Association of Immune Checkpoint Inhibitors (ICI) And Venous Thromboembolism (VTE) in Non-Small Cell Lung Cancer (NSCLC)– A Single Healthcare System Experience.

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Background

- NSCLC and chemotherapy are well-known predisposing factors for VTE.
- There are conflicting data regarding the association between ICI and VTE in patients with NSCLC.
- We conducted a retrospective chart review to further assess the relationship between VTE and ICI in patients with NSCLC who were treated at our facility.

Methods

- All adult patients >18 years of age with NSCLC who received cancer treatment in our academic health system between January 2011- January 2021 were extracted from the tumor registry.
- Information was obtained about the type of cancer treatment, deep venous thrombosis (DVT) or pulmonary embolism (PE) occurrence, and associated comorbidities.
- Patients were divided into two groups – chemotherapy and combined ICI-chemotherapy.
- Fisher exact tests were used to compare categorical covariates by VTE status, while Wilcoxon rank-sum tests were used for continuous covariates.
- Multivariable logistic regression was performed to adjust for potential confounding.

Results

* 370 patients with NSCLC were included in the study.
* No statistically significant difference was found between VTE incidence and race, histology, or gender.
* There was a decreased VTE rate among non-advanced cancer (6.2% vs. 18.1%, p=.015) and squamous cell histology (7.5% vs. 28.1%, p=.009).
*Although the rate of VTE increases slightly in ICI/chemotherapy (17.4%, CI: 11.2%-25.8%) when compared to chemotherapy (15.3% %, CI: 11.2%-20.4%), this was not statistically significant (p=.645).
* After adjusting for sex, histology, and race, ICI/chemotherapy group had a statistically insignificant increase in odds of VTE events (adjusted OR = 1.24 95% CI = 0.67-2.3, p=.498) compared to the chemotherapy group.
* The odds of death were significantly lower in patients with ICI/chemotherapy (aOR=.33, 95% CI = .2-.54, p=.001).
* The median time between ICI use and VTE was 21 days (CI: 12.5-65), while the median time between chemotherapy and VTE was 65.5 days (CI=36.5-146.5).

Variable	OR (CI)	P-value
Immunotherapy+Chemo vs chemo only	1.24 (0.67-2.3)	0.498
AA Race vs Other	1.59 (0.85-2.98)	0.15
Squamous Cell vs other	0.44 (0.19-1.03)	0.057
Age at Dx	0.97 (0.94-1.01)	0.111
Alcohol Use	1.26 (0.7-2.28)	0.434
Male Gender	0.63 (0.35-1.15)	0.131
Stage 4 vs others	1.41 (0.79-2.51)	0.248

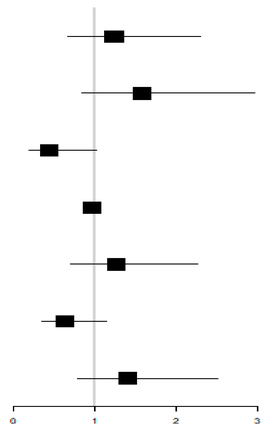

Figure 1: Logistic regression for VTE/PE

Conclusion

* In patients with NSCLC who were treated at our facility, there was no significant VTE difference in patients related to race or gender identity.
* Likewise, there was no statistical difference in the incidence of VTE in the ICI/chemotherapy and chemotherapy groups.
* Further studies, including meta-analyses, are required to evaluate the association further, given conflicting results on prior retrospective studies.