Cardiovascular outcomes in hospitalized patients with COVID-19 and history of cancer: a CORONA-VTE analysis

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Background: In hospitalized patients with COVID-19, active cancer has been identified as a potential risk factor for adverse cardiovascular outcomes, including thrombosis. However, the impact of COVID-19 on outcomes in patients with a remote history of cancer is poorly understood. We evaluated hospitalized patients with a history of remote cancer and COVID-19 to examine whether a history of cancer contributes to 30-day major adverse cardiovascular outcomes among patients with COVID-19.

Methods: Using a retrospective cohort of 1114 patients from CORONA-VTE (Registry of Arterial and Venous Thromboembolic Complications in Patients With COVID-19), we looked at 399 hospitalized patients diagnosed with polymerase chain reaction (PCR)-confirmed COVID-19 within a large heath care network that consists of two large academic medical centers and several community hospitals. Twenty-six patients with active cancer or receiving cancer treatment within 1-year of COVID-19 diagnosis and five patients with unknown cancer history were excluded. We assessed 46 patients with a history of cancer and 322 patients without any history of cancer. The primary endpoint was the frequency of adjudicated major adverse cardiovascular outcomes, defined as myocardial infarction, stroke, pulmonary embolism, deep vein thrombosis, and mortality.

Results: Among the 46 hospitalized patients with COVID-19 and a history of cancer, 23.9% were non-white and 43.48% women. Compared to patients without any history of cancer, patients with a history of cancer were older (median 59.0 vs. 75.5 years, $p<0.001$) and had higher BMI (median 26.4 vs. 29.6 kg/m^2, $p<0.05$). Patients with a history of cancer had higher rates of underlying CVD than those without (42.4% vs. 23.2%). Rates of major adverse cardiovascular events were similar in patients with and without a history of cancer (28.3% vs. 23.6%, respectively). Those with a history of cancer had a higher mortality rate (28.9% vs. 11.2%, $p<0.05$). Acute Respiratory Distress Syndrome (ARDS) and preexisting CVD were independently associated with mortality in this patient cohort (OR 19.7, 95% CI 7.5–51.7 and OR 2.9, 95% CI 1.2–6.9). History of remote cancer was not independently associated with mortality (OR 2.39, 95% CI 0.93–6.15, p=0.07).

Conclusion: Our findings indicate that a history of remote cancer is not independently associated with increased mortality in hospitalized COVID-19 patients. These data suggest that the cause of death among hospitalized patients with COVID-19 and history of cancer is most likely multifactorial, with a strong contribution from cardiovascular disease.

Table. Univariate and Multivariate Analysis of Risk Factors for Mortality in Hospitalized Patients with COVID-19

	Univariate		Multivariate	
	OR	95% CI	Adjusted OR	95% CI
Mortality				
History of Cancer	3.24	1.55-6.75	2.39	0.93-6.15
CVD	3.67	1.97-6.87	2.94	1.25-6.89
Male	1.27	0.67-2.36	1.04	0.47-2.29
ARDS	8.02	3.84-16.74	19.66	7.48-51.66
Age	1.08	1.05-1.11	1.08	1.04-1.12
BMI	0.95	0.90-1.00	0.96	0.92-1.05