for both radiotracers. **Results:** 18F-PSMA-1007 uptake in bladder lesions and regional lymph nodes progressively increased between 5, 90 minutes and 2 hours. A total of 11 lesions were identified in the 4 patients using 18F-PSMA-1007 and 9 using 18F-FDG. Two patients had undergone transurethral resection and had no active macroscopic lesions in the bladder. 18F-PSMA-1007 detected bladder lesions in the other 2 patients (SUVmax = 9.8 and 23.4), while FDG detected only 1 (SUVmax = 30.0), with the other lesion indistinguishable from radioactive urine, even after diuretic administration. Both tracers detected lymph node metastases in 3 patients (SUVmax = 4.1 to 15.8, and 9.5 to 18.3, respectively, for 18F-PSMA-1007 and 18F-FDG), and bone metastasis in 1 patient (SUVmax = 11.1 and 10.1 for 18F-PSMA-1007 and 18F-FDG, respectively). Two patients had pulmonary inflammatory/infectious processes that were FDG-avid but not 18F-PSMA-1007-avid. **Conclusion:** PET/CTs with 18F-FDG and 18F-PSMA-1007 appear to have similar sensitivities for MIBC lesions. Due to lower uptake in inflammatory processes, 18F-PSMA-1007 appears to have higher specificity and, due to significantly lower urinary excretion than 18F-FDG, may be more favorable for evaluating the primary bladder lesion. The significant uptake of 18F-PSMA-1007 in MIBC lesions raises the possibility of theranostic approach in selected patients.

Keywords: 18F-FDG PET/CT, bladder cancer, PSMA PET;.

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COMPARISON OF IBI AND PBI CALCULATED FOR 68GA-PSMA AND 18F-FDG IN MULTIPLE MYELOMA PATIENTS

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Introduction/Justification: The benefits of using 18F-FDG PET/CT for staging and managing treatment in patients with multiple myeloma (MM) are extensively documented. Recent studies indicate that 68Ga-PSMA PET/CT is also an excellent marker for MM lesions and may complement 18F-FDG due to the significant genetic heterogeneity observed in these patients' lesions. The involvement of bone tissue stands out as one of the most critical aspects of MM. To quantify this involvement, two quantitative parameters have recently been proposed: Percentage of Bone Involvement (PBI) and Intensity of Bone Involvement (IBI). **Objectives:** This study aims to compare PBI and IBI in 68Ga-PSMA and 18F-FDG PET/CT images for multiple myeloma patients. **Materials and Methods:** Fifteen patients were included in the study, 8 men (53.3%), with a mean age of 66.7 ± 10.7 years. The patients underwent 68Ga-PSMA and 18F-FDG PET/CT scans with a maximum interval of 8 days between images (median 4 days). The bone tissue was segmented in the images based on the Hounsfield scale of the CT image, followed by processing for closing of the volume of interest (VOI). Both PBI and IBI were calculated for the two radiotracers, with the liver SUV used as a reference for 18F-FDG and the left atrium as a reference for 68Ga-PSMA. Spearman's rank-order correlation assessed the relationship between PBI and IBI data. **Results:** On average, PBI values were higher for 68Ga-PSMA than for FDG, at 3.07% ± 2.5% and 1.96% ± 3.8%, respectively. The mean IBI values were similar for both radiotracers: 0.08 ± 0.13 for 18F-FDG and 0.08 ± 0.09 for 68Ga-PSMA. The median IBI calculated for 68Ga-PSMA was 0.05, higher than the 0.01 found for 18F-FDG. Despite the similarity in average values between 68Ga-PSMA and 18F-FDG, the maximum PBI and IBI values were found in different patients for both radiotracers. Additionally, the Spearman test did not indicate correlation between the variables: ($r = 0.39$; $p = 0.16$) for PBI and ($r = 0.41$; $p = 0.13$) for IBI. **Conclusion:** The average and maximum values of PBI and IBI for 68Ga-PSMA and 18F-FDG are close. However, no correlation was found between them, highlighting that the heterogeneous genetic profile of the disease results in different uptake patterns for both radiotracers.

Keywords: FDG, IBI, multiple myeloma, PSMA.

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18F-FLUORIDE PET/CT vs 18F-PSMA-1007 TO DETECT BONE METASTASES IN PROSTATE CANCER – A HEAD-TO-HEAD PROSPECTIVE COMPARISON

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