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LETTER TO THE EDITOR
RADIATION INJURY TO BLOOD VESSELS

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Epidemiological studies have indicated that coronary artery disease (CAD) is significantly increased in patients irradiated to the heart and followed for a long period[1,2]. The threshold dose for CAD is 24 Gy[3]. CAD may appear 10 to 15 years after irradiation, but is also influenced by the usual risk factors for its development, i.e., obesity, smoking, and hypertension[3]. Among the chemotherapy agents used in the treatment of lymphomas, doxorubicin in particular may be a risk factor for cardiac events[4].

Bilora *et al.*[5] reported some of these factors in their recent paper. However, there are several points that need to be stressed. First of all, the whole study population received chemotherapy. Doxorubicin is likely to have been one of the chemotherapeutic agents used. This may be one of the reasons for the high risk of cardiovascular events. In addition, there was a 7% difference between the groups in the rate of smoking. This may be another reason for the high risk in the treated group. Furthermore, a likely risk factor, family history of cardiac disease, was not taken into consideration in the study.

Moreover, external photon irradiation and endovascular radiotherapy have different physical properties. For example, beta-emitting sources have a short, finite (<10 mm) range and the ability to quickly deposit their energy in tissue[6]. This means that only a small segment of the vessel may be affected. However, a larger cardiac vessel volume is exposed to higher radiation doses unless proper shielding is applied in lymphoma patients. Recently, there has been a tendency to reduce the radiation dose to as low as 20 Gy in this group of patients, especially for complete responders. As mentioned before, this dose is under the threshold level for CAD.

In conclusion, radiation therapy is an important treatment modality for lymphoma patients which should be planned and delivered with great precision.

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IN REPLY

The patients with non-Hodgkin's lymphoma were treated with doxorubicin and radiation therapy according to the international protocol, at doses carrying no associated cardiotoxicity. Doxorubicin and radiation therapy may have a synergistic toxic effect on the myocardium, however[1]. We also conducted an intragroup statistical assessment as regards intima-media thickness, and there was no evidence of a significant difference. Some authors, moreover, have recently examined carotid wall thickening in patients treated with radiotherapy for head or neck tumors, and they found significant wall thickening by comparison with the nonirradiated vessel[2]. These considerations lead us to conclude that radiation therapy is a risk factor in addition to the classic risk factors for atherosclerosis. Radiotherapy cannot be postponed, of course, but we might also consider ways to protect these patients using antioxidant therapy, for instance.

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