**NQPC-14**

**COMPARISON OF QOL SCALES IN PATIENTS WITH BRAIN TUMORS**

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PURPOSE: Measurement of quality of life (QOL) of patients with brain tumors is a challenge, because parameters of the established QOL scales for cancer patients are easily affected by the focal neurological deficits. Thus, simpler QOL scales which are feasible for evaluation of QOL with severe neurological deficits are required. We compared the results of four QOL scales in patients with brain tumors. METHODS: From 2015 to 2018, we prospectively performed EORTC QLQ-C30/BN20 (C30/BN20), KPS, EQ-5D and "Distress and Impact Thermometer (DIT)" every three months. RESULTS: 2150 QOL evaluations from 710 patients were analyzed. The median age was 54 years (range 14–97). 319 glioma, 93 meningioma, 165 brain metastases and 133 other brain tumors were included. Global health status of C30/BN20 strongly correlated with QOL scores calculated by EQ-5D and DIT; it also showed correlation with KPS (correlation coefficients: 0.632, -0.675, -0.622, 0.412, respectively ($p<0.001$)). Most items of C30/BN20 showed relatively strong correlation with QOL scores, whereas KPS strongly correlated to physical activities and DIT strongly correlated to items related to psychological status. Seizures did not corelate with any other QOL scales. In patients with KPS≤60, wide dispersion of QOL scores and DIT were observed. In these patients, KPS correlated only with items 1–3 of EQ-5D and DIT with item 5. When time course of QOL scores in malignant glioma was evaluated, it was maintained until first remission, and significantly impaired at recurrence, compared to onset ($p=0.014$). CONCLUSION: QOL scores can be used as an alternative for C30/BN20, and QOL time course of glioma can be adequately evaluated with it. KPS and DIT can also be alternative scales. These two scales should desirably be used in combination in patients with low KPS. Evaluations of feasibility and validity of these QOL scales in patients who cannot answer C30/BN20 are warranted.

**NQPC-15**

**COGNITIVE FUNCTION AND ACTIVITY OF DAILY LIFE AFTER TUMOR REMOVAL FOR PATIENTS WITH BIFRONTAL GLIOBLASTOMA**

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INTRODUCTION: Glioblastomas often grow in a butterfly shape in the bifrontal lobes. The aggressive removal of these contrast-enhanced lesions may cause serious cognitive dysfunction. In this study, we have analyzed changes of cognitive function, effects on ADL, as well as rehabilitation methods for patients with bifrontal glioblastoma before and after tumor removal. SUBJECTS: In this study, 6 patients including 2 males and 4 females with a mean age of 39.8 were reviewed. All patients exhibited bifrontal glioblastoma that was surgically removed. The primary tumor location was lower-left frontal gyrus for four of the patients, the right preSMA-SMA region for one patient, and the lower-right frontal gyrus for the remaining patient. METHOD: Patients'cognitive function and ADL evaluated after the tumor removal and at the end of postoperative chemoradiotherapy, were retrospectively analyzed. We compared and verified the features and EOR. An evaluation was performed using MMSE-J, FAB, TMT, RCPM, RBMT, BADS, and FIM. RESULT: After completion of chemoradiotherapy, 3 patients returned home, 2 were transferred to the hospital, and 1 returned to work. MMSE score was worsen in two patients, and their tumor were located in the lower-right frontal gyrus and the lower-left frontal gyrus. Two cases in the right frontal lobe and two cases in the lower left frontal gyrus scored lower average on the TMT. In our final evaluation, ADL was not worsening after surgery. DISCUSSION: Many patients with bifrontal glioblastoma exhibited disturbance of consciousness due to strong edema before surgery, but they recovered in about two months after the tumor removal and many of them considered back to work. Involvement of prefrontal cortex may be related to severe cognitive dysfunction. Active rehabilitation should be started as soon as possible after surgery to acquire a compensation functions for the cognitive disorders and simulation for social life and work.

## PCNSL (ML)

**ML-02**

**MULTIAGENT IMMUNOCHEMOTHERAPY, R-MPV-A, FOR PATIENTS WITH SECONDARY CENTRAL NERVOUS SYSTEM LYMPHOMA**

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BACKGROUNDS: Standard of care (SOC) for primary central nervous system lymphoma (PCNSL) has been induction therapy with high-dose methotrexate (MTX)-based multiagent immunochemotherapies followed by consolidation, and we have shown that one such regimen, R-MPV-A have superior efficacy over HD-MTX alone with whole brain radiotherapy (WBRT). While SOC for secondary CNS involvement of systemic diffuse large B-cell lymphoma (DLBCL)(SCNSL) has not been established. Here we report the outcome of R-MPV-A for patients with SCNSL. PATIENTS AND METHODS: Fifteen patients with SCNSL treated with R-MPV-A from January 2014 to January 2019 in Kyorin University Hospital were eligible. Prior treatment for systemic DLBCL was mostly R-CHOP. Response and survival outcomes were evaluated. RESULTS: Median age was 68.0 y (55–84), male/female 6/9, median KPS 70 (40–90), histopathological confirmation was achieved in 12 patients (80%; biopsy 11). RMPV (rituxim ab+MTX+procarbazine+vincristine) 3 cycles in 3, 4–7 cycles in 6, 8 cycles in 5. WBRT and cytarabine were delivered in 6 and 9 patients, respectively. R-MPV resulted in 6 CRs/CRus, 5 PRs, 1 SD, and 2 PDs (Response rate 73%). R-MPV-A including consolidation led to 9 CRs/CRus, 2 PRs, 1 SD, and 2 PDs (complete response rate 60%). With median F/U period of 11.2 m (0.1–51.5), 1y-PFS and 2y-PFS of R-MPV-A were 66.0% and 56.6%, 1y-OS and 2y-OS were 72.2% and 72.2%, respectively. Median PFS/OS were not reached. Consolidation cytarabine was associated with better outcome. Three deaths occurred during the treatment (20%; two during R-MPV with aged 70s, KPS 40 and 50; one presented MTX clearance delay). No other serious adverse events were observed. CONCLUSIONS: These results suggest the certain efficacy of R-MPV-A for SCNSL. Being heavily pretreated frequently, precautions should be taken to identify high risk cases.

**ML-03**

**RECONSIDERATION OF TREATMENT FOR ELDERLY PATIENTS WITH PRIMARY CENTRAL NERVE SYSTEM LYMPHOMAS**

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BACKGROUND: The therapeutic response to high-dose methotrexate therapy (HD-MTX) for primary central nervous system lymphoma (PCNSL) varies. Polyglutamylation (PG) is a reversible protein modification, tumor cells show frequent occurrence of PG. Intracellularly polyglutamylated MTX is not subject to competitive inhibition by leucovorin (LV). Tumor cells with high PG levels are selectively killed, whereas normal cells with lower PG are rescued by LV. We previously reported that PG is a predictor of therapeutic response to HD-MTX in PCNSL. However, PG did not affect overall survival (OS) in the elderly unlike the young patients, suggesting that there are other significant predictors in the elderly. The aim of this study is to identify the prognostic factors in aged PCNSL. METHODS: The prognostic factors were investigated in 48 patients (M/F=23/25) aged 65 and older undergoing HD-MTX in our institute with data of area under the concentration-time curve of MTX, $AUC_{MTX}$ (μmol/L/h). RESULTS: The median OS of elderly PCNSL was 937days. In the $AUC_{MTX}$ high group (median 1706.3 or more, n=24) and the low group (median below, n=24), OS was significantly shortened in the high group compared with the low group (median 728 vs 1290days, $p=0.032$). Even in multivariate analysis, AUC was the only independent poor prognostic factor of OS ($p=0.031$). On the other hand, AUC was not a prognostic factor for OS in PCNSL younger than 65 years. $AUC_{MTX}$ of aged PCNSL was significantly higher compared with younger patients ($p<0.01$). These results suggested that PG may be a good prognostic factor of OS when $AUC_{MTX}$ is low. CONCLUSION: In the aged PCNSL, OS was shortened when $AUC_{MTX}$ was high. With the results of the previous research, it is suggested that if PG levels is high in elderly PCNSL, the OS prolongation can be expected if the MTX dose is reduced.

**ML-04**

**PROGNOSTIC SIGNIFICANCE OF IMMUNOHISTOCHEMICAL SUBTYPES BASED ON THE STAGE OF B-CELL DIFFERENTIATION IN PRIMARY CNS LYMPHOMA**

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PURPOSE: Primary central nervous system lymphoma (PCNSL) has been immunohistochemically classified into two subtypes, germinal center (GC) B-cell and non-GC B-cell, but prognostic impact of these subtypes