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Title: Prognostic utility of primary tumor and lymph nodes activity by [18F]FDG PET-CT for radiotherapy planning in patients with locally advanced Non Small Lung Cancer

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Introduction
Fluoro-D-glucose uptake of the primary tumor has been identified as an independent prognostic indicator for survival in early stage Non Small Lung Cancer (NSCLC) at diagnosis. However, its prognostic value has been found disappointing in advanced NSCLC. To quantify a lesion on PET, the most commonly used parameter is the maximum standardized uptake value (SUVmax). The prognostic value of FDG-PET after induction treatment has not been studied as entirely as at diagnosis.
Purpose of our study was to evaluate prognostic utility of the SUVmax of primary tumor and lymph nodes by [18F]FDG PET-CT for radiotherapy planning after induction chemotherapy (ChT) in patients with locally advanced NSCLC.

Methods
Fifty-seven patients (46 male, 11 female) with locally advanced NSCLC and [18F]FDG PET-CT images for radiotherapy planning were retrospectively evaluated. All patients (pts) were treated with radical radiotherapy after induction ChT from 2012 to 2017. Forty-two pts had squamous cell carcinomas and 15 had adenocarcinomas. The time between [18F]FDG PET-CT imaging and death was calculated depending of the SUVmax of primary tumor and SUVmax of lymph nodes.

Results
Median follow-up duration was 18 months (range 6-72). The mean SUVmax of primary tumor was 10.72 (range: 0–36.14) and 3.12 of lymph nodes (range: 0–16.5). We assumed that the minimum SUVmax values of primary tumor and SUVmax of lymph nodes were 0 after induction ChT, as a good response to the ChT. The SUVmax of the primary tumor more than 10.72 was not correlated with a worse overall survival (OS) ($p = 0.839642$), as well as the SUVmax of the lymph nodes more than 3.12 ($p=0.526905$). Also, there was no effect on disease free survival (DFS) with higher SUVmax of the lymph nodes ($p = 0.886135$), however, an effect on DFS was observed regarding to the higher SUVmax of the primary tumor ($p = 0.022695$). The 2-year DFS and OS for the whole group of patients were 28%, 33%, respectively.

Conclusion

We did not find a correlation between the SUVmax of primary tumor and lymph nodes and prognosis of patients in [18F]FDG PET-CT for radiotherapy planning after induction chemotherapy. The use of [18F]FDG PET-CT for radiotherapy planning after induction treatment has not been proven to be a reliable method to predict survival of patients and disease aggressiveness.

Biography

Danijela Scepanovic has completed his PhD from University of Novi Sad, Serbia, Europe. He is the Radiation Oncologist of the department of Radiation Oncology, National Cancer Institute of Slovakia, Bratislava, Slovakia, Europe. She has published more than 60 papers in reputed journals and has been serving as an editorial board member of repute journals.

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