ESC European Society of Cardiology

European Heart Journal - Case Reports (2023) **7**, 1–2
https://doi.org/10.1093/ehjcr/ytad288

Forty years after mediastinal radiotherapy for Hodgkin lymphoma: how late is late cardiotoxicity? A case report

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Received 15 May 2023; first decision 19 May 2023; accepted 23 June 2023; online publish-ahead-of-print 26 June 2023

Radiation-associated cardiovascular disease is well-described yet under-recognized. Mediastinal radiation is known to affect any component of the heart. We present a case of valvular, coronary, and conduction abnormalities up to decades after initial radiotherapy.

ESC curriculum 6.9 Cardiac dysfunction in oncology patients • 7.5 Cardiac surgery • 5.9 Pacemakers • 9.1 Aortic disease • 5.7 Bradycardia

Case report

A 67-year-old male was incidentally found to have both Mobitz type I and II heart blocks on separate electrocardiograms. This was confirmed on Holter monitoring, which demonstrated an average ventricular rate of 48 b.p.m. with predominantly 2nd-degree atrioventricular block. Medical history was notable for Hodgkin lymphoma diagnosis in 1980. He underwent radiotherapy to the neck, mediastinum, and axillae using 36 Gy in 18 increments and a splenectomy with curative intent. No chemotherapy was administered, and he remains in remission. He is a distant ex-smoker during adolescence.

In 2010, he developed exertional dyspnoea, and a trans-thoracic echocardiogram (TTE) showed severe aortic stenosis (AS) with preserved left ventricular (LV) systolic function (*Figure 1*). Chest computed tomography (CT) demonstrated a heavily calcified ascending aorta. A coronary angiogram revealed moderate diffuse right coronary artery (RCA) disease with normal left-sided circulation. He underwent a Bentall procedure using a mechanical aortic valve prosthesis with coronary reimplantation, hemiarch replacement, a saphenous vein graft to his RCA, and repair of an atrial septal defect. A myocardial biopsy was not performed at the time of surgery.

In 2017, he developed typical exertional angina and shortness of breath. His TTE showed mild systolic dysfunction with left ventricular ejection fraction 50 ± 5% on visual estimation and no pericardial effusion. Chest CT showed no pericardial calcification. A coronary angiogram demonstrated severe ostial left main coronary artery stenosis for which he underwent successful percutaneous coronary intervention (PCI) with a single drug-eluting stent (DES).

In 2022, his TTE demonstrates low–normal LV systolic function and satisfactory function of the mechanical aortic valve prosthesis. He underwent successful implantation of a dual-chamber permanent pacemaker (PPM) with a deep septal lead for Mobitz type II heart block.

This case highlights the importance of early detection of radiation-associated cardiovascular disease through targeted history, examination, and relevant investigations.[1] Clinical features can be occult and may only develop with severe disease.[2] Whilst technological advancement in radiotherapy delivery and cardiac shielding has mitigated toxicity, there is a growing cohort of cancer survivors who will require vigilant, lifelong cardiac follow-up.

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Handling Editor: Elena Cavaretta
Peer-reviewer: Annachiara Pingitore

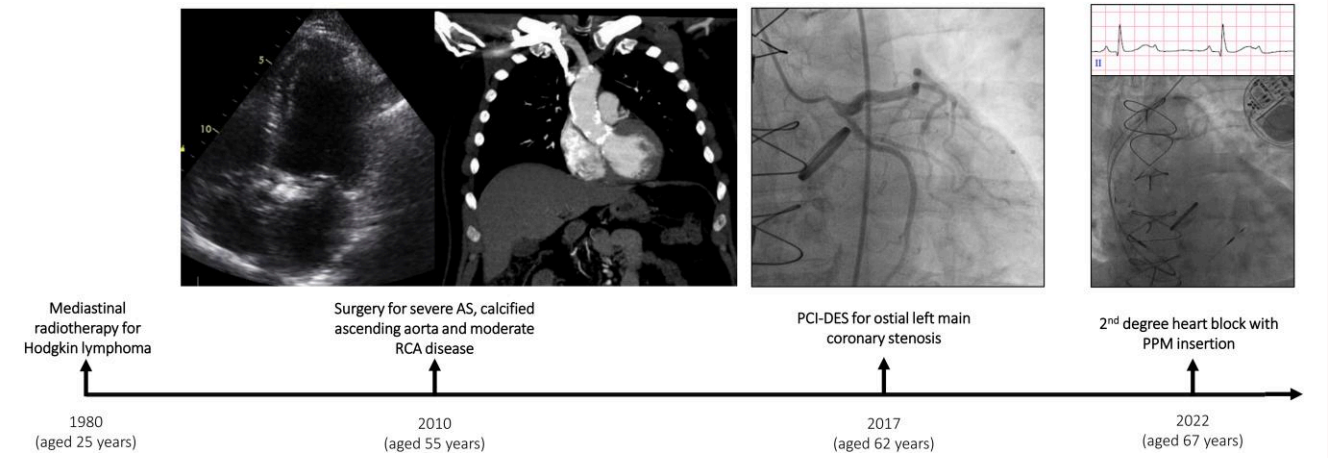

Figure 1 Timeline of late cardiotoxic effects in the setting of previous mediastinal radiotherapy. AS, aortic stenosis; DES, drug-eluting stent; PCI, percutaneous coronary intervention; PPM, permanent pacemaker; RCA, right coronary artery.

Consent: The patient verbally consented to the publication of his medical case in a peer-reviewed medical journal. The authors of this article, who actively participated in the decision process and management, obtained written informed consent from the patient, in accordance with COPE guidelines.

Conflict of interest: None declared.

Funding: None declared.

Data availability: De-identified data are available upon request.

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