IMPACT OF IMMUNE-RELATED ADVERSE EVENT DEVELOPMENT ON OVERALL SURVIVAL IN HOSPITALIZED LUNG CANCER PATIENTS

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Background Immune-related adverse events (irAEs) are a unique characteristic of immune checkpoint inhibitors (ICIs) and can confer survival benefits. For example, melanoma patients who develop vitiligo as an irAE tend to have improved overall survival (OS), hypothesized to be due to molecular mimicry between similar antigens.^{1 2} Further analysis of the impact of irAEs on OS among real-world lung cancer patients is needed; this study addresses this need in a hospitalized population.³⁻⁵

Methods This single-center retrospective cohort study collected data on a subset of lung cancer patients who received > 1 dose of an ICI (nivolumab or pembrolizumab) between 6/1/18 and 2/1/20 (n=210) and who were subsequently hospitalized and received > 1 dose of systemic corticosteroids for any indication (n=97). Patients were stratified according to whether or not they developed irAEs at any point. Clinical factors for data collection included: comorbidities, irAE development (organ and grade), cancer stage, ICI cycles, biomarkers, progression, and survival. OS analysis was calculated from the first dose of ICI to date of death or last known follow-up. To assess significance, the log-rank approximation of the chi-square test was used.

Results Kaplan-Meier survival analysis revealed that patients who developed irAEs (n=28, median OS 14.9 months) did not have an association with increased median OS when compared to patients without irAEs (n=69, 8.7 months, p 0.072) (table 1). The subgroup of patients who developed either colitis or pneumonitis had an increased median OS (n=15, 41.3 months, p 0.049) compared to patients without irAEs. Patients who only experienced grade ≥ 3 irAEs (n = 20, median OS 17.0 months, p 0.095) did not show any OS difference compared to patients without irAEs. Patients who developed ≥ 2 irAEs of any grade (n = 7, median OS 17.0 months, p 0.22) did not show any OS difference as compared to patients without irAEs.

Abstract 810 Table 1 Results of irAE impact on median OS analysis

Groups (n)	Median Overall Survival (months)	P value
All irAE (28) vs no irAE (69)	14.9, 8.7	0.072
Colitis/Pneumonitis (15) vs no irAE (69)	41.3, 8.7	0.049
Grade ≥ 3 irAEs (20) vs no irAE (69)	17.0, 8.7	0.095
Multiple irAEs (7) vs no irAE (69)	17.0, 8.7	0.22

Conclusions Initial analysis shows that while generalized irAEs in this hospitalized lung cancer population were not significantly associated with OS change, patients who developed pneumonitis and colitis were associated with treatment response and increased OS. Patients could be developing an interaction between pneumonitis and lung cancer analogous to the interaction between vitiligo and melanoma via molecular mimicry, resulting in improved OS. Thus, certain organ-related irAEs may indicate an immune response to ICIs depending on the malignancy being treated, correlating with improved prognosis.

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Ethics Approval The study protocol was approved by Wake Forest Baptist Medical Center's institutional review board.

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