.0) was observed in one patient, but controlled with steroid and osmotic diuretics. Grade 3 and more adverse events were not observed. 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-fSRT followed by surgery is safe 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 convolution, 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 RECURRENT PATTERN 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 be proven a 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 radiation therapy. 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 37 males 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.
grade 0 was 23 cases (33%), grade 1 was 18 cases (26%), grade 2 was 28 cases (41%). There were 16 deaths in grade 0 (69.6%), 10 deaths in grade 1 (55.6%), 15 deaths in grade 2 (53.3%). CONCLUSIONS: In this study, there was no statistically significant difference in the SWI or T2* post group. However, there was a tendency for many long-term survivors in the SWI or T2* positive group.

MET-10
PRELIMINARY REPORT OF RADIOTHERAPY FOR BRAIN METASTASES FROM BREAST AND KIDNEY USING MASK SYSTEM OF LEKSELL GAMMA KNIFE ICON
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OBJECT: Leksell Gamma Knife Icon enables us to apply new methods of immobilization using mask fixation and the option of fractionated treatment. This provides exceptional accuracy and precision of radiosurgery, making it a possibility for many more disease types and many more patients to be treated.

METHODS: We retrospectively analyzed 97 patients (140 times) with brain metastases from breast (B group) and 26 patients (33 times) with brain metastases from kidney (K group) and who underwent Gamma Knife Icon using mask fixation between September 25th, 2017 and June 30th, 2020 at Rakusai Shimizu Hospital. Patients with small, few, newly diagnosed, and non-eloquent area tumors were treated in a single session. If the tumor volume was larger than 5.0 ml, recurrence, or the location was in an eloquent area, we applied a fractionated schedule. If the tumor number was large, we selected a multisession schedule. Median tumor number was three (1–64) in B group and two (1–31) in K group. Median tumor size was 2.7 (0.01–58.8) ml in B group and 2.8 (0.02–123.5) ml in K group. We selected fractionated schedules as follows: 7.0 Gy x 5Fr (5–10 ml), 4.2 Gy x 10Fr (10–20ml), 3.7 Gy x 10Fr (20-30ml), 3.2 Gy x 10Fr (30ml–).

RESULTS: 32 (B) and 14 (K) cases were treated in a single session, 80 (B) and 17 (K) with fractionation, and 28 (B) and 2 (K) with multiple sessions. Median survival times after Icon treatment was 28.2 (B) and 15.5 (K) months. Local control rates were 89% (B) and 85% after 12-month Icon treatment. Qualitative survival rates were 91% (B) and 68% (K) after 12-month Icon treatment. There were no statistically differences between two groups.

CONCLUSIONS: Although these results are limited to short periods, survival rates, local control rates and qualitative survival rates were within the acceptable ranges.

RARE CASE SERIES (CS)

CS-01
RAPID RECURRENCE AND ANAPLASTIC TRANSFORMATION OF A PILOCYTIC ASTROCYTOMA IN AN ELDERLY PATIENT
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BACKGROUND: Rapid recurrence of a pilocytic astrocytoma with anaplastic transformation is extremely rare. The case of an elderly patient with a cerebellar pilocytic astrocytoma with anaplastic transformation during short-term follow-up is reported. CASE DESCRIPTION: An 83-year-old woman presented initially with dizziness and a gait deviation to the right. Magnetic resonance imaging (MRI) demonstrated a homogeneously enhanced mass in the right cerebellar hemisphere, and the tumor was subtotally removed by right suboccipital craniotomy. Histological examination showed that the tumor cells contained eosinophilic cytoplasm and spindle-shaped processes with Rosenthal fibers and eosinophilic granular bodies, diagnosed as a typical pilocytic astrocytoma (PA). The MIB-1 index was less than 1%. The patient did not receive postoperative adjuvant radiation and chemotherapy. Two months after surgery, MRI showed growth of the residual tumor adjacent to the fourth ventricle, causing obstructive hydrocephalus. She underwent surgery again, and the tumor was totally removed. Histological findings showed mitotic cells and increased cellularity compared with the primary tumor, which was compatible with anaplastic transformation of PA with a MIB-1 index of 50%. Postoperatively, it was observed with best supportive care without postoperative adjuvant therapy. Nine months after the second operation, she died due to tonsillar herniation and obstructive hydrocephalus caused by a recurrent tumor. An autopsy was performed.

CONCLUSIONS: It is extremely rare, as in the present case, that a cerebellar PA in an elderly patient recurs rapidly with anaplastic transformation, despite deferred postoperative adjuvant therapy including radiation and chemotherapy. A novel molecular-targeted therapy is needed for anaplastic PA showing aggressive biological behavior.

CS-03
BRAF V600E MUTATION MEDIATES FDG-METHIONINE UPTAKE MISMATCH IN POLYMORPHOUS LOW-GRADE NEUROEPITHELIAL TUMOR OF THE YOUNG
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We present a case of a 14-year old boy with tumor-associated refractory epilepsy. Positron emission tomography imaging demonstrated a region with heterogeneous high 11 C-methionine uptake and a region with homogenous low 18 F- fluorodeoxyglucose uptake within the tumor. Histopathological and genomic analyses confirmed the tumor as BRAF V600E-mutated PLNTY (polymorphous low-grade neuroepithelial tumor of the young). Within the high-methionine-uptake region, we observed increased protein levels of L-type amino acid transporter 1 (LAT1) and constituents of the mitogen-activated protein kinase (MAPK) pathway. We also found that LAT1 expression was linked to BRAF V600E mutation and subsequent activation of MAPK signaling. Pharmacological inhibition of the MAPK pathway suppressed LAT1 expression and cell viability in PLNTY cells. Collectively, our results indicate that BRAF V600E mutation-activated MAPK signaling indicates specific metabolic alterations in PLNTY, and may represent an attractive target in the treatment of the disease.

CS-09
EXTRA-PARENCYHAL (PERIPHERAL) ATYPICAL TERATOMATOID / RHABDOMYOID TUMORS
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AT/RT is a malignant embryonal tumor reported by Rorke in 1996. Authors reported first AT/RT in Japan in 1998. This tumor entity was included as new malignant embryonal tumor in WHO 2000, and tumors of Japanese patients has been reported more than 80 cases in the past. This AT/RT is a tumor in the brain parenchyma that a medulloblastoma and PNET and the possibility that it has been misdiagnosed have had pointed out. On the other hand, it is reported that there is the type that we should call peripheral AT/RT which rarely occurs in extra-parenchyma. We want to propose that there is such special tumor group. In the results, age: 17 infants were