

Clinical implications of adipose tissue distribution in advanced non-small-cell lung cancer patients receiving first-line Pembrolizumab

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Background and aims: Body composition (BC) phenotypes may reflect aspects of patients (pts)' immunology and thereby their ability to respond to immunotherapies. In this light, our study aimed to explore the prognostic significance of BC in non-small-cell lung cancer (NSCLC) pts receiving first-line Pembrolizumab (PEMBRO).

Methods: A retrospective review of consecutive advanced NSCLC pts treated with PEMBRO as first-line therapy at two academic medical institutions from August 2017 to August 2020 was performed. The estimation of skeletal muscle and adipose tissue (subcutaneous [SAT], visceral and intermuscular) were performed using pre-treatment computed tomography scans at the level of the third lumbar vertebra. Data were correlated to progression-free/overall survival (PFS/OS) using a Cox and logistic regression model. Log-Rank analysis was used for Kaplan-Meier curves comparison.

Results: Data from 77 pts (median age: 68 years [range 36-85]; median follow-up: 11 months [range 1-42]) were collected. Median PFS and OS were 3 (95% CI, 2-4) and 10 (95% CI, 8-13) months, respectively. At univariate analysis for PFS, SAT was a significant prognostic factor. Particularly, pts with pre-treatment higher SAT had significantly longer PFS compared to patients with lower SAT (median 8 vs. 3 months, $p = 0.05$). Although BC parameters were not associated with OS, this was numerically higher in those pts with higher SAT (median 18 vs. 12 months, $p = 0.11$).

Conclusions: These preliminary results support the hypothesis that BC may impact on survival of advanced NSCLC pts treated with PEMBRO, suggesting a potential interaction between the immune system and BC.

Keywords: immune-checkpoint inhibitor; non-small-cell lung cancer; body composition; subcutaneous adipose tissue.