funcional (10,0 vs. 22,0; p = 0,03). **Conclusão:** Os resultados deste estudo sugerem que a QdV de pacientes com CCECP tratados na UNICAMP pode ser influenciada por fatores sociodemográficos e clínicos. Esses achados destacam perfis de maior vulnerabilidade e reforçam a necessidade de estratégias individualizadas para minimizar os impactos do tratamento na QdV desses pacientes.

Palavras-chave: Aspectos clínicos, Aspectos sociodemográficos, Câncer de cabeça e pescoço, Qualidade de vida.

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DUAL-TRACER PET/CT IMAGING IN HEPATOCELLULAR CARCINOMA: COMPARING THE PERFORMANCE OF 18F-FDG AND 18F-PSMA

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A B S T R A C T

Introduction/Justification: Hepatocellular carcinoma (HCC) is a prevalent malignancy with rising incidence in Western countries, often diagnosed at advanced stages. Early detection and accurate assessment of tumor extent are crucial for optimal treatment planning. 18F-FDG PET/CT has limited diagnostic value in HCC. While prostate-specific membrane antigen (PSMA) is primarily a marker for prostate cancer, its association with tumor neoangiogenesis and demonstrated uptake in various malignancies, including HCC, suggests potential diagnostic applications. **Objectives:** This study compared 18F-FDG and 18F-PSMA uptake in PET/CT for evaluating hepatic lesions in HCC. **Materials and Methods:** Eleven patients with HCC were included, six with Barcelona Clinic Liver Cancer (BCLC) staging system stage C (advanced) and five with BCLC stage B (intermediate), with a median age of 74 years (range: 59–86). All patients underwent 18F-FDG and 18F-PSMA PET/CT scans with a one-day interval between them. 18F-FDG images were acquired at 60 and 120 minutes post-injection, while 18F-PSMA images were obtained at 90 and 150 minutes. The maximum standardized uptake value (SUVmax) was measured for all hepatic lesions, and the change between early and delayed images (ΔSUVmax) was calculated. Spearman's rank correlation coefficient (ρ) was used to assess the correlation between SUVmax values for the two radiotracers, with statistical significance set at $\rho <$ 0.05. **Results:** Nine of the 11 patients had multiple hepatic lesions. A median of 3 lesions per patient (1–15) was detected with 18F-FDG, and 2 lesions per patient (1–11) with 18F-PSMA, totaling 75 lesions. Fifty-six lesions were positive for both radiotracers, 16 were only for 18F-FDG, and 3 only for 18F-PSMA. In the BCLC-B group (n = 5), 11 lesions were detected with 18F-FDG, 15 with 18F-PSMA, and 32 with both. The median SUVmax (early images) was 6.3 (3.5–8.5) for 18F-FDG and 17.2 (15.0–25.6) for 18F-PSMA. In the BCLC-C group (n = 6), 34 lesions were detected with 18F-FDG, 14 with 18F-PSMA, and 24 with both. The median SUVmax (early images) was 8.1 (4.7–17.2) for 18F-FDG and 23.3 (17.1–50.2) for 18F-PSMA. For BCLC-B patients, the median ΔSUVmax was 17.65% (-6.35% to 28.57%) for 18F-FDG and -30.17% (-9.74% to -50.67%) for 18F-PSMA. For BCLC-C patients, the median ΔSUVmax was 0.00% (-66.67% to 10.47%) for 18F-FDG and -0.47% (-67.26% to 16.37%) for 18F-PSMA. Spearman's correlation between 18F-FDG and 18F-PSMA SUVmax was ρ = -0.5357 (ρ = 0.2357). **Conclusion:** The 18F-FDG and 18F-PSMA PET/CT provide complementary information for evaluating hepatic lesions in BCLC stage B and C HCC. 18F-FDG detected more lesions, particularly in advanced disease, while 18F-PSMA showed higher uptake, especially in BCLC-C patients. The lack of significant correlation between 18F-FDG and 18F-PSMA SUVmax values suggests they reflect distinct biological processes. This independent uptake pattern may inform treatment strategies. Further research is needed to investigate whether antiangiogenic therapy might be more effective in patients with high 18F-PSMA uptake. The more pronounced 18F-PSMA washout phenomenon observed may have implications for its theranostic potential.

Keywords: 18F-FDG PET/CT, 18F-PSMA PET/CT, Comparative Analysis, Hepatic Lesions, Hepatocellular Carcinoma (HCC).

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CT-SEGMENTED BONE SUV IN MULTIPLE MYELOMA: A COMPARATIVE STUDY OF ^{18}F-FDG AND ^{68}GA-PSMA PET/CT

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A B S T R A C T

Introduction/Justification: ^{18}F-FDG PET/CT is widely used in the management of multiple myeloma (MM), a disease that often presents with extensive bone involvement. Radiolabeled prostate-specific membrane antigen (PSMA), primarily a marker for prostate cancer, is also associated with tumor neoangiogenesis, and studies have demonstrated its uptake in MM lesions. Hybrid PET/CT imaging with both FDG and PSMA tracers allows for several quantitative metrics, enabling objective comparisons beyond visual analysis. **Objectives:** This study aims to compare ^{18}F-FDG and ^{68}Ga-PSMA PET/CT quantitative metrics in the skeletal system of patients with MM. **Materials and Methods:** The study included ^{18}F-FDG and ^{68}Ga-PSMA PET/CT images acquired within a 1- to 8-day interval from 15 patients (53% male, mean age 66.7 ± 10.7 years) with symptomatic, biopsy-proven MM. CT was used to segment the entire skeleton in PET images, with the skull excluded in ^{18}F-FDG images due to artifacts from brain uptake coregistration. SUV quantification was performed using in-house software developed in MATLAB. Descriptive statistics and individual percentage deviations between the radiotracers were used to evaluate bone mean and maximum Standardized Uptake Values (SUVmean and SUVmax). Correlation analysis between the radiotracers was conducted using Spearman's rank correlation coefficient (r) with a significance level of $p < 0.05$. **Results:** For bone SUVmean, values were higher for ^{18}F-FDG compared to ^{68}Ga-PSMA, with an average of 0.9 ± 0.1 vs. 0.5 ± 0.1, corresponding to a -40% ± 9% difference (range: -25% to -57%). Conversely, for bone SUVmax, values were lower for ^{18}F-FDG compared to ^{68}Ga-PSMA, with an average of 8 ± 3 vs. 19 ± 14, corresponding to a 154% ± 2% difference (range: -21% to 762%). A moderate correlation was found for bone SUVmean between ^{18}F-FDG and ^{68}Ga-PSMA ($r = 0.55$, $p = 0.03$), while no significant correlation was observed for bone SUVmax ($r = 0.17$, $p = 0.55$). **Conclusion:** This study reveals distinct quantitative uptake patterns between ^{18}F-FDG and ^{68}Ga-PSMA PET/CT in the skeletal system of MM patients. ^{18}F-FDG exhibited significantly higher SUVmean than ^{68}Ga-PSMA, likely due to physiological ^{18}F-FDG uptake in bone marrow. A moderate correlation was observed for SUVmean between the two tracers. The higher SUVmax values for ^{68}Ga-PSMA, with no correlation with ^{18}F-FDG SUVmax, may reflect the different biological targeting mechanisms of each tracer. This suggests that some regions of increased PSMA uptake (possibly indicating neoangiogenesis) may not correspond to areas of increased glycolysis, highlighting the potential complementary role of these radiotracers in MM evaluation.

Keywords: Multiple Myeloma, PET/CT, SUV Quantification, ^{18}F-FDG, ^{68}Ga-PSMA.

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MIR-4421 AS A POSSIBLE MODULATOR OF MAPK/AKT PATHWAY THROUGH ERP29 IN PHARYNGEAL CANCER

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A B S T R A C T

Introduction/Justification: ERP29 gene encodes a chaperone protein essential for protein folding and secretion. Our previous study linked ERP29 inhibition to an increased risk of pharyngeal cancer (PC) and reduced patient survival, possibly due to the binding affinity between microRNA miR-4421 and ERP29 messenger RNA (mRNA). This interaction leads to ERP29 silencing, which may influence PC progression especially by decreasing necrosis and increasing cell migration. However, the precise mechanism underlying this process remains unknown, particularly its impact on well-established signaling pathways such as MAPK/Akt, which are frequently dysregulated in PC and play a critical role in tumor progression, cell survival, and metastasis. **Objectives:** This study aims to explore the role of miR-4421 and ERP29 in PC survival and progression. **Materials and Methods:** We first evaluated ERP29 and miR-4421 prognostic value in head and neck cancer patients assessing the Kaplan–Meier Plotter (kmplot.com/analysis/). We used PC FaDu cell line (ATCC) in two different scenarios: FaDu cisplatin (CDDP)-sensitive and FaDu CDDP-resistant (FaDu-R). ERP29 expression was silenced using a specific siRNA. We identified and validated genes modulated by ERP29 in FaDu and FaDu-R cells by TaqMan plate array and quantitative PCR (qPCR), respectively. We tested if miR-4421 inhibitor could reverse ERP29 silencing effect, with gene expression analyzed by qPCR in FaDu and FaDu-R cells. Statistical analysis was performed by t-test using SPSS 21.0 software (SPSS Incorporation, USA). **Results:** Lower ERP29 ($p = 0.03$) and higher miR-4421 ($p < 0.01$) expressions were associated with poor overall survival in head and neck cancer patients. In FaDu cells, ERP29 silencing increased MAPK1 (FC: 2.4, $p = 0.03$), AKT1 (FC: 17.5, $p < 0.01$), and JUN (FC: 29.0,