re-consideration of treatments for tumors diagnosed as so-called PNET. In this study, we propose the optimization of treatments for tumors diagnosed by the new classification to clarify which treatments were effective for the tumors those were diagnosed as PNEN, MATERIALS AND METHODS: The tumor samples diagnosed as so-called PNETs were analyzed. The molecular information was extracted from tumor specimens. We used high throughput analysis with microarray, FISH, and immunohistochemistry. They all had treated in our institution in last 6 years and their clinical courses were followed by medical records. Informed parental consent was obtained from their guardians and this study was approved by the institutional review board of Juntendo university. RESULTS: Nine tumor samples were able to be analyzed and they are re-classified into high-grade glioma, high-grade sarcoma, embryonal tumors with multilayered rosettes, C19MC altered (ETMR). They resembled each other closely in morphology, and therefore, it was not able to be classified by histopathological findings. There was a case of pineoblastoma, whose molecular background suggested that the tumor was re-classified into neuroblastoma. In terms of treatments, we have succeeded in neuroblastoma cases so far, ETMRs were required multiple surgeries and radiations to maintain remissions. CONCLUSIONS: Re-classification of diagnosis based on the molecular background is necessary to clarify the optimization of treatments for pediatric brain tumors, and the comprehensive methods is required. We present our methods for molecular diagnosis in clinical field and future plans.

MPC-11
IDH1/2 MUTATIONS ARE ASSOCIATED WITH SEIZURE ONSET AND VETRY IMAGING IN PATIENTS WITH DIFFUSE GLIOMA VISUALIZING 2-HYDROXYGLUTARATE BY MASS SPECTRUM IMAGING (MALDI-HR-MSI) FOR HIGH GRADE GLIOMA OPERATION COMPARED WITH INTRAOPERATIVE FROZEN DIAGNOSIS (IOFD). We compared to microscopical findings, MIB-1, and IOFD to iFC. METHOD AND MATERIAL: Total 33 cases of high grade glioma patients were underwent operation in April 2017 ~ May 2019, and IOFD was better than that of IOFD. Probably, iFC of IOFD was a little difficult because of sample heterozygosity.

MPC-14
BRAF V600E MUTANT OLIGODENDROGLIOMA-LIKE TUMORS WITH CHROMOSOMAL INSTABILITY IN ADOLESCENTS AND YOUNG ADULTS. Kohei Fukuoka1, Uri Tabori, Cynthia Hawkins; 1Department of Hematology/Oncology, Sattama Children’s Medical Center, Sattama, Japan

We performed genomewide methylation analysis on 156 pediatric low grade glioma (LGG) and identifying neuroblastoma and sarcoma variant subtypes. We used liquid chromatography-tandem mass spectrometry. The matrix-assisted laser desorption/ionization high resolution mass spectrometry imaging (MALDI-HR-MSI) was used to visualize tissue 2HG distribution in patients with diffuse glioma. METHODS: We assessed 149 patients with diffuse glioma, and measured tissue 2HG concentrations in 34 among 56 (60.7%) patients with IDH1/2 mutant tumor, whereas in 115 patients with diffuse glioma, we used high throughput analysis with microarray, FISH, and immunohistochemistry. They all had treated in our institution in last 6 years and their clinical courses were followed by medical records. Informed parental consent was obtained from their guardians and this study was approved by the institutional review board of Juntendo university. RESULTS: Tissue 2HG concentration was significantly higher in IDH1/2 mutant than in IDH1/2 wild-type tumor (median: 4862 ng/mg vs 75 ng/mg) (p<0.0001). Multivariate analysis, including tissue 2HG concentration, IDH1/2 status, histology, grade, and location, showed that IDH1/2 mutation was significantly correlated with seizure onset. The MALDI-HR-MSI was better than that of IOFD. Probably, iFC of IOFD was a little difficult because of sample heterozygosity.

MPC-15
FEASIBILITY OF GLIOMA SPECIFIC ONCOPANEL IN THE DIAGNOSIS OF GLIOMA
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AIM: Molecular classification of glioma is a mandatory in the diagnosis of glioma according to the WHO 2016 classification of tumors of the central nervous system. However, WHO does not indicate the molecular methodology to be integrated, and the versatility and cost-effectiveness of molecular diagnosis is a concern. In this study, we evaluate the feasibility of a glioma specific tailored NGS panel where driver gene mutation and copy number alterations can be precisely characterized, thus 1p/19q co-deletion can also be evaluated. We have analyzed 106 glioma patients (Grade II: 19 cases, Grade III: 23 cases, Grade IV: 64 cases) using this system.

RESULTS: From these 106 cases, IDH1 and TERT promoter mutations were detected in 33 cases (28%) and 55 cases (52%), respectively. 1p/19q co-deletion was detected in 19 cases (18%), with IDH1 mutations in all cases. In 57 Grade IV cases, TP53, PTEN, RB1, NF1, PDGFRA mutations were detected in 25 cases (43%), 24 cases (41%), 10 cases (17%), 8 cases (14%) and 6 cases (10%). Although EGFR mutation frequency was low (3%), amplification was detected in 14 cases (24%). As for deletion, PTEN and CDKN2A loci were deleted in 36 cases (62%) and 30 cases (52%) respectively. To note, MET alterations were detected in 2 cases. The cases in which histopathological diagnosis is difficult to make have a tendency to show atypical genetic alterations.

CONCLUSION: Diagnosis of glioma patients with this glioma-specific tailored NGS panel is feasible.