Abstract Form

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Project Title:	Comparison of Coronary Artery Calcium Scores Among Different Anti-Cancer Therapies

Research Category (please check one):

☒	**Original Research**	☐	**Clinical Vignette**	☐	**Quality Improvement**	☐	**Medical Education Innovation**

Abstract

INTRODUCTION

Immune checkpoint inhibitors (ICIs) are increasingly used to treat a broad range of cancers but are also associated with accelerated atherosclerosis and coronary artery disease (CAD). Other cancer-directed therapies such as alkylating agent, gonadotropin-releasing hormone (GnRH) agonist, VEGFi (vascular endothelial growth factor inhibitor), tyrosine kinase inhibitor (TKI), and immunomodulator (lenalidomide and thalidomide) have also been shown to be negative regulators of atherosclerosis. Our objectives were to assess coronary artery calcium (CAC) scores in patients following any cancer therapies known to cause CAD.

METHODS

A retrospective single-center cohort study of patients with any type of cancer treated with CAD-associated cancer therapies between 2010 and 2023 was performed. We identified 472 patients who had CAC scans after cancer therapy initiation. Using CAC score percentile as the main outcome measurement, we used multivariate regression models on our cohort to examine associations between demographics, clinical characteristics, and cancer therapies.

RESULTS

Median age was 74 (Q1-Q3: 61 – 87) years, and 47% were female. Hypertension was presented in 12.9% of the cohort, 34.7% had CAD, 39.4% were current or former smokers, 9.5% had heart failure, 17.8% had diabetes, and 10% had a history of stroke. In our cohort, 12.1% of patients received ICIs, 23.5% GnRH agonists, 10.4% TKIs, 30.1% alkylating agents, 6.4% VEGFi, and 25.4% immunomodulators. Median days between cancer treatment and post-treatment CAC scan was 1023 days (Q1-Q3: 529-1517) days.

Median CAC score percentile was highest in the TKI group (74%ile, Q1-Q3: 39 - 91%ile) and lowest in the GnRH agonist group (53%, Q1-Q3: 0 – 85%). On multivariate analysis, age (odds ratio [OR] 8.83, 95% CI: 5.97 – 11.7, p <0.001), male (OR 14.1, 95% CI: 6.38 – 21.87, p <0.001), and Asian ethnicity (OR 22.41, 95% CI: 3.04 – 41.79, p=0.023) were associated with a higher CAC score percentile. CAC score percentiles were higher when comparing patients treated with ICI versus all other cancer therapies but did not reach statistically significance (OR 2.19, 95% CI: -9.81 – 14.19, p = 0.72).

CONCLUSIONS

In this small pilot study, there were no differences in CAC scores after initiation of ICI compared to other cancer-directed therapies. Future studies measuring pre- and post-cancer treatment CAC scores would be beneficial in understanding the rate of atherosclerotic plaque growth.