Abstract: 4118

Cisplatin therapy as a risk factor for incident atrial fibrillation

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Background: Although aging is a major contributor to the rising epidemic of atrial fibrillation (AF), increased numbers of cancer survivors who suffer from chemotherapy and radiotherapy mediated cardiovascular disease also appear to be especially vulnerable to developing the arrhythmia. Currently, little is known about the long-term risk of AF in patients treated with these two treatment modalities for cancer.

Purpose: To define the incidence and prevalence of AF in a thoracic tumour cohort following radiotherapy and chemotherapy.

Methods: We conducted a retrospective study from the electronic health records (EHR) of patients who had a primary tumour of the breast and lung. Patients with AF, radiotherapy or chemotherapy prior to cancer diagnosis were excluded. All patients were followed for incident AF until last censoring or death using a validated AF algorithm (positive predictive value 96%). Radiation oncology treatment reports were reviewed and chemotherapy data was extracted from the EHR and manually reviewed for 43 chemotherapeutic agents.

Results: In the tumour registry, 17,402 patients were identified by histological and pathological reports. We examined 3,336 patients with a thoracic tumour diagnosis (breast and lung) with a mean age of 62.7±12.5 (SD) years. The AF incident rate for breast and lung cancer was 1.2 and 13.5 cases per every 100 persons with a cumulative rate of 2.49 and 0.67 respectively. We observed an overall AF prevalence of 3.4% and 7.4% in the breast and lung cohorts respectively. The average follow-up duration was 4.69 years (0.0-17.8 years) in breast cancer and 1.36 years (0.0-13.9 years) in lung cancer patients. A Cox regression model revealed no association between radiotherapy and AF in either cancer type (breast: P=0.18 and lung: P=0.16). However, patients who received cisplatin had 4-fold increased risk of developing AF after covariate adjustment (HR = 4.22, 95% CI:0.10-17.85, P = 0.05).

Conclusions: We show for the first time in a large thoracic tumour registry and using the EHR that patients treated with cisplatin were more likely to develop AF. Additional studies are needed to validate our findings and to further investigate the underlying mechanisms of these cardiotoxic effects.