

ML-14

LOW INVASIVE APPROACH FOR PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA TREATMENT INVOLVING RITUXIMAB-METHOTREXATE + PROCARBAZINE + VINCRISTINE AND TRIPLE INTRATHECAL INJECTION

Takahiro Ogawa¹, Kei Oowada¹, Kazuna Tanba, Kouichi Hirakawa;
¹Department of Neurosurgery, Fukuchiyama City Hospital, Fukuchiyama City, Kyoto, Japan

INTRODUCTION: Although the treatment outcomes of primary central nervous system lymphoma (PCNSL) with multiple treatment regimens involving high-dose methotrexate (MTX)-based multiagent chemotherapy have improved compared with the outcomes with high-dose methotrexate therapy in recent years, its regimen has not been established. Additionally, it is controversial whether intrathecal (IT) MTX injection can be included in a regimen. Our facilities treat PCNSL with R-MPV (rituximab-methotrexate + procarbazine + vincristine) and triple IT injection (methotrexate + Ara C + prednisolone). Here we report a low invasive approach for PCNSL treatment involving R-MPV therapy and triple IT injection. **CASE DESCRIPTION:** A 58-year-old woman complained of prolonged headache and had undergone a medical checkup at our department. Head computed tomography revealed a mass lesion with edema near the right anterior horn of the lateral ventricle. After being hospitalized, biopsy was performed via a small craniotomy for the mass lesion near the right anterior horn of the lateral ventricle, which was suspected to be PCNSL. Multipurpose Head Frame 2 (Mizuho Co., Ltd.) was used for four points of head fixation. Vertek Biopsy Kit (Medtronic Co., Ltd.) was attached to it, and needle biopsy guided by neuronavigation was performed. Finally, biopsy samples were obtained from the lesion. Changes in the entry and target points could be easily made through the operative procedure, which was performed uneventfully. The diagnosis was B-cell-related lymphoma. Subsequently, an Ommaya reservoir was placed via lumbar puncture on postoperative day 7. Finally, the patient was successfully treated with R-MPV therapy and triple IT injection, thereby avoiding repeated lumbar puncture and reduced pain associated with IT injection. **CONCLUSION:** We have reported the diagnosis of PCNSL with needle biopsy guided by neuronavigation and its treatment with R-MPV therapy and triple IT injection after lumbar Ommaya reservoir placement. This approach was associated with reduced invasion and pain in the patient.

CNS METASTASIS (MET)

MET-01

INDICATION AND OUTCOME OF SALVAGE SURGERY FOR LOCAL PROGRESSION OF BRAIN METASTASIS PREVIOUSLY TREATED WITH STEREOTACTIC IRRADIATION

Koichi Mitsuya¹, Shoichi Deguchi¹, Yoko Nakasu¹, Nakamasa Hayashi¹;
¹Division of Neurosurgery, Shizuoka, Japan

PURPOSE: To determine treatment outcome following salvage surgery (SS) for local progression of brain metastasis treated by stereotactic irradiation (STI). **METHODS:** The clinical records of patients who underwent SS of local progression of brain metastases after STI at our institute between October 2002 and July 2019 were retrospectively reviewed. Kaplan-Meier curves were used for the assessment of overall survival (OS). The decision to perform SS was based on findings of magnetic resonance imaging and/or clinical evidence of local progression of the brain metastases and status of systemic disease. Prognostic factors for survival were analyzed; age, sex, primary cancer, RPA classification at surgery, extent of resection, radiotherapy after salvage surgery, and pre-surgical neutrophil-to-lymphocyte ratio (NLR). **RESULTS:** Fifty-four SS of 48 patients were performed. The median age of the patients was 63 years (range 36–79). The median interval from STI to SS was 12 months. The median overall survival was 20.2 months from SS. Primary cancer were lung 34, breast 10, and other 10. Fourteen of 54 lesions (26%) developed local recurrence. Leptomeningeal dissemination occurred after the SS in 3 patients (5.7%). RPA classification (1 vs 3, HR:0.16, 95%CI: 0.03–0.59) (2 vs 3, HR:0.44, 95%CI:0.19–0.97) and primary cancer (breast vs lung, HR:0.21, 95%CI:0.05–0.64) (breast vs others, HR:0.08, 95%CI:0.015–0.32) (lung vs others, HR:0.38, 95%CI:0.16–0.94)) were identified as good prognostic factors of overall survival in multivariate analysis. The optimum NLR threshold value was identified as 3.65 for 1-year survival from SS (AUC0.62, sensitivity:71%). **CONCLUSIONS:** Salvage surgery for local progression of brain metastases after STI in selected cases leads to a meaningful improvement in survival.

10070: MET-02

NON-SMALL-CELL LUNG CANCER WITH SYNCHRONOUS BRAIN METASTASIS IN THE ERA OF MOLECULAR TARGETED DRUGS: TREATMENT OUTCOME AND RISK FACTORS

Takeo Uzuka¹, Fumi Higuchi¹, Phyo Kim¹, Keisuke Ueki¹;
¹Department of Neurosurgery, Dokkyo Medical University, Mibu, Tochigi, Japan

Brain metastasis is associated with worse prognosis in patients with non-small cell lung cancer (NSCLC). However, recent advances in molecular targeted therapy are rapidly changing the treatment strategy for NSCLC. Here, we conducted a retrospective study to clarify the prognosis and risk factors in NSCLC patients with synchronous brain metastasis. Seventy-four patients who were treated at our institute between Jan 2013 and Apr 2019 were included. The association between overall survival (OS) and clinicopathological features, such as neurological symptoms at diagnosis, histology, EGFR and ALK mutation status, number of intracranial metastases, extracranial systemic metastasis, Karnofsky performance status (KPS) at diagnosis, and initial therapy, were examined. OS was calculated from the day of diagnosis with brain metastasis or NSCLC. Of the 51 men and 23 women enrolled (median 70.0 years of age, range 40–84), 26 patients (35.1%) exhibited neurological symptoms at diagnosis. EGFR and ALK mutations were present in 24 (32.4%) patients. The median OS for all patients was 23.0 months. Factors significantly associated with worse OS in univariate analysis were symptomatic lesions and the absence of a driver mutation. Driver mutation status was only an independent prognosis factor in multivariate analysis. On lung-mol GPA score, the patients greater than or equal to 2.5 were significantly better prognosis compared with less than 2.5 (median OS: 40.0 VS 10.0 months, respectively). Our cohort of 74 NSCLC patients with synchronous brain metastasis had a median OS of 23.0 months. This much longer OS may reflect recent advances in treatment, particularly the availability of molecular targeted drugs. Lung-mol GPA score was considered as a useful tool to estimate the prognosis; thus, the information of KPS score, extracranial metastasis, brain metastases numbers, and driver mutation status are essential to build a treatment strategy for synchronous brain metastasis from NSCLC.

MET-04

EVALUATION OF PERITUMORAL BRAIN PARENCHYMA USING CONTRAST-ENHANCED FIESTA IMAGING FOR DIFFERENTIATING METASTATIC BRAIN TUMORS AND GLIOBLASTOMAS

Junkoh Yamamoto¹, Shingo Kakeda, Yukunori Korogi,
 Takeshi Saito¹, Yoshiteru Nakano¹;
¹Department of Neurosurgery, University of Occupational and Environmental Health

Introduction: Metastatic brain tumors and glioblastomas commonly revealed heterogenous enhancement lesions with peritumoral brain edema on magnetic resonance imaging (MRI). In particular, distinguishing solitary metastatic brain tumors from glioblastomas is difficult on conventional MRI. Fast imaging employing steady-state acquisition (FIESTA) can emphasize the water content signal with a high spatial resolution. In this study, we evaluate a role of contrast-enhanced FIESTA(CE-FIESTA) by focusing on the peritumoral brain parenchyma between metastatic brain tumors and glioblastomas. **Materials and Methods:** We included patients who underwent initial surgery and were histologically diagnosed with metastatic brain tumor (43 cases) or glioblastoma (14 cases) between November 2008 and May 2016. We evaluated CE-FIESTA findings of peritumoral brain parenchyma. Next, we performed an observer performance study with neuroradiologists based on the findings of peritumoral brain parenchyma using conventional MRI and CE-FIESTA. **Results:** CE-FIESTA revealed hyperintense rim in peritumoral brain parenchyma. We classified hyperintense rim in three groups, as follow: type A, no hyperintense rim; type B, partial hyperintense rim; and type C, extended hyperintense rim. Regarding the diagnosis of metastatic brain tumors, the observer performance demonstrated high sensitivity (95.3%), specificity (85.7%) and accuracy (93.0%) of type C on CE-FIESTA, and thus, CE-FIESTA could distinguish metastatic brain tumors from glioblastomas with high accuracy. **Conclusions:** CE-FIESTA may provide useful information for distinguish metastatic brain tumors from glioblastomas, focusing on the differences in the peritumoral brain parenchyma.

MET-05

PRELIMINARY REPORT OF RADIOTHERAPY FOR BRAIN METASTASES FROM GASTRO-INTESTINAL CANCERS USING MASK SYSTEM OF LEKSELL GAMMA KNIFE ICON

Takuya Kawabe¹, Manabu Sato¹;
¹Department of neurosurgery, Rakusai Shimizu Hospital

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 50 patients (71 times) with brain metastases from gastro-intestinal cancers who underwent Gamma Knife Icon using mask fixation between September 25th, 2017 and June 30th, 2019 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.