Abstracts

ABSTRACT CITATION ID: NOAD179.0777
NIMG-82: FET PET SENSITIVITY IN PRIMARY BRAIN TUMORS ACCORDING TO CNS WHO 2021: VALUE AND PITFALLS IN PRESURGICAL IMPLEMENTATION
Christoph Oster1, Tobias Blau2, Kathy Keyvan2, Teresa Schmidt1, Lazaros Lazartis1, Sarina Aglekate1, Ulrich Sure1, Christoph Kleinschnitz1, Bjorn Scheffler1, Francesco Barbato1, Ken Herrmann1, Sied Kebrit1, and Martin Glas1; 1Department of Neurology and Center for Translational Neuro- and Behavioral Sciences (C-TNBS), Division of Clinical Neurooncology, University Medicine Essen, University Duisburg-Essen, Essen, Germany, Essen, Germany, 2Institute of Neuropathology, University Medicine Essen, University Duisburg-Essen, Essen, Germany, Essen, Germany, 3Department of Neurosurgery and Spine Surgery, University Medicine Essen, University Duisburg-Essen, Essen, Germany, Essen, Germany, 4DKFZ-Division Translational Neurooncology at the West German Cancer Center (WTZ), DKTK Partner Site, University Medicine Essen, Germany, German Cancer Consortium (DKTK), Germany, German Cancer Research Center (DKFZ), Heidelberg, Germany, Essen, Germany, 5Department of Nuclear Medicine. University Medicine Essen, University Duisburg-Essen, Essen, Germany, Essen, Germany, 6Department of Nuclear Medicine, University Medicine Essen, University Duisburg-Essen, Essen, Germany, Essen, Germany

BACKGROUND: FET-PET imaging has emerged as a valuable tool in the characterization of unclear brain lesions that cannot be clearly diagnosed with conventional diagnostic methods. In 2021, the Central Nervous System (CNS) World Health Organization (WHO) introduced significant changes in the classification of CNS tumors. Notably, under the new classification, certain cases of WHO grade II glioma may be reclassified as glioblastoma. Unfortunately, a subset of grade II gliomas, as defined by the 2016 WHO classification, may exhibit no detectable FET uptake and lack contrast enhancement on MRI, which can lead to underestimation of such tumors and potentially result in inappropriate treatment decisions, including avoiding surgery. Question: In how many cases did the diagnostics consisting of MRI and FET PET underestimate the malignancy in unclear brain lesions? METHODS: In this study, we conducted a retrospective analysis of all patients who underwent FET PET imaging of the brain between 2017 and June 2021, prior to their first surgical brain intervention. We obtained the results from presurgical MRI-scans and categorized the lesions based on whether they exhibited contrast media enhancement or not, in addition to the postsurgical molecular-histopathologic diagnosis. Our analysis focused on identifying the number of cases in which the diagnosis of malignancy was underestimated in the context of the WHO 2016 classification. To further...
investigate these cases, we conducted NGS and 850k-analysis to reclassify the results in accordance with the new CNS WHO 2021 classification. RESULTS: After enrolling 85 patients, our study found that according to the 2016 classification, preoperative imaging underestimated malignancy in 14 cases (16%) where histopathological analysis revealed high-grade malignant brain tumors. In 32 cases (27%), the preoperative imaging correctly suggested a malignant tumor, which was later confirmed by histopathological analysis after surgery. The final results of this reclassification after the CNS-WHO-2021 will be presented at SNO-meeting.