

Multiple late cardiovascular complications after combined oncological treatment of Hodgkin's lymphoma

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A 64-years-old female, actively smoking, with hypertension and dyslipidemia, was admitted to the department of cardiology for *de novo* retrosternal pain (Canadian Cardiovascular Society score II). In oncological history in 1992, the patient was diagnosed with Hodgkin lymphoma (HL) and treated with intensive head and chest radiotherapy (cumulative dose, 39 Gy). In 1998, a local relapse was noted and a successful COPP (cyclophosphamide, vincristine, procarbazine, prednisone)/ABVD (doxorubicin, bleomycin, vinblastine, and dacarbazine) chemotherapy was administered. Physical examination revealed asymmetric pulse and difference in blood pressure between the upper limbs (43 mm Hg), with lower pressure, weakness, and numbness on the left one.

Computed tomography angiography of the chest documented inflammatory lesions, emphysema, minor nodular lesions without enlarged lymph nodes in the lungs, and severe calcification of the aorta, aortic branches, coronary arteries, and aortic valve. The ultrasound Doppler indicated non-significant stenosis of the left and right internal carotid arteries, stenosis of the left subclavian (LSA) and vertebral arteries (LVA), with stage III of subclavian steal syndrome. The diagnosis was confirmed on angiography, with 70% ostial stenosis of LVA with a highly calcified plaque in the LSA with collateral circulation (Figure 1A, B). It was established that angioplasty of lesions was not possible. The surgery of the LSA was delayed because of extensive neovascularization around the aortic arch and subclavian branches. The transthoracic echo-

cardiography showed preserved contractility (left ventricular ejection fraction [LVEF], 55%), confirmed with global longitudinal strain, with hypokinesia of the basal segments of the lateral and inferior walls, and moderate tricuspid regurgitation. Moreover, a massively calcified aortic valve without significant stenosis was visualized. Furthermore, the post-exercise myocardial perfusion scintigraphy showed perfusion defects in the apical and septal segments (11% of the myocardium).

Coronary angiography demonstrated 80% stenosis of the left artery descending (LAD) and right coronary artery (RCA) (Figure 1C, D). Results were consulted with the Heart Team and the decision about staged primary percutaneous coronary intervention (PCI) was made due to the high risk of potential surgery complications resulting from the patient's history including chest irradiation. In the first step, LAD angioplasty with a semi-complaint balloon and stent implantation was performed (Figure 1E, F). PCI of the RCA was abandoned due to the extensive calcification and resolution of symptoms.

Currently, the number of cancer survivors and cardiovascular (CV) complications is constantly increasing [1]. In this report, we present a description of an HL survivor with multiple CV side effects, diagnosed almost 30 years after treatment. There are few similar descriptions of such CV complications in the literature [2]. The pathogenesis of these complications is mainly the microvascular destruction and vascular insufficiency caused by radiation-induced free radical generation and endothelial dysfunction caused

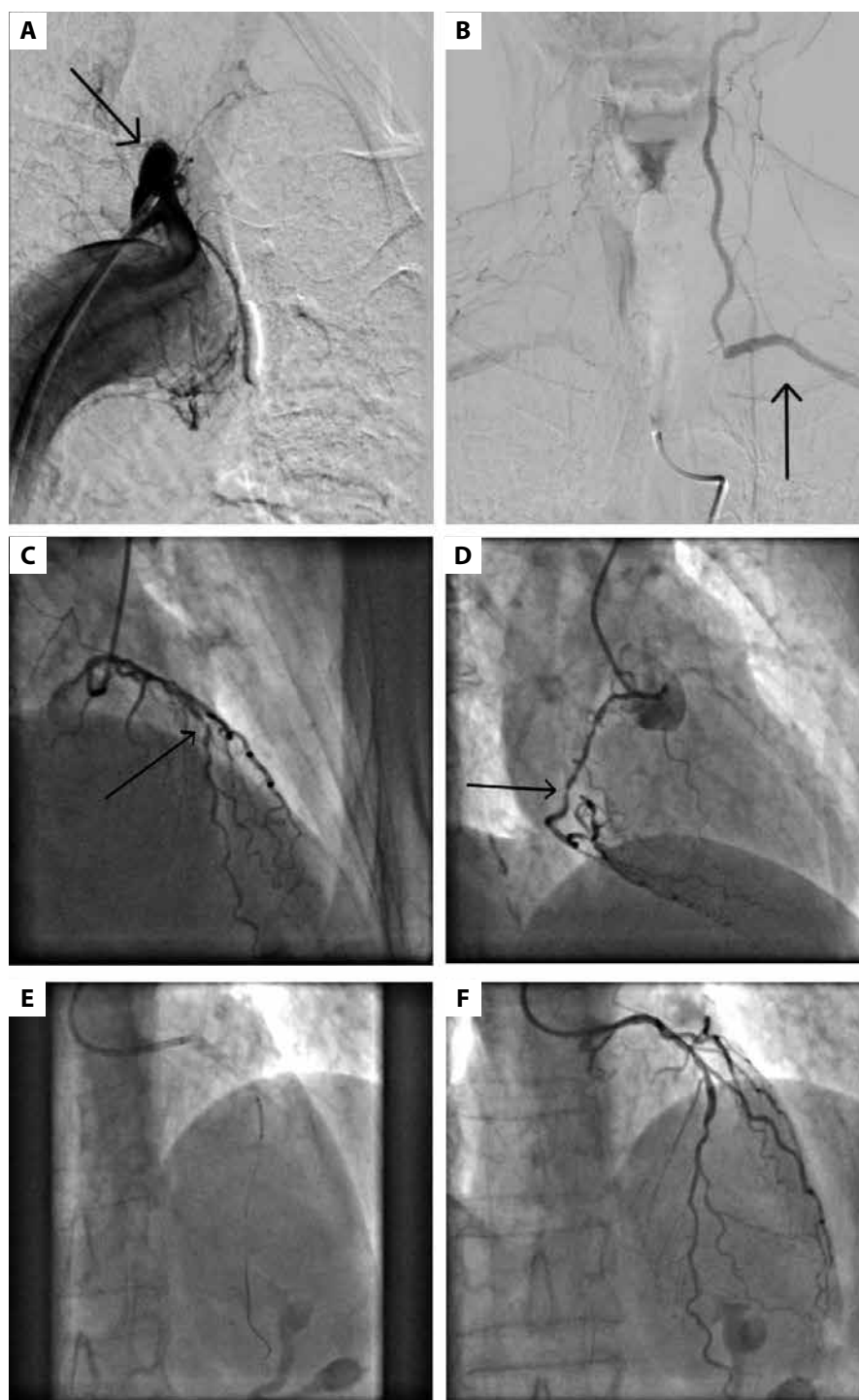


Figure 1. Angiography. **A, B.** 70% ostial stenosis of LVA with a significant highly calcified plaque in LSA with collateral circulation (arrow). **C.** Significant stenosis of LAD (arrow). **D.** 80% stenosis of RCA (arrow). **E.** LAD during PCI. **F.** The final effect of LAD PCI

Abbreviations: LAD, left anterior descending artery; LSA, left subclavian artery; LVA, left vertebral artery; PCI, percutaneous coronary intervention; RCA, right coronary artery

by anticancer agents in diverse molecular mechanisms that promote atherosclerosis and CV dysfunction [3]. In conclusion, the discussed patient had a high risk of their occurrence due to a high dose of applied non-selective chest radiotherapy (>30 Gy), a combination of hematological treatment methods as well as her young age during therapy, and several CV risk factors [4, 5]. Moreover, the currently recommended International Cardio-Oncology

Society screening intervals enabling early detection of abnormalities and implementation of adequate preventive strategies (Supplementary material, *Figure S1*) were not applied [5].

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska

Article information

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