

## **Chemotherapy Treatment with either Panitumumab or Vinorelbine Increases the Risk of Developing Atrial Fibrillation in Lung Cancer**

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**Introduction:** With an aging population and increasing number of cancer survivors, radiotherapy and chemotherapy mediated cardiovascular disease is becoming more prevalent. However, little is currently known about the impact that these different treatment modalities have on the prevalence of atrial fibrillation (AF).

**Hypothesis:** Chemotherapy increases the incidence of AF in patients with lung cancer.

**Methods:** We conducted a retrospective review from 1994 to 2014 in the electronic medical record (EMR) of patients treated with radiotherapy and/or chemotherapy for lung cancer. Incident AF was detected using a validated algorithm. Radiotherapy data was obtained from radiation oncology treatment reports. Chemotherapy data was extracted from patient charts and 43 different chemotherapy drugs were examined from 8 classes consisting of: Tyrosine Kinase Inhibitors, Alkylating Agents, Monoclonal Antibodies, Antimetabolites, Mitotic Inhibitors, Hormonal Modifiers, Topoisomerase Inhibitors and Antineoplastic Antibiotics. These were further categorized into the 16 most commonly used treatment regimens for lung cancer.

**Results:** Among 1,784 lung cancer patients with a mean age of 65.1 (standard deviation 11.3) years, there was a 9% prevalence of AF in this cohort. We observed panitumumab, a monoclonal antibody to increase the risk of AF in both unexposed or exposed thoracic radiotherapy groups when controlling for age, sex, race, body mass index, coronary artery disease, hypertension, diabetes mellitus, and heart failure (OR = 3.74, 95% CI 0.004 - 1.116, P = 0.05 and OR = 3.55, 95% CI 0.004 - 1.040, P = 0.05) respectively. We also observed an additive effect with vinorelbine, a mitotic inhibitor to increase the likelihood of AF with (P = < 0.01) or without (P = < 0.05) concomitant thoracic radiotherapy.

**Conclusions:** We identified two chemotherapy agents in lung cancer patients that significantly increase the development of AF. While these findings need to be further validated, panitumumab and vinorelbine for lung cancer should be prescribed with caution in at-risk AF populations.