modulus. Magnetic resonance elastography (MRE) is an epoch-making method capable of non-invasively imaging the elasticity of internal organs. We have examined the elasticity of meningiomas and pituitary adenomas and evaluated their usefulness. This time, we measured the glioma elasticity and verified usefulness of MRE.

METHOD: Twenty-four gliomas (mean age 51.8±15.7 years, male: female = 17: 7) who underwent tumor resection after MRE imaging from July 2017 to May 2020 were targeted. The average elasticity was measured as an evaluation of tumor elastic modulus by MRE. Gliomas were divided into a low-grade glioma group (LGG: Grade 1, 2) and a high-grade glioma group (HGG: Grade 3). Then, a comparative statistical study was conducted.

RESULTS: The average values of the average elasticity of LGG (grade i-ii: 9 cases) and HGG group (15 cases) were 1.8±0.8 kPa and 2.5±0.8 kPa, respectively. The average elasticity was significantly higher in the HGG group (p<0.023). In the ROC analysis, the cutoff value was 2.1 kPa (sensitivity 70%, specificity 70%). Therefore, it was suggested that the tumor is likely to be HGG when the average elasticity is 2.1 kPa or more.

DISCUSSION: The glioma elasticity by preoperative MRE was significantly higher in the HGG group. Based on actual surgical experience, the tumor seems to be hard in the HGG group, and it was judged to be consistent with our preoperative research. The preoperative examination of glioma elasticity by MRE was considered useful, and it might help in planning a surgical strategy considering malignant grade.

NI-04 EVALUATION OF POST BORON NEUTRON CAPTURE THERAPY FOR RECURRENT MENINGIOMA USING FLUORIDE-LABELLED BORONOPHENYLALANINE PET
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We have applied boron neutron capture therapy (BNCT) for 46 recurrent high grade meningiomas (HGM). Twelve cases among them, fluoride-labeled boronophenylalanine positron emission tomography (18F-BPA-PET) were utilized before and after BNCT to evaluate the tumor activity. The lesion to normal brain (L/N) ratios of 14 lesions on these 11 cases were investigated. In all cases, the L/N ratio decreased after BNCT. The L/N ratio of recurrent HGM (HGM) was 3.2±1.5 (mean±SD) before BNCT and 2.1±0.6 after that. In contrast enhanced MRI, 13 out of 14 lesions shrank or unchanged at least 3 months after BNCT, while one lesion transiently increased and then decreased within 3 months, showing pseudoprogression. In addition, 6 of 12 lesions which could be followed on MRI for more than 3 months progressed after 8 months. 4 of them were performed PET at the time of progressing. The L/N ratio of 2 progressing lesion which were diagnosed as recurrence due to continuously increasing were showed increasing. The L/N ratio of the other 2 lesions which were diagnosed radiation necrosis due to unchanged or shrinkage showed decreasing. Moreover, some systemic metastasis detected in PET image. F-BPA-PET seems to be useful for the evaluation of tumor activity.

NI-08 UTILITY OF MULTIPLE POSTOR EMISION TOMOGRAPHY TRACERS IN THE DIAGNOSIS OF BRAIN TUMORS ACCORDING TO THE 2016 WORLD HEALTH ORGANIZATION CLASSIFICATION
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OBJECTIVE: Magnetic resonance imaging alone is not sufficient for the diagnosis and therapy outcomes in brain tumors. We herein examined the utility of positron emission tomography (PET) studies for diagnosis in brain tumor patients.

METHODS: Between April 2009 and June 2020, 320 patients with central nervous diseases, including 140, 65, 52, 52, and 11 patients with glioma, metastatic brain tumor, malignant lymphoma, meningioma, and demyelinating disease, respectively, underwent PET studies (FDG, MET, FLT, and FMISO) in our department. Lesion/normal (L/N) ratios for FDG, MET, FLT, and FMISO were compared.

The glioma subtypes were compared based on the 2016 World Health Organization classification (IDH-mut, Codel, IDH-wt, GBM), and metastatic brain tumors, malignant lymphomas, meningiomas, and demyelinating diseases were compared with GBM. RESULTS: In glioma, the cutoff MET L/N ratios to distinguish between IDH-mut and Codel, IDH-mut and GBM, and IDH-wt and GBM were 3.61, 4.42, 4.92, and 4.33, respectively. The cutoff FLT L/N ratios to distinguish between IDH-mut and IDH-wt, IDH-mut and GBM, and IDH-wt and GBM were 3.43, 4.66, 3.93, and 5.76, respectively. The cutoff FDG MET and FLT L/N ratios between metastatic brain tumors and GBM were 2.72 and 4.89, respectively. The cutoff FMISO L/B ratio between malignant lymphoma and GBM were 4.68 and 2.13; and the cutoff FDG and MET L/N ratios between meningioma and GBM were 1.58 and 4.36. Demyelinating disease and GBM were distinguishable by FDG, MET, and FLT L/N ratios of 2.29, 3.32, and 5.83, and FMISO L/B ratio of 1.68. CONCLUSION: Four PET tracers were required to differentiate glioma subtypes, FDG and MET were useful for distinguishing GBM from metastatic brain tumor, malignant lymphoma, and meningioma, whereas accumulation was lower for all four PET tracers in demyelinating diseases than in GBM.

NI-09 AMIDE PROTON TRANSFER (AP) IMAGE IS USEFUL FOR DIAGNOSTIC IMAGING OF GLIOMA
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INTRODUCTION: AP image(APt), which images the concentration of amide groups that increases in tumors, is expected to be applied clinically in diagnostic imaging of glioma. PURPOSE: APt was compared with MET-PET based on the pathological diagnosis results, and it was retrospectively verified that APt was useful for diagnostic imaging of glioma.

METHODS: A total of 46 cases with glioma (WHO 2016: Grade II/III/IV) and Pseudoprogression were included. APt measured the APt accumulation value by placing the region of interest in the tumor part. MET-PET was administered with 370MBq and the accumulation ratio (TNR) between the tumor part and the normal part was measured. RESULTS: The APt measurement value in all cases was 2.2±1.01 and the TNR was 2.5±1.50, and a correlation was observed between the APt measurement value and the TNR (Pearson, p<0.01). When the accuracy of discrimination between GBM (32 cases) and Pseudoprogression (14 cases) by APt measurement was verified, the sensitivity was 91% and the specificity was 100% at the threshold of 1.81. In the verification of malignancy diagnosis, the measured APt value of GBM (15 cases) was 2.67±0.69, and the measured APt value of GII (11 cases) was 2.18±0.43, which was significantly lower than that in the tumor without mismatch sign. Thus, the cutoff APt value was 1.56, which was significantly lower than that in the tumor without mismatch sign (2.01, p=0.016). APt image was found in 7 (33%) TOPIC: NEURO-ONCOLOGY ADVANCES • NOVEMBER 2020