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**M2M: PET/CT & Miscellaneous**

**EP539**

**Factors Influencing the Pattern and Intensity of Myocardial FDG Uptake in Oncologic PET-CT Imaging**

**B. Fallahi**, B. Moasses Ghaffari, D. Beiki, A. Fard-Esfahani, M. Eftekhari; Research Center for Nuclear Medicine, Tehran University of Medical Sciences, Tehran, IRAN, ISLAMIC REPUBLIC OF.

**Introduction:** Myocardial FDG uptake is highly variable, ranging from quite intense to minimal distribution, in oncologic whole body FDG PET-CT studies. Intense or heterogeneous myocardial FDG uptake is undesirable as it may interfere with the visual or quantitative evaluation of tumoral invasion and metastases in pericardium, myocardium or adjacent mediastinal structures. The diet, as well as many other factors, is assumed to influence the myocardial FDG uptake. Using a multivariate model, we tried to identify and predict the main factors influencing cardiac FDG uptake in patients referred for oncologic PET-CT evaluation. **Methods:** A total of 214 patients referred for oncologic FDG PET/CT scan were enrolled in our study. Patients were randomly allocated into two groups according to the diet they were instructed to follow during 24-hour period before imaging. One hundred and seven cases with a routine diet (RD) and the same number of patients with a low carbohydrate high fat (LCHF) diet were included. All patients in both groups were also instructed to fast 6 hours before imaging. Weight, height, blood glucose, heart rate, systolic and diastolic blood pressure were measured before radiotracer injection. Visual and quantitative analysis were done after imaging and the pattern of FDG uptake as well as standardized quantitative value of cardiac uptake was determined for each case. **Results:** The frequency of undesirable cardiac FDG uptake in the LCHF group was significantly less than RD group (17% vs. 72%,  $p < 0.001$ ). The univariate analyses showed male gender, BMI  $\geq 30$  as well as consumption of cardiochemotoxic agents, benzodiazepines and beta blockers were significantly associated with higher intensity of myocardial FDG uptake, while this undesirable finding was less evident in cases with diabetes mellitus. A multivariate logistic regression model including all of the mentioned variables revealed the diet was the only significant independent factor that predicted undesirable myocardial FDG uptake ( $p < 0.001$ ). **Conclusion:** LCHF diet 24 hours before PET-CT imaging is the only controllable independent factor influencing the intensity and pattern of myocardial FDG uptake and is recommended to achieve optimal suppression of cardiac FDG uptake.

**EP540**

**Prognostic Value of Volumetric Parameters of PET-CT With Stage IIIB-IV Non-Small Cell Lung Cancer**

**B. YUSUFOGLU**<sup>1</sup>, C. Bilir<sup>2</sup>; <sup>1</sup>RECEP TAYYIP ERDOGAN UNIVERSITY Teaching and Education HOSPITAL, RIZE, TURKEY, <sup>2</sup>Sakarya University School of Medicine, Department of Medical Oncology, Sakarya, TURKEY.

**Abstract Objective:** PET-CT has been used for staging of lung cancer, particularly in case of exclusion and operability of distant metastasis. Although PET-CT is often used for response to treatment; clinically, prognostic and predictive importance of basal PET-CT haven't exactly been known. As well as TLG value in PET-CT is parameter associated with SUVmean and MTV values of tumoral region, information about its clinical importance is not sufficient yet. We investigated the relation of this parameter, which hasn't been specified in routine PET-CT reporting, with oncological outcomes in advanced stage NSCLC.

**Methods:** All patients TLG values of primary tumor, lymph nodes and measurable lesions in metastatic regions were calculated by being measured in accordance with RECIST criteria, reviewing basal PET-CT results of 76 NSCLC patients who was diagnosed and treated in our hospital between the years 2013-2015. SUVmax, SUV mean, MTV and TLG values were calculated for primary tumor, lymph nodes and metastatic regions separately. **Results:** The average of age of 76 patients was 64(34-84) years and they consisted of 68 males and 8 females patients. While 41 patients were diagnosed with adenocarcinoma, 35 patients were diagnosed with squamous cell carcinoma. While there wasn't a significant difference between two groups in respect to their biochemical and hemogram parameters, which are among general characteristics; just the patients diagnosed with adeno Ca were younger (62 vs 67,8;  $p = 0.03$ ). Among PET-CT parameters, a statistical relation of only SUVmax and SUVmean values was identified with PFS. But, PET-CT parameters were not related to PFS in subgroup analyzes of SCC tumor type. In adenocancer subtype, mediastinal TLG and WB TLG values were significantly correlated with each other in addition to the SUVmax value. Similarly, a relation of PET-CT parameter with only adeno Ca subtype was found. **Conclusion:** Although PET/CT has often been used for staging of lung cancer, prognostic importance of many PET parameters in exclusion of metastasis hasn't been known exactly. The most important finding of our study are that there is not prognostic and predictive importance of PET-CT in SCC; whereas, especially TLG values of primary tumor, WB TLG and mediastinal metastatic lymph nodes are significant and important for both PFS and OS in lung adeno Ca. As well as the number of our cases is small, provided it is supported with large-scale studies that PET-CT is more beneficial to patients diagnosed with lung adenocarcinoma; calculation of value of PET-CT indication and TLG value in this subtype may take an important place in terms of clinical practice.

**EP541**

**Detection of Primary Tumor by FDG PET/CT in Cancer of Unknown Primary**

**P. Ozcan Kara**<sup>1</sup>, Z. Koc<sup>1</sup>, E. Yaman Sezer<sup>2</sup>; <sup>1</sup>Mersin University Faculty of Medicine Department of Nuclear Medicine, Mersin, TURKEY, <sup>2</sup>Mersin University Faculty of Medicine Department of Oncology, Mersin, TURKEY.

**Abstract Aim:** Cancer of unknown primary tumors is a heterogeneous group of patients who presented with metastatic involvement of a distant organ without a documented primary site despite detailed investigation. Aim of this retrospective study is to estimate the detection ratio of FDG PET/CT in cancer of unknown primary patients. **Materials and Method:** Twenty five patients (13M, 12F; mean: 61,84  $\pm$  12,16 years old) with diagnosis of distant metastasis according to histopathology and/or MRI/ultrasonography were included into this retrospective study. **Results:** The patients presented brain (n=10), bone lesion (n=3), liver (n=6), lymph node (n=5) and pleural lesions (n=1) with additional metastatic sites in 19 patients (mean SUVmax: 5,91  $\pm$  3,5). The primary tumor was determined by FDG PET/CT in 21/25 patients (84%) (lung (n=6), primary brain (n=2), renal cell carcinoma (n=2), thyroid (n=2), rectum (n=3), pancreaticobiliar (n=2), subcutaneous tissue (n=1), base of tongue (n=1), sinus priformis (n=1) and lymphoma (n=1)) and two patients with suspicious primary site (colon (n=1), nasopharynx (n=1)) were present. Eight patients were out of follow up. Four patients had documented primary site which we pointed out in FDG PET/CT. **Conclusion:** Previous studies report 20-50% detection rate for identification of primary tumor in patients with CUP. However new generation multislice scanners may provide higher detection ratio's. The detection rate of FDG PET/CT might be higher than previously reported according to this study however prospective studies in large series are warranted. **Key Words:** Unknown primary, metastasis, FDG, PET/CT.