

information for monitoring patients and combining therapies, especially as PSMA PET/CT demonstrated more extensive disease. PSMA PET/CT has the advantage of the possibility of a Theranostic approach.

Keywords: Musculoskeletal tumors, PET FDG, PET PSMA, Theranostic.

<https://doi.org/10.1016/j.htct.2024.04.089>

EVALUATION OF METABOLIC QUANTITATIVE VARIABLES AND QUALITATIVE/VISUAL PET/CT IN PATIENTS WITH RECTAL CANCER WHO ACHIEVED COMPLETE AND INCOMPLETE RESPONSE AFTER NEOADJUVANT RADIOCHEMOTHERAPY

Kaique Moraes do Amaral, Rayama M. Siqueira, Tiago Ferreira Souza, Edna M. Souza, Allan O. Santos, Mariana Da Cunha Lopes Lima, Elba C.S.C. Etchebehere, Celso D. Ramos, Dalton A. Anjos, Carlos A.R. Martinez, Barbara J. Amorim

Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil

Introduction/Justification: Patients diagnosed with advanced rectal cancer (RC) are often submitted to neoadjuvant chemoradiotherapy (NACRT) treatment. There is no ideal imaging tool to measure the response of tumor after treatment. **Objectives:** The aim of this study was to evaluate the metabolic parameters obtained by FDG PET/CT, before and after NACRT. **Materials and Methods:** This retrospective study analyzed 518 patients with advanced RC. We divided patients in 2 groups: the ones who achieved a complete clinical response after treatment (good responder group) and the ones who did not achieved complete response (poor responder group). All patients underwent pre-treatment and post-treatment FDG PET/CT, with the post-treatment scan performed on average 19 weeks after treatment completion. Among the exclusion criteria were patients who began therapy before pre-treatment PET/CT and patients who did not have both studies, pre and post treatment. We included 37 patients in the good responder group who met all inclusion criteria and were selected for analysis, and 36 patients in the poor responder group. FDG PET/CT was analyzed by two nuclear medicine physician, and qualitative and quantitative analysis were performed. We used a visual response score (VRS) in qualitative analysis: grade 0 – (not reduce/progress) grade 1 ($\leq 33\%$ reduction), grade 2 ($> 33\%$ to 66% reduction), grade 3 ($> 66\%$ reduction), and grade 4 (no uptake after treatment). The following quantitative parameters were analyzed: SUV, MTV, and TLG, with ROIs drawn with a fixed threshold of 41% and a variable threshold which determined the best delimitation of the tumoral area (best fit value). **Results:** In visual analysis of good responders group the majority of patients had a VRS of grade 4 (62%) and grade 3 (33%). For poor responders group, 45.9% patients had a VRS grade 3, 32.4% grade 2, 16.2% grades 0 and 1 and only 5.4% in grade 4. The average reductions in

the analyzed variables were calculated: For good responders there was a reduction of 83% (SUV-mean with 41%); 68% (SUV-mean - BVF); 84% (TLG -41%); 94% (TLG- BVF); 7.29% (MTV-41%); 78% (MTV- BVF). For poor responders had a lower response rate: 51% (SUV-mean with 41%); 41% (SUV-mean - BVF); 63% (TLG -41%); 75% (TLG- BVF); 37 (MTV-41%); 6,5 (MTV- BVF.) **Conclusion:** FDG PET/CT can provide qualitative and quantitative variables in monitoring neoadjuvant radiochemotherapy response and possibly identify patients who will benefit from earlier monitoring and low-risk patients. Further analyses/studies are still needed to establish a cutoff/ value for quantitative measures to aid clinicians.

Keywords: 18F-FDG PET/CT, Neoadjuvant response, Rectal cancer.

<https://doi.org/10.1016/j.htct.2024.04.090>

THE NECESSITY OF 24-HOUR DELAYED IMAGING IN PATIENTS WITH PYELOCALICEAL DILATION FOR RELATIVE RENAL FUNCTION CALCULATION: A RETROSPECTIVE ANALYSIS

Edna Marcia Rodrigues Brunetto ^a, Sérgio Querino Brunetto ^b, Allan de Oliveira Santos ^a, Bárbara Juarez Amorim ^a, Elba Cristina Sá de Camargo Etchebehere ^a, Juliana Pasquotto Souza ^a, Mariana da Cunha Lopes De Lima ^a, Celso Darío Ramos ^c

^a Serviço de Medicina Nuclear do Hospital de Clínicas (HC) da Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil

^b Centro de Engenharia Biomédica (CEB) da Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil

^c Oncologia e Radiologia (DAOR) da Faculdade de Ciências Médicas (FCM), Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil

Introduction/Justification: Static renal scintigraphy using ^{99m}Tc-DMSA is an accurate method for diagnosing and monitoring renal scars and allows for semi-quantification of relative tubular function (RTF). However, in cases of hydronephrosis, radiopharmaceutical accumulation in the pyelocaliceal system may interfere with RTF quantification. Although 24-hour images are typically requested to address this issue, they can inconvenience patients and disrupt the nuclear medicine service routine. **Objectives:** This study aimed to assess the impact of additional 24-hour imaging on RTF quantification in patients with hydronephrosis compared to standard 3-hour images. **Materials and Methods:** A retrospective analysis was conducted on patients who underwent renal scintigraphy with ^{99m}Tc-DMSA, focusing on those who received additional 24-hour imaging. Patients were divided into two groups: those aged up to 12 years (Group 1) and those over 12 years old (Group 2). Planar images were acquired 3 hours post-injection of 175 mBq of ^{99m}Tc-DMSA for adults and 1.5 MBq/kg for patients weighing up to 40 kg. Additional