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Abstracts

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initial staging, determining the presence of recurrency and response to therapy in patients with male breast cancer.

P37 - Monday, October 12, 2015, 4:00 PM - 4:30 PM, Hall 3 – Poster Exhibition

Clinical Oncology: Lung

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Evaluation of 18F-FDG PET/CT and low-dose CT performance in diagnosing lymph node metastases among NSCLC patients.

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Objective: The aim of our study is to assess the efficacy of lymph node staging in NSCLC, with particular emphasis on operability, using 18F-FDG-PET-CT and low-dose CT. **Material and methods:** PET-CT and CT results were compared to pathological analysis of operatively excised material, which were used as a “gold standard”. The initial part of our study included scanning and follow-up of 89 patients and 238 nodal stations diagnosed with 18F-FDG-CT in Department of Nuclear Medicine of UCC in Gdansk and treated operatively with pneumonectomy/lobectomy in the Department of Thoracic Surgery, UCC Gdansk in years 2010-2014. Our study aims to answer the following questions: what is accuracy of 18F-FDG-PET-CT and CT in defining the lymph node status; how valuable diagnostically is low-dose CT co-registered with PET study; how to modify the criteria for the evaluation of mediastinal lymph nodes in 18F-FDG-PET-CT and CT to obtain more accurate diagnosis; what is optimal SUV cutoff value to minimize false results; how strong is the need for motion correction; how strong is the need for partial volume effect correction; what are differences in diagnostic quality of PET-CT/CT between particular lymph node stations; what is the optimal algorithm for staging and operability assessment in patients with NSCLC; to what extent PET-CT modifies patient management; what is level of agreement between observers in 18F-FDG-PET-CT nodal staging; what is prognostic value of detected glucose metabolism intensity. **Results:** We confirmed the high specificity of 18F-FDG-PET-CT in diagnosing lymph node metastases reaching 92%. Sensitivity reached 53% and

was reduced probably due to the high fraction of micrometastases in early stages of disease. Sensitivity of low-dose CT in detection of lymph node metastatic disease was only 33%, probably due to the high number of micrometastases in our group, but the specificity of low-dose CT was surprisingly high - 87%. The minimum of false (positive plus negative) results of 18F-FDG PET-CT was reached by SUVmax cutoff value 5.2. Our study confirmed high agreement between PET-CT observers - 0,885 and between observations of PET-CT and CT - 0,896. **Conclusions:** 18F-FDG-PET-CT has relatively high specificity but moderate sensitivity in detection of mediastinal and hilar lymph node metastases in patients with NSCLC. 18F-FDG-PET-CT was much more sensitive than CT, but only moderately more specific. Minimum of false results (FP+FN) was obtained using relatively high SUVmax cutoff value (5.2) for discrimination of benign and malignant lymph nodes. Interobserver agreement in 18F-FDG-PET-CT evaluation was high.

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The value of different 18F-FDG PET/CT baseline measurements in predicting response to chemo-radiotherapy in advanced NSCLC

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Objectives: To investigate the predictive value of the pre-treatment 18F-FDG PET/CT tumor measurements (SUVmax, SUVmean, SUVpeak, MTV and TLG) regarding response to treatment in advanced inoperable NSCLC patients receiving chemotherapy ± radiotherapy. **Patients and Methods:** This retrospective study included thirty patients with newly diagnosed advanced NSCLC who were referred to our center for whole body 18F FDG-PET/CT as a baseline staging method before therapy and later referred again to monitor the response to the therapy taken. For each patient, maximum, mean and peak SUVs, metabolic tumor volume (MTV) and total lesion glycolysis (TLG) of the primary tumor were determined at the pre-treatment scan. The tumor volume was measured using a semi-automatic contouring software. The selected volumes were based on the PERCIST threshold level (drawn on the right lobe of the liver). Two weeks after the end of treatment, the metabolic response of the primary tumor was evaluated using the EORTC response criteria. The correlation between each parameter and the response was done using Student's T-test. Receiver operating characteristic methodology was used to assess the performance of the different parameters to differentiate responders from non-responders (which included