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In this special issue of the Turkish Journal of Oncology, we will discuss radiation-induced heart toxicity regarding its mechanisms, clinical aspects, and effects on oncological treatment results.

Cardiac diseases and cancers are two leading causes of death.[1] Unfortunately, cancer treatments can also affect cardiac structures negatively.[2] Radiotherapy continues to play an integral role in the treatment of many different thoracic tumor types. In treating malignant thoracic diseases, radiotherapy was applied by planning two-dimensional and covering large lymph node volumes 20-30 years ago. In this type of thoracic irradiation, which is called conventional radiotherapy, radiation oncologists relatively protected the heart by using "cerrobend" blocks and then "multileaf collimators". Nowadays, three-four-dimensional radiotherapy plannings and later intensity-modulated radiotherapy (IMRT) methods have provided a more conformal treatment opportunity. In-room imaging systems and gating and tracking methods have ensured that irradiated target volumes, and therefore critical normal tissue volumes, can be significantly reduced.[3] Advances in proton therapy devices, which are unfortunately still not widely available globally, also promise to reduce cardiac toxicity.[4]

In the last 30 years, radiotherapy has been used in combination with systemic chemotherapy drugs in the curative or neo (adjuvant) treatment of many malignant diseases. Combination therapy made the elective irradiated volume smaller, which created an advantage in terms of toxicity. However, it has been understood that some chemotherapy drugs are cardiotoxic, and when used in combination with radiotherapy, they may cause a negative synergistic effect on cardiac toxicity.[5] Targeted therapies such as tyrosine kinase inhibitors are newer systemic treat-

ments with less known toxicity profiles. Some drugs in this group showed different patterns of cardiotoxicity.[6] Studies on immune treatments have gained momentum in the last few years. Immune therapies have already entered the standard treatment scheme in some lung cancer and lymphomas stages, and many clinical studies are carrying on other thoracic diseases. Preliminary information suggests that although the heart toxicity of immune therapies is rare, this toxicity can be fatal. Therefore, the cardiac effects of combined use with other therapies are being investigated today.[2,7]

Over time, it has been understood that the contribution of radiotherapy to local control in diseases with relatively long survival expectancy has not been reflected in the overall survival contribution, primarily due to cardiac toxicity.[8] Pertinently, cardiac and pulmonary rehabilitation is essential for this group of patients. The cardio-oncology concept has become increasingly popular in the last decade and can be part of standard treatment and follow-up in cancer patients.

I believe this supplement issue will provide you an awareness of the importance of radiation-induced cardiotoxicity.

Sincerely,

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