GC growth pattern have a poor prognosis even in low histological grading. In this study, we focused on tumor invasion into white matter fibers. We analyzed the MRI findings focusing on white matter fibers and compared in patients with histologically proven low grade gliomas (LGGs) with GC pattern and localized LGGs. METHODS: The patients can be classified into four groups according to the range of tumor invasion in T2-weighted image as follows: group 1, more than 5 lobes (n=6); group 2, 1 or 2 lobes infiltrate the high signal lesion (HSL); group 3, multicentric (n=2) and group 4 (n=12) localized. In reference to the human brain white matter atlas, the infiltration to the major white matter fibers (uncinate fasciculus, genu, corpus callosum, claustrum, cingulum, lenticulostriate vascular, septal, inferior longitudinal fasciculus) was examined. RESULTS: Twenty-five patients (18 males, 7 females) were included in the study. Of these, 20 patients were histologically diagnosed with diffuse astrocytomas, and 5 patients with oligodendrogliomas. The infiltrations into ifo, slf, and il of white matter fibers were a poor prognostic factor. The number of infiltrating white matter fibers correlated significantly with the Kaplan-Meier survival curve. CONCLUSIONS: The higher NAA/Cho ratio in the GC lesions may reflect the abundance of normal neural tissue in GC compared with IODA. Nonetheless, the T/N ratios of the two groups were comparable. The discrepancy suggests that GC cells have higher tumor metabolic activity than IODA cells. Therefore, when GC is simply classified as grade II glioma based on neuroimaging diagnosis, the possibility of underestimating its malignant potential at the single-cell level should be considered.

NI-19
USEFULNESS OF AMIDE PROTON TRANSFER IMAGE IN IMAGING DIAGNOSES OF GIAOMA.
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INTRODUCTION: APT image is one of the imaging methods in MRI, and it is a molecular image that images the concentration of an amide group having an amino acid increasing in a tumor, and is expected to be clinically applied in the imaging diagnosis of glioma. On the other hand, MET-PET is useful for diagnosis of glioma because it is well accumulated in tumor cells. Based on the results of pathological diagnosis, we compared the two and verified that APT image is useful. METHODS: The study included 36 patients who underwent APT image and MET-PET. (Gloma WHO2016 GradeII/III/IV and Pseudoprogression). MET-PET was administered 370MBq/kg, and the accumulation ratio (TNR) of the tumor part to the normal part was measured. APT image measured APT signal with the region of interest at the tumor site. RESULTS: APT signal in all 36 cases was correlated with 2.19±0.94 and TNR with 2.61±1.35 (r=0.67,p<0.001). The discrimination accuracy between GradeII/IV/PSP and Pseudoprogression by APT signal was 84% sensitivity and 100% specificity at threshold 2.0. APT signal 2.30±0.43, TNR 4.02±2.12, GIII APT signal 2.67±0.69, TNR 2.81±0.72, GIV APT signal 2.78±0.61, TNR 3.57±1.28. The APT signal of the astrocytoma line (GI/III) was 2.69±0.51, and the TNR was 2.43±0.98. The oligodendrogloma lineage was lower in APT signal than the astrocytoma lineage, and the TNR was higher. DISCUSSION: APT images are non-invasive, can easily provide important information, and have the same diagnostic potential as MET-PET. Although TNR of oligodendrogloma (GI/III) tends to be high, the APT signal which is not affected by 

NI-20
IS GLIOMATOSIS CEREBRI DIAGNOSED AS GRADEII IN NEUROIMAGING A POTENTIALLY GRADEII GLIOMA? Etsuko Owashi 1, Keiichi Kobayashi1, Shohei Iijima1, Yoshiaki Takei1, Yuka Ikeyama1, Yoshitaka Asano1, Kuniaki Iwama, Takeshi Ito, Kazutoshi Yokoyama, Jun Shinoda1, Takashi Maruyama, Yoshihiro Muragaki, Hirohito Yano, Toru Iwanami; 2Kawaza Memorial Hospital, 1Chubu Medical Center For Prolonged Traumatic Brain Dysfunction, Minokamo, Gifu, Japan

The 2007 World Health Organization (WHO) classification defined gliomatosis cerebri (GC) as a rare entity and an extensively infiltrating diffuse glioma involving three or more cerebral lobes. Although the revised 2016 WHO classification removed GC as a separate glioma entity due to the common histopathological findings shared with other gliomas, GC exhibits a distinct growth pattern and worse prognosis compared with other grade- matched gliomas. We retrospectively reviewed five patients with GC and five patients with insulo-opercular diffuse astrocytoma (IODA) who underwent both proton magnetic resonance spectroscopy (MRS) and [13C]-methylene positron emission tomography (MET-PET). The patients were diagnosed with GC or IODA by T2-weighted magnetic resonance imaging /fluid-attenuated inversion recovery from April 2014 to August 2019 at our institution. The locations of lesions where single-voxel MRS to measure the N-acetylaspartate (NAA)/choline (Cho) ratio and MET-PET to measure the tumor/normal (T/N) ratio were performed were the same in every patient.

The mean age of all patients was 46.3±13.7 years. The mean ages of the GC (three males and two females) and IODA (two males and three females) groups were 54.0±14.0 and 38.6±9.7 years, respectively. The mean NAA/Cho ratios in the GC and IODA groups were 1.01±0.441 and 0.594±0.449, respectively. The mean T/N ratios in the GC and IODA groups were 2.101±0.030 and 1.169±0.009, respectively.

The higher NAA/Cho ratio in the GC lesions may reflect the abundance of normal neural tissue in GC compared with IODA. Nonetheless, the T/N ratios of the two groups were comparable. The discrepancy suggests that GC cells have higher tumor metabolic activity than IODA cells. Therefore, when GC is simply classified as grade II glioma based on neuroimaging diagnosis, the possibility of underestimating its malignant potential at the single-cell level should be considered.

NI-22
IMPROVED DELINEATION OF THE SUPERFICIAL CEREBRAL VENOUS SYSTEM IN BRAIN CT ANGIOGRAPHY BY ULTRAHIGH-RESOLUTION CT ANGIOGRAPHY FOR BRAIN TUMOR SURGERY Masamichi Koyanagi1, Mitsuori Suzuki, Satoshi Kikuyama1, Akira Nakashima1, Migo Gotouchi, Takakazu Kawamata1, Kenichi Yokoyama, Kazutoshi Tsuchiya, Keiichi Kobayashi, Yoshiaki Shiokawa, Motoo Nagane; 1Department of Radiology, Kyorin University Hospital, Tokyo, Japan

BACKGROUND: In brain CT angiography (CTA) for assisting brain tumor surgery, delineation of the superficial cerebral venous system is critical for selecting the optimal surgical approach. This delineation is, however, limited using conventional CT scanners, including an area-detector CT (ADCT) scanner, due to their insufficient spatial resolution. Since March 2017, a state-of-the-art ultra-high-resolution CT (UHRCT) scanner has been clinically available to improve in- and through-plane spatial resolution compared with conventional CT scanners, mainly due to smaller slice thickness from 0.5 mm to 0.25 mm, larger channel number from 896 to 1792, and smaller x-ray focus from 0.9 x 0.8 mm to 0.4 x 0.5 mm. Purpose: We assessed usefulness of UHRCT to improve delineation of the superficial cerebral venous system in brain CTA for assisting brain tumor surgery compared with conventional ADCT. METHODS: We retrospectively enrolled patients with intra- and/or extra-axial brain tumors who underwent preoperative brain CTA for assisting brain tumor surgery by UHRCT or ADCT using our routine technique and generated the CTA to delineate the superficial cerebral venous system using the same technique. Two reviewers by consensus subjectively counted the number of the superficial sylvian veins and the cortical veins draining into these veins and the maximal bifurcation order of the cortical veins draining into the superior sagittal sinus. We compared these numbers between the UHRCT and ADCT groups using the intraoperative findings as the reference. RESULTS: The numbers and the maximal bifurcation order in the UHRCT group were significantly greater and more accurate than those in the ADCT group. CONCLUSIONS: Use of UHRCT can be clinically useful for better delineating the superficial cerebral venous system in brain CTA and assisting brain tumor surgery.

NI-23
ULTRA-HIGH-RESOLUTION CT ANGIOGRAPHY FOR BRAIN TUMOR SURGERY Kuniki Saito1, Keichi Kobayashi1, Shohei Iijima1, Yoshiaki Takei1, Yuka Ikeyama1, Yoshitaka Asano1, Kuniaki Iwama, Takeshi Ito, Kazutoshi Yokoyama, Jun Shinoda1, Takashi Maruyama, Yoshihiro Muragaki, Hirohito Yano, Toru Iwanami; 2Kawaza Memorial Hospital, Chubu Medical Center For Prolonged Traumatic Brain Dysfunction, Minokamo, Gifu, Japan

BACKGROUND: Preoperative accurate evaluation of arteries and veins can help avoid ischemic complication of brain tumor surgery. The latest ultra-high-resolution CT (UHRCT) angiography (Aquilion PrecisionTM; Canon Medical Systems) has recently become available for clinical testing of the main arteries and critical perforating arteries by brain CTA, compared to conventional CT. METHODS: UHRCT provides slice collimation of 0.25 mm x 160 and matrix size of 1024 x 1024 or 2048 x 2048. Major features of this CT scanner include an improved detector system (the minimal slice thickness, 0.25 mm; the maximal channel number, 1792) and a small x-ray focus (the smallest size, 0.4 x 0.5 mm) compared to a standard multi-detector CT (MDCT) scanner (the minimal slice thickness, 0.5 mm;