

Impact of Cardiac Radiation on Risk of Coronary Artery Disease



Over the years, there has been significant progress in the treatment of children with cancer. This has resulted in an increase in the number of cancer survivors living into adulthood. However, significant impact has been observed on the long-term health of these individuals, with many of them experiencing chronic health issues related to previous treatment. In particular, cardiovascular conditions have been reported in cancer survivors after treatment. These include the incidence of cardiomyopathy, cardiac arrhythmias, coronary artery, valvular, and pericardial diseases.

Cancer treatments try to focus on advancing cure rates as well as minimising long-term adverse effects. Exposure to cardiotoxic treatment patterns have changed over time and now fewer children receive chest directed radiation. When they do receive radiation, it is usually in lower doses and smaller volumes. However, the impact of these treatment modifications on the late onset of cardiovascular disease in cancer survivors remains understudied.

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The Childhood Cancer Survivor Study was conducted to examine temporal trends in cardiac outcomes among a diverse population of cancer survivors, and the effect of changes in treatment over time. The goal of the study was to assess whether changes in exposure to cancer treatment in childhood is associated with altered risks for cardiac events in adulthood. The study included five year survivors in US and Canada of common childhood cancers including leukaemia, central nervous tumours, Hodgkin lymphoma, non-Hodgkin lymphoma, renal tumours, neuroblastoma, soft tissue sarcomas, and bone sarcomas.

Participants were requested to complete surveys regarding cardiac outcomes and these responses were analysed using an algorithm to grade and score all conditions according to the National Cancer Institute's Common Terminology Criteria for Adverse Events. All cardiac conditions of grades 3-5 were reported including heart failure, coronary artery disease, heart valve replacement, pericardial disease, and arrhythmias requiring pacemakers or cardioversion or death from any one of these five conditions.

As per the findings of the study, the 20-year cumulative incidence of heart failure and coronary artery disease decreased in recent eras. However, the same declines were not observed for valvular disease, pericardial disease, or arrhythmias. Survivors with a diagnosis in the 1970s had a higher risk of heart failure, coronary artery disease and valvular heart failure compared to those in the 1980s and 1990s, but only significantly for coronary artery disease. Overall, the risk of coronary artery disease was attenuated by adjustment for cardiac radiation, particularly among survivors of Hodgkin lymphoma.

These findings suggest that historical reductions in exposure to cardiac radiation are associated with a reduced risk of coronary artery disease among adult survivors of childhood cancer.

Source: [BMJ](#)

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