Impact of Infections in Patients Receiving Immune Checkpoint Inhibitor Therapies for Non-Small Cell Lung Cancer (NSCLC)

Kelly Gee*, Catherine Wiechmann, Ethan Burns, Saqiong Xu, Yuqi Zhang, Abdullah Esmaeil, Aubrey Crenshaw, Ryan Kieser, Godsfavour Umoru, Ibrahim Muhsen, Kai Sun, Zimu Gong, Shivan Shah, Jun Zhang, Eric Bernicker, Maen Abdelrahim. Houston Methodist Neal Cancer Center, Houston Methodist Hospital, Houston, TX, USA; Department of Medicine, Houston Methodist Hospital, Houston, TX, USA; Department of Pharmacy, Houston Methodist Hospital, Houston, TX, USA; Section of Hematology and Oncology, Department of Medicine, Baylor College of Medicine, Houston, TX, USA

Background While infections are a known cause of morbidity and mortality in those receiving chemotherapy, the burden of infections in the ICI era is seldom explored. This analysis aimed to assess incidence of infections and risk factors in patients who received pembrolizumab (P), nivolumab (N), nivolumab/ipilimumab (N/I), or atezolizumab (A)-based therapies for NSCLC.

Methods Data was collected from 7 hospitals for patients who received P, N, N/I, or A for NSCLC from 1/2017–8/2021. Date of last follow up was 12/2022. Covariates compared among infected and non-infected cohorts included age, gender, race, comorbidities, ECOG, chronic infections, and anti-infective at ICI initiation. Outcomes included rate of infection, association of infection between different ICIs, number of cycles received, all-cause emergency department (ED), hospital, and intensive care unit (ICU) admissions, and median overall survival (OS) and progression free survival (PFS). OS/PFS were evaluated using the Kaplan-Meier model. P-value <0.05 was considered statistically significant.

Results There were 340 patients included: 243 (71.5%), 53 (15.6%), 15 (4.4%), and 29 (2.5%) received P, N, N/I, and A, respectively. Infection was reported in 146 (42.94%) patients; 111 (45.7%), 23 (43.4%), 2 (13.3%), and 10 (34.5%) received P, N, N/I, and A, respectively. Patients with COPD (OR 1.94 [95% CI 1.19, 3.15], p=0.007) and anti-infectives at ICI initiation (OR 2.99 [95% CI 1.34, 6.66], p=0.007) had a higher risk of infection. Compared to non-infected, infected patients had more ED (48 (32.88%) vs 40 (20.62%) p=0.011), hospital, (115 (78.77%) vs 74 (38.14%) p<0.001), and ICU admissions (37 (25.34%) vs 7 (3.61%) p<0.001). Median OS for infected vs non-infected was 11.87 (95% CI 7.97–17.3) vs 17.6 (95% CI 13.67–21.1) (p=0.286) months and PFS was 6.5 (95% CI 5.1–9.1) vs 7.1 (95% CI 6.2–8.9) (p=0.859) months, respectively. At last follow up, 100 (69.49%) infected and 116 (59.79%) non-infected died; 18 (18%) vs 4 (3.45%) deaths from infection, 13 (13.0%) vs 5 (4.31%) deaths from multiorgan failure, and 63 (63.0%) vs 100 (86.21%) deaths from primary disease (p<0.001), and 6 (6.0%) and 7 (6.03%) dying from other causes.

Conclusions While infections appear to be frequent in patients receiving ICI for NSCLC, a smaller proportion are in the setting of non-P ICI regimens. Patients with COPD or who received anti-infectives at ICI initiation had a higher risk of infection. Infections contributed to higher all-cause hospitalization rate and mortality rate, but did not significantly impact survival. Studies to minimize infectious risk to improve patient morbidity and mortality are needed.

http://dx.doi.org/10.1136/jitc-2023-SITC2023.1234