

Letter to the Editor



Myocardial Perfusion Imaging in Breast Cancer Patients

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Conflict of Interest

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To the Editor:

Breast cancer represents the most frequent malignant tumor in women [1]. Its management includes surgery or biopsy, radiotherapy, and chemotherapy, depending on its histology and stage. Radiation therapy (RT) may be used as an adjuvant or palliative treatment. RT after partial surgery may reduce local tumor recurrence and improve the survival of patients [2]. In patients with left breast cancers, radiotherapy may elicit cardiotoxicity, when the heart is within the radiation field, especially in patients receiving cardiotoxic chemotherapy or those having pre-existing cardiovascular conditions. Early cardiotoxicity is characterized by pericardial effusions, and late effects may include valvular disease, coronary artery disease, or heart failure [3].

A recent study reported a 5.3% rate of major coronary events (MACE) after RT in breast cancer patients. Moreover, patients with high blood pressure, diabetes mellitus, and cerebrovascular accidents had 3-year coronary event-free survival rates that were inferior to those of the patients without such comorbidities [4]. The increase in the rate of MACE was proportional to the radiation dose; MACE manifested within up to at least 20 years [5].

A meta-analysis showed that significant cardiovascular mortality after RT of the left breast, compared with that of the right breast, was more obvious after a long follow-up of over 15 years [6]. Thus, in breast cancer patients with cardiovascular risk factors, RT should include heart-sparing methods, or it may be performed via intensity-modulated technology to avoid significant cardiotoxicity [4].

Myocardial perfusion imaging (MPI) single-photon emission computed tomography (SPECT) represents an accurate non-invasive technique for detecting subtle myocardial ischemia in various clinical conditions [7,8], even without obvious coronary artery disease [9-11]. In such cases, early myocardial ischemia without obstructive coronary artery disease may be partially reversible with appropriate therapy [12].

Patients treated with RT for left-sided breast cancer demonstrated a higher risk of post-RT myocardial perfusion defects on MPI SPECT than those treated for right-sided breast cancer [13]. Similar MPI SPECT results were reported by another study that found more myocardial abnormalities in patients with left breast cancer after RT than in those with right breast cancer, manifested between 6 and 263 months after RT. In these patients, the reported myocardial ischemia was silent and without significant clinical consequences [14].

In conclusion, RT of left breast cancers is associated with a higher risk for cardiotoxicity because of the partial inclusion of the heart within the radiation field. Utilization of advanced RT technology, such as intensity-modulated technology, may reduce myocardial damage. In any event, MPI SPECT represents a valuable imaging method for the early diagnosis of myocardial toxicity and early appropriate treatment to minimize permanent damage.

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