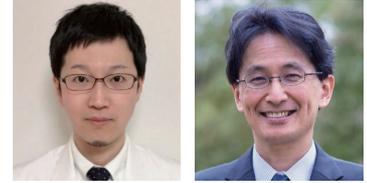# Impact of sarcopenia in patients with advanced non-small cell lung cancer treated with PD-1 inhibitors

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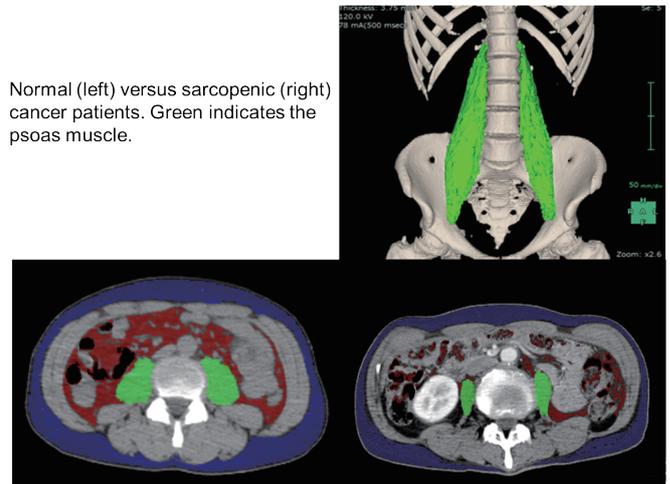
Professor **Atsushi Kumanogoh** Researchmap https://researchmap.jp/read0051725?lang=en

Abstract

The aim of this study was to investigate the clinical impact of sarcopenia on the efficacy of programmed death (PD)-1 inhibitors. We evaluated all patients treated with nivolumab or pembrolizumab between January 2016 and September 2018 for previously treated advanced non–small cell lung cancer (NSCLC). The cross-sectional area of the psoas muscle at the level of the third lumbar vertebra on baseline computed tomography was assessed to calculate the psoas muscle index (PMI). Sarcopenia was defined based on PMI cut-off values for Asian adults (6.36 cm2/m2 for males and 3.92 cm2/m2 for females). A total of 42 patients were analyzed. The prevalence of sarcopenia was 52.4%. Sarcopenia was significantly associated with poorer progression-free survival (PFS) (median, 2.1 vs. 6.8 months, $p = 0.004$). Compared to patients with sarcopenia, those without sarcopenia had a higher overall response rate (40.0% vs. 9.1%, $p = 0.025$) and 1-year PFS rate (38.1% vs. 10.1%). In conclusion, sarcopenia at baseline as determined using computed tomography is a significant predictor of worse outcome in patients with advanced NSCLC receiving PD-1 blockade. Screening for sarcopenia may help identify patients more likely to achieve a long-term response in routine clinical practice.
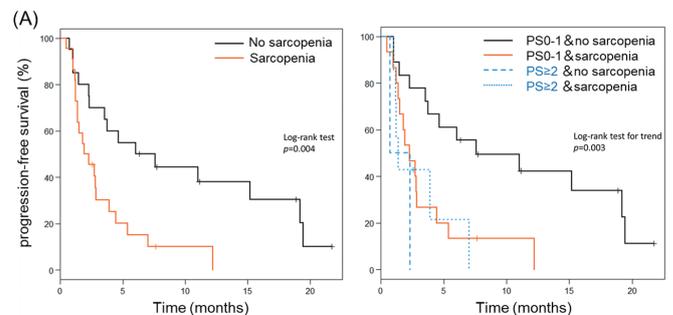
Background & Results

Programmed death (PD)-1 inhibitors such as nivolumab and pembrolizumab demonstrated promising efficacy for treating many cancers, including lung cancer. However, long-term response is currently limited to a subset of patients. The currently available predictive markers are incomplete, at least when used alone. We found that sarcopenia was significantly associated with poorer progression-free survival (PFS) (median, 2.1 vs. 6.8 months, $p = 0.004$). Compared to patients with sarcopenia, those without sarcopenia had a higher overall response rate (40.0% vs. 9.1%, $p = 0.025$) and 1-year PFS rate (38.1% vs. 10.1%).

Significance of the research and Future perspective

Sarcopenia at baseline as determined using computed tomography is a significant predictor of worse outcome in patients with advanced NSCLC receiving PD-1 blockade. Screening for sarcopenia may help identify patients more likely to achieve a long-term response in routine clinical practice.

Normal (left) versus sarcopenic (right) cancer patients. Green indicates the psoas muscle.

Analyzed by SYNAPSE VINCENT® (Fujifilm)

Figure: Muscle mass assessment using abdominal CT.

Sarcopenia was associated with significantly worse outcome than no sarcopenia (log-rank test, p = 0.004). There was a statistically significant difference in the four groups based on PS and sarcopenia status (log-rank test for trend, p = 0.003)

Figure: Kaplan-Meier curves of progression-free survival by (A) sarcopenia status and (B) ECOG PS and sarcopenia status.