804 REAL-WORLD INCIDENCE AND IMPACT OF PNEUMONITIS IN LUNG CANCER PATIENTS TREATED WITH IMMUNE CHECKPOINT INHIBITORS

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Background Immune checkpoint inhibitors (ICI) generate T-cell mediated anti-tumor responses that are effective across numerous malignancies, but their use is frequently complicated by immune-related adverse events (irAEs). irAEs may lead to treatment delays, need for immunosuppression, morbidity, and even mortality.[1–3]Checkpoint inhibitor pneumonitis (CIP) is the most common cause of fatality related to anti-programmed cell death receptor/ligand 1 (PD-1/PD-L1) agents, and can be difficult to diagnose.[3] We aimed to characterize the real-world incidence and management of CIP, as well as its impact on clinical course and healthcare utilization, in a large cohort of ICI patients using a multi-institutional database.

Methods Propensity score-matched cohorts of 14,461 lung cancer patients who did or did not receive PD-1/PD-L1 inhibitors between 2014 to 2021 were identified from TriNetX Dataworks, a database of health records and claims data from over 40 institutions. Incidence of pneumonia/pneumonitis was estimated using billing codes. A subgroup of 158 patients was selected by the most specific code group and confirmed to have features consistent with suspected CIP, permitting analysis of management practices and outcomes. To describe differences in healthcare utilization and survival, a second propensity score-matched cohort was generated for the subgroup.

Results The attributable risk of pneumonitis to PD-1/PD-L1 inhibitors in lung cancer at 1 year after ICI initiation was 6.88% (95% CI 6.01–7.75%). Median time to onset of drug-induced pneumonitis in the subgroup was 4.4 months (IQR 2.1–7.8 months). Of 158 patients, 21 (13.3%) underwent bronchoscopy within 30 days after diagnosis. Prednisone (130/158, 82.3%), methylprednisolone (80/158, 50.6%), and antibiotics (135/158, 85.4%) were frequently prescribed. ICI was discontinued in 69.5% of patients within 90 days of drug-induced pneumonitis. Within the first year of PD-1/PD-L1 therapy, patients with pneumonitis had more hospitalizations (83.5% vs 49.4%, RR 1.69, $p<0.0001$) and ICU requirements than controls (28.5% vs 8.9%, RR 3.21, $p<0.0001$). Landmark analysis at 6 months demonstrated that CIP associated with reduced overall survival, with a mortality HR of 1.43 (95% CI 1.03–1.97, $p=0.03$).

Conclusions To our knowledge, this is the largest study of CIP to date. Importantly, the study found that the incidence of PD-1/PD-L1-induced pneumonitis, 6.88%, is higher than clinical trial estimates (2–5%), but lower than reported in uncontrolled real-world studies (17–19%).[4–8] CIP had significant negative impacts on therapy continuation, healthcare utilization, and overall survival in lung cancer. This work demonstrates proof of concept that studies of irAE incidences and patient outcomes are feasible using large claims and electronic health record databases.

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Ethics Approval As described on TriNetX's website (https://trinetx.com/trinetx-publication-guidelines/), all data available on the network is de-identified and in-line with HIPAA Privacy Rule standards.

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