Aim: Computed tomography (CT) scan, despite its limitation of imaging sequence, is the standard tool for response assessment following chemo-radiation in locally advanced non-small cell lung cancer (LA-NSCLC). Molecular imaging can characterise the temporal nature of biological activity of a tumour. Thus PET (positron emission tomography)-based response evaluation may be useful and provide information for the planning of an optimal therapeutic strategy. This study aimed to assess the role of 18F-fluoro-deoxyglucose PET-CT (18-FDG PET-CT) in response assessment of patients with LA-NSCLC and in evaluating the predictive value of metabolic response for progression-free survival (PFS) and overall survival (OS).

Methods: Between January 2012 and July 2013, 30 patients with LA-NSCLC fulfilling the inclusion criteria were enrolled in this randomized controlled study. All of them were randomly allocated to one of the two treatment arms. Arm A received two cycles of neoadjuvant chemotherapy (NACT) (paclitaxel 200mg/m² and carboplatin AUC 5) followed by (f/b) external radiotherapy (XRT) (60Gy/30fractions/6weeks) while arm B received the same NACT regimen f/b XRT (48Gy/20fractions/4weeks), with concurrent chemotherapy (cisplatin 30mg/m²weekly). 18-FDG PET-CT was carried out for all patients before treatment and repeated 6 weeks after completion of treatment. SUVm (maximum standard uptake value) was noted from both the baseline and post-treatment scans. Patients with reduction of SUVm of > 50% were considered to be metabolic responders (MR) while ≤ 50% were considered to be non-responders (MNR). Median follow up duration was 9 months.

Results: The median pre- and post- treatment SUVm were 14.4, 6.24, 15.3 and 3.5 for arm A and arm B, respectively. No statistically significant difference was found in the 1-year estimated OS and PFS rate of MR vs. MNR group though they were numerically superior in the MR-subset.

Conclusions: The current study fails to derive any prognostic significance of FDG-PET-CT in LA-NSCLC patients. A larger patient sample and longer follow-up might have showed a different result.

Disclosure: All authors have declared no conflicts of interest.