Fearon's criteria, being defined as weight loss greater than 5%, or weight loss greater than 2% in individuals already showing depletion according to current bodyweight and height (body-mass index [BMI] < 20 kg/m^2) or low skeletal muscle mass (defined according to Martin's criteria). Body composition and tissue radiodensity was analyzed using computed tomography (CT) images processed with the SliceOmatic software based on the difference in tissue measurements by Hounsfield Units (HU). The segmentation and data collection of PET/CT images are performed in FIJI and the Beth Israel Plugin for FIJI. In the segmented areas (VAT and SAT), glucose uptake values (^{18}F-FDG) are collected, represented by the Standard Uptake Value (SUV) variable. M-value was determined using euglycemic hyperinsulinemic clamp. Demographics characteristics, disease-related data, and biochemical test results were collected from medical records. Statistical analyses were performed using Jamovi® version 2.3. This study protocol was approved by the Institutional Review Board (CAAE: 91217418.2.0000.5404). **Results:** A total of 36 patients were included in the analysis. Cachexia was diagnosed in 25 patients (69.4%). The median age was 64 years (range: 43-74) in the C group and 62 years (range: 47-72) in the NC group. Weight loss greater than 5% occurred in all C patients, and low muscularity in 36.4% of this group. Cachexia patients had a higher VAT SUV mean (0.815 ± 0.184) compared to NC (0.644 ± 0.148), p = 0.005. VAT glucose uptake was correlated with VAT radiodensity (rho = 0.678, p < 0.001) and weight loss (rho = 0.434, p = 0.015) while it was negatively correlated with VAT area (rho = -0.412, p = 0.021). Additionally, VAT radiodensity showed a negative correlation with VAT area (rho = -0.452, p = 0.008), SAT area (rho = -0.465, p = 0.006), and BMI (rho = -0.695, p = 0.015). Positive correlations were observed between VAT radiodensity and SAT radiodensity (rho = 0.633, p < 0.001) and SAT SUV mean (rho = 0.532, p = 0.002). No significant correlation was found between VAT SUV mean and M-value; however, M-value-TBW correlated with VAT radiodensity (rho = 0.369, p = 0.03). **Conclusion:** These findings suggest that VAT metabolism may serve as a potential biomarker in cachexia and underscore the need to expand investigations into the metabolic alterations that influence the pathophysiology of cachexia.

Keywords: Adipose tissue radiodensity, Cancer cachexia, Fludeoxyglucose F-18 (^{18}F-FDG) PET/CT, Weight loss.

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FATORES ASSOCIADOS À PIOR QUALIDADE DE VIDA DE PACIENTES COM CÂNCER DE CABEÇA E PESCOÇO TRATADOS COM RADIOTERAPIA E QUIMIOTERAPIA NA UNICAMP

Jose Renato De Oliveira Mariano [a], Diogo Back Sartoretto [a], Joyce Gruenwaldt [b], Eduardo Baldon Pereira [b], Carmen Silvia Passos Lima [a], Luciana Campanatti Palhares [b], Gustavo Jacob Lourenço [a]

[a] *Laboratório de Genética do Câncer da Faculdade de Ciências Médicas da Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brasil*
[b] *Departamento de Radiologia e Oncologia, Faculdade de Ciências Médicas da Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brasil*

R E S U M O

Introdução/Justificativa: A radioterapia (RT) e a quimioterapia (QT) são essenciais no tratamento do câncer de cabeça e pescoço (CCP), mas seus efeitos adversos comprometem a qualidade de vida (QdV) dos pacientes. Sintomas como xerostomia, mucosite e disfagia afetam a funcionalidade, enquanto alterações na aparência e dificuldades na comunicação impactam o bem-estar emocional e social. Embora esses efeitos sejam reconhecidos, ainda há uma necessidade de melhor compreensão dos fatores sociodemográficos e clínicos associados à QdV desses pacientes. **Objetivos:** Este estudo teve como objetivo avaliar se as características sociodemográficas, os aspectos clínicos e as características do tumor influenciam a percepção da QdV de pacientes com CCP tratados com RT e QT. **Materiais e Métodos:** Foram avaliados 32 pacientes com CCP atendidos no Hospital de Clínicas da UNICAMP durante o tratamento com RT e/ou QT exclusiva. As informações sociodemográficas (idade, sexo, cor da pele, grau de instrução, tabagismo e etilismo), aspectos clínicos (dor, escala de performance ECOG, marcadores hematológicos, índice de inflamação imune sistêmica e de resposta à inflamação sistêmica) e as características do tumor (localização, grau de diferenciação e estágio TNM) foram coletadas dos prontuários dos pacientes e por questionário específico. A QdV dos pacientes foi avaliada pelo instrumento FACT-H&N que possui 39 questões distribuídas nos domínios de bem-estar físico, social, emocional, funcional e preocupações adicionais específicas para CCP. A análise dos dados foi realizada por meio do cálculo das médias dos escores de cada domínio e do escore total, sendo que menores escores indicam pior QdV. A análise estatística foi realizada utilizando o teste t para comparação entre grupos, o valor de p < 0,05 foi considerado significativo. **Resultados:** Observamos que pacientes negros apresentaram menor bem-estar emocional (19,0 vs. 23,5; p = 0,002), enquanto tabagistas apresentaram escores mais baixos de bem-estar físico (20,0 vs. 25,5; p = 0,03) e bem-estar específico (19,0 vs. 29,0; p = 0,02). Dor moderada ou intensa foi associada a pior bem-estar físico (20,5 vs. 26,5; p = 0,002), emocional (18,0 vs. 22,0; p = 0,01) e global (101,0 vs. 122,0; p = 0,02). Pacientes com status funcional ECOG ≥ 1 apresentaram piores escores de bem-estar funcional (19,0 vs. 23,0; p = 0,001) e total (101,5 vs. 123,5; p = 0,04). A presença de anemia foi associada a menor bem-estar específico (21,5 vs. 30,0; p= 0,002) e total (99,0 vs. 120,5; p= 0,009). Pacientes com índice de resposta à inflamação sistêmica elevado apresentaram menor bem-estar físico (20,5 vs. 25,0; p = 0,04), funcional (16,5 vs. 22,0; p = 0,01), específico (21,0 vs. 28,0; p = 0,03) e total (99,0 vs. 116,0; p = 0,03). Além disso, pacientes com tumores na faringe relataram pior bem-estar físico (20,0 vs. 26,5; p = 0,01), enquanto aqueles com tumores pouco diferenciados apresentaram menor bem-estar

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

Giulia Picciola Bordoni [a,b],
Maria Emilia Seren Takahashi [c,d],
Fabíola F. Zarpelão [d,e], Najua A. A Silveira [a],
Victor C.C.R. Heringer [a], Simone Kuba [a,d],
TobarNatália [a,d], Sergio Q Brunetto [b,d],
Carmino A Souza [d,f],
José Barreto Carvalheira [d,e],
Celso Dario Ramos [a,d]

[a] *Division of Nuclear Medicine, Faculdade de Ciências Médicas, Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*
[b] *Centro de Engenharia Biomédica (CEB), Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*
[c] *Instituto de Física Gleb Wataghin, Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*
[d] *Cancer Therenostics Innovation Center (CancerThera), Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*
[e] *Division of Oncology, Faculdade de Ciências Médicas, Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*
[f] *Hemocentro, Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*

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

Alexandre Mercuri Barbosa [a,b],
Maria Emília Seren Takahashi [c,d],
Stephan Pinheiro Macedo Souza [a],
Edna Marina Souza [b,d],
Sérgio Querino Brunetto [b,d],