https://doi.org/10.29289/259453942024V34S1068

Valvulopathy due to mediastinal radiation: a diagnosis little thought of in radiotherapy for breast cancer, a systematic review

Gustavo Moreira Andrade[1], Marina Ribeiro Castro[1], Gabriela Muniz Ferreira dos Santos[1], Cynara louany da Silva Ramos[1], Marcos Vinícius Milki[1], Rebeca da Silveira Ferreira[1]

[1]Pontifícia Universidade Católica de Goiás, Department of Undergraduate Medicine.

Objective: This study aimed to review the possibility of diagnosing valvular heart disease due to mediastinal radiation, in radiotherapy for breast cancer, as it is little considered and an insidious diagnosis. Due to the reason that radiotherapy is an important way of treatment in patients with not only breast cancer but also lymphomas. **Methodology:** We comprehensively searched the PubMed database for studies and trials that included mediastinum radiotherapy for breast cancer and valvulopathy in their papers. Our systematic review followed the PRISMA statement guidelines. **Results:** Cardiac complications include coronary artery stenosis, pericardial disease, cardiomyopathy, conduction abnormalities, and, mainly, valve disease, with significant prevalence in survivors of Hodgkin's lymphoma and breast cancer. Asymptomatic radiation-associated valve disease is usually diagnosed more than 10 years after mediastinal irradiation. Understanding the pathophysiological mechanisms underlying radiation-induced cardiovascular damage is crucial for early diagnosis and effective treatment of subclinical cardiac abnormalities, as valve disease begins with mild asymptomatic valve thickening and progresses to severe valve fibrosis with hemodynamic compromise that requires surgical intervention. Although evidence-based specific cardiac screening approaches are lacking, prevention remains the best way to treat radiation-induced cardiotoxicity. Modern radiotherapy techniques, such as three-dimensional planning and the use of subcarinal blocks, are essential to minimize the volume of the irradiated heart and reduce the risk of cardiovascular complications. **Conclusion:** It is clear that radiotherapy plays an indisputable role in the treatment of breast cancer; however, its application may be associated with serious cardiovascular complications, especially when the heart is directly exposed to radiation. Dose prediction models are being developed to predict the risk of future heart valve disease and new radiation techniques are being developed to reduce radiation dose to the heart, but continued surveillance and long-term cardiac follow-up will still be necessary to ensure quality. life expectancy of patients undergoing radiotherapy for breast cancer.

Keywords: breast cancer; radiotherapy; valvulopathy; oncology.