Commentary: The relationship of cancer and heart disease—it’s complicated

Moritz C. Wyler von Ballmoos, MD, PhD, MPH,a,b and G. Hossein Almassi, MD c,d

Both cardiovascular disease (CVD) and cancer are among the leading causes of death globally. More importantly, they share many risk factors, including genetics, sex, age, diabetes, obesity, and radiation, among others. Although often thought of as separate entities, cancer and CVD are tightly intertwined with shared causal pathways such as inflammation or oxidative stress promoting CVD and carcinogenesis. Furthermore, common treatment strategies for cancer increase cardiovascular risk; plus, a significant proportion of deaths in patients with cancer are, in fact, cardiovascular deaths. This proportion of cardiovascular death grows significantly with more indolent forms of cancer (eg, most prostate cancer). The insidious onset, chronicity, complex interaction, and shared causes between CVD and cancer pose significant challenges for observational studies on the relationship between them. Given the sheer prevalence and coexistence of the 2 disease processes, more research and a better understanding when invasive therapies such as revascularization are beneficial are desperately needed.

In this edition of the Journal, Mennander and colleagues present an analysis of more than 82,000 patients undergoing isolated, first-time coronary artery bypass grafting (CABG) in Sweden using national registry data. In their study, they compare subjects with a previous medical history of cancer (18% having a cancer diagnosis more than 10 years before CABG) to those without such a history over a median follow-up time of 5.9 years in the cancer group and 9.3 years in the comparison group.

In their paper, they share some interesting observations from these data. Arguably, the most important finding is that over time an increasing number of patients with a history of cancer were offered CABG, and those patients have similar 30-day mortality (2.4%) compared with the control group (1.7%). These are encouraging data that CABG may be safely performed in a select group of patients with a history of cancer. This trend is likely explained by significant progress made in oncology, rather than cardiac surgery, allowing a growing number of patients to survive long enough to require coronary revascularization. The authors report that cancer history was independently associated with increased all-cause mortality during follow-up; this association was also more pronounced in patients with a history of hematologic malignancies compared with solid tumors. Furthermore, this association was stronger if the cancer diagnosis was in closer temporal proximity to CABG. All this is rather expected.

Finally, the authors explore cause-specific mortality and conclude that cardiovascular prognosis after CABG is the same for patients with and without a history of cancer. We feel less certain about these conclusions. Several points about the study design and analysis are worth noting. The cancer-history-cohort enters this study after a significant survivorship bias; patients with the worst cancer and CVD burden simply did not survive or qualify for CABG. On the flip side, the control group enters this study with no similar previous selection...
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Commentary: Are all cancers equal?

Sigrid E. Sandner, MD, and Mario Gaudino, MD, MSCE

Cardiovascular disease and cancer are the 2 leading causes of death in the United States to date. In 2018, in the United States, the age-adjusted death rate from cardiovascular death. Substantial literature would suggest otherwise. Rather, the explanation here is given by a peculiarity of this popular methodology (Fine and Gray competing risk models), which was not actually devised for causal interpretations. To estimate the subhazards, an unnatural assumption that subjects remain part of the risk set, after a competing event has occurred, must be made. Consequently, any variable that increases the cause-specific risk of event A will appear to decrease the subdistribution hazard for event B. Because whenever a type A event occurs, it eliminates the possibility that a type B event will happen. We commend the authors for presenting this large cohort study with some important findings but also caution against a conclusion that suggests cardiovascular prognosis is the same for patient with and without a cancer.

References