



O-092 - [18F] FDG PET/MR VERSUS STANDARD MRI IN PREDICTING RESPONSE TO NEOADJUVANT TREATMENT IN RECTAL CANCER

Ferri, Valentina; Vicente, Emilio; Quijano, Yolanda; Durán, Hipólito; Caruso, Riccardo; Diaz, Eduardo; Ruiz, Pablo; Balelli, Luca

Hospital de Madrid Norte-Sanchinarro, Madrid.

Resumen

Introduction: A correct identification of patients with pathologic complete response following neoadjuvant radiochemotherapy for locally advanced rectal cancer is mandatory. PET/MRI may provide metabolic information complementing the morphological assessment of MRI and potentially enhance the distinction between fibrotic and tumorous tissues post-RCT. This study aims to present our experience with PET/MRI in evaluating treatment response in LARC patients undergoing neoadjuvant therapy comparing with standard MRI study.

Methods: A prospective study was carried on at Sanchinarro University Hospital from 2018 to 2021. Patients with locally advanced rectal cancer undergoing neoadjuvant treatment were included and each patient was staged at diagnosis and restaged 8-12 weeks post-neoadjuvant treatment completion with PET/MRI. Primary outcome was to compare performance of PET MRI with standard MRI in detecting tumor response (pCR/no-pCR) and tumor regression grade (TRG) determined via histopathological examination. Moreover quantitative analysis involved assessing the apparent diffusion coefficient (ADC) and standardized uptake value (SUV) was assessed. Additionally, as secondary outcome a survival analysis using Kaplan-Meier method was performed. Radiologic prognostic markers were evaluated using Cox regression radiologic.

Results: A total of thirty-three patients were enrolled, among whom pCR was observed in 45% (14/33). PET/MRI demonstrated a sensitivity, specificity, and accuracy of 0.88, 0.80, and 0.84 in detecting pCR, while standard MRI showed a sensitivity, specificity, and accuracy of 0.82, 0.50 and 0.67 ($p < 0.001$). PET-MRI accurately identified pathologic TRG-stage in 24 out of 33 patients (72%), including TRG1 in 12 out of 15 (80%), TRG2 in 5 out of 7 (71.4%), TRG3 in 4 out of 7 patients (57.1%) and TRG4 3 of 4 patients (75%), respectively. In the interpretation of MRI sequence alone the pathologic tumor regression grade (pTRG) stage was accurately identified in 17 out of 33 patients (50.1%). In the survival analysis, mrEMVI and mrTRG was independently associated with better disease free survival.

Conclusions: 18-FDG PET/MRI emerges as a promising imaging tool for predicting response to neoadjuvant treatment in advanced colon rectal cancer and radiologic findings such as mrTRF and mr EMVI can better stratified high risk patient.