

Poster
Leuchtfuehr

Clinical utility of different approaches for detection of late pseudoprogression in glioblastoma with O-(2-[¹⁸F]fluoroethyl)-L-tyrosine PET

O Kertels , T Linsenmann , AF Kessler , M Kircher , J Brumberg , J Tran-Gia , S Samnick , CM Monoranu , AK Buck , RI Ernestus , M Löhr , PT Meyer , C Lapa

Ziel/Aim:

Positron emission tomography/computed tomography (PET/CT) using O-(2-[¹⁸F]fluoroethyl)-L-tyrosine ([¹⁸F]FET) has proven valuable in differentiating tumor recurrence from therapy-induced changes. This study aimed to investigate the diagnostic performance of several analytic approaches in the setting of suspected late pseudoprogression in glioblastoma (GBM).

Methodik/Methods:

Retrospective analysis of tumor recurrence was performed in 36 patients with histopathologically confirmed GBM and suspicion of recurrence/disease progression > 12 weeks from cessation of irradiation as based on MRI and Response Assessment in Neuro-Oncology (RANO) working group criteria. Images were analyzed visually and semi-quantitatively including regions of interest (ROI) and tumor-to-background (TBR) ratios using five different analytic approaches for ROI definition. Histopathology and/or clinical and imaging follow-up served as reference.

Ergebnisse/Results:

[¹⁸F]FET-PET/CT was able to reliably differentiate pseudoprogression from true tumor recurrence with areas under the receiver operating characteristic curve ranging from 0.80 to 0.88 ($p < 0.01$). Irrespective of the approach chosen, the classification differences between the five applied methods were not significant (all $p > 0.05$).

Schlussfolgerungen/Conclusions:

Irrespective of the analytical approach, [¹⁸F]FET-PET/CT is a robust tool for detection of late pseudoprogression with only minor differences between different analytical approaches. However, methodological standardization and harmonization are needed to ensure comparability between different centers.