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IMAGING VIGNETTE

INTERMEDIATE

CLINICAL VIGNETTE

Vanishing Cardiac Tumor by Chemotherapy in a Patient With Diffuse Large B-Cell Lymphoma

Yuta Watanabe, MD, Masahiko Kaneko, MD, PhD, Shoichi Matsukage, MD, PhD, Kiyotaka Ohshima, MD, PhD, Akiyoshi Ogimoto, MD, PhD

ABSTRACT

A 70-year-old Japanese man presented with a massive cardiac tumor associated with diffuse large B-cell lymphoma. Standard chemotherapy resulted in complete remission and the cardiac tumor disappeared. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2021;3:1444–1446) © 2021 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

A 70-year-old Japanese man was referred to our hospital with worsening dyspnea and lower limb edema that had persisted for 7 days. He had a history of hypertension, diabetes mellitus, and cerebral infarction. His blood pressure was 140/95 mm Hg, pulse 95 beats/min, oxygen saturation 95% on a nasal cannula at 2 L/min, and respiratory rate 12 cycles/min. Physical examination revealed bilateral lower leg edema, with no appreciable cardiac murmur. Electrocardiography showed sinus rhythm and negative T waves in leads V_1-V_5, II, III, and aVF. The N-terminal pro-B-type natriuretic peptide level was 718 pg/mL. Transthoracic echocardiography revealed a large mass in the pericardial space and a left ventricular ejection fraction of 66%. Chest computed tomography confirmed the presence of a large smooth mass adjacent to the right coronary artery. Cardiac magnetic resonance (CMR) imaging revealed a lesion occupying the right atrioventricular groove (**Figure 1A,** Video 1). Relative to the myocardial signal, T1-weighted (Supplemental Figure 1A) and T2-weighted dark-blood imaging (Supplemental Figure 1B) demonstrated mildly hypointense and hyperintense signals, respectively. First pass perfusion (Supplemental Figure 1C) and late gadolinium enhancement imaging (Supplemental Figure 1D) revealed mild enhancement and mild heterogeneous enhancement with less enhanced central regions in the mass, respectively. The etiology was unconfirmed; however, because the cardiac mass was located behind the sternum, myocardial biopsy was considered to be a very high-risk option and was not performed. Although he received diuretics, his condition worsened, and he became increasingly hypoxic (oxygen saturation was 88% on 5 L oxygen). Sarcoid-protocol cardiac positron emission tomography-computed tomography (PET-CT) revealed focal uptake in the cardiac mass, left axillary lymph node, and left 11th rib (**Figure 1B**). Lymph node biopsy revealed diffuse large B-cell lymphoma (hematoxylin-eosin staining: **Figure 1C1**; immunohistochemical staining for CD 20: **Figure 1C2**). He underwent 8 courses of chemotherapy with rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisolone. Five days after the first therapy cycle, electrocardiography showed a complete atrioventricular block. A temporary pacing wire

From the Division of Cardiology, Uwajima City Hospital, Uwajima, Ehime, Japan.
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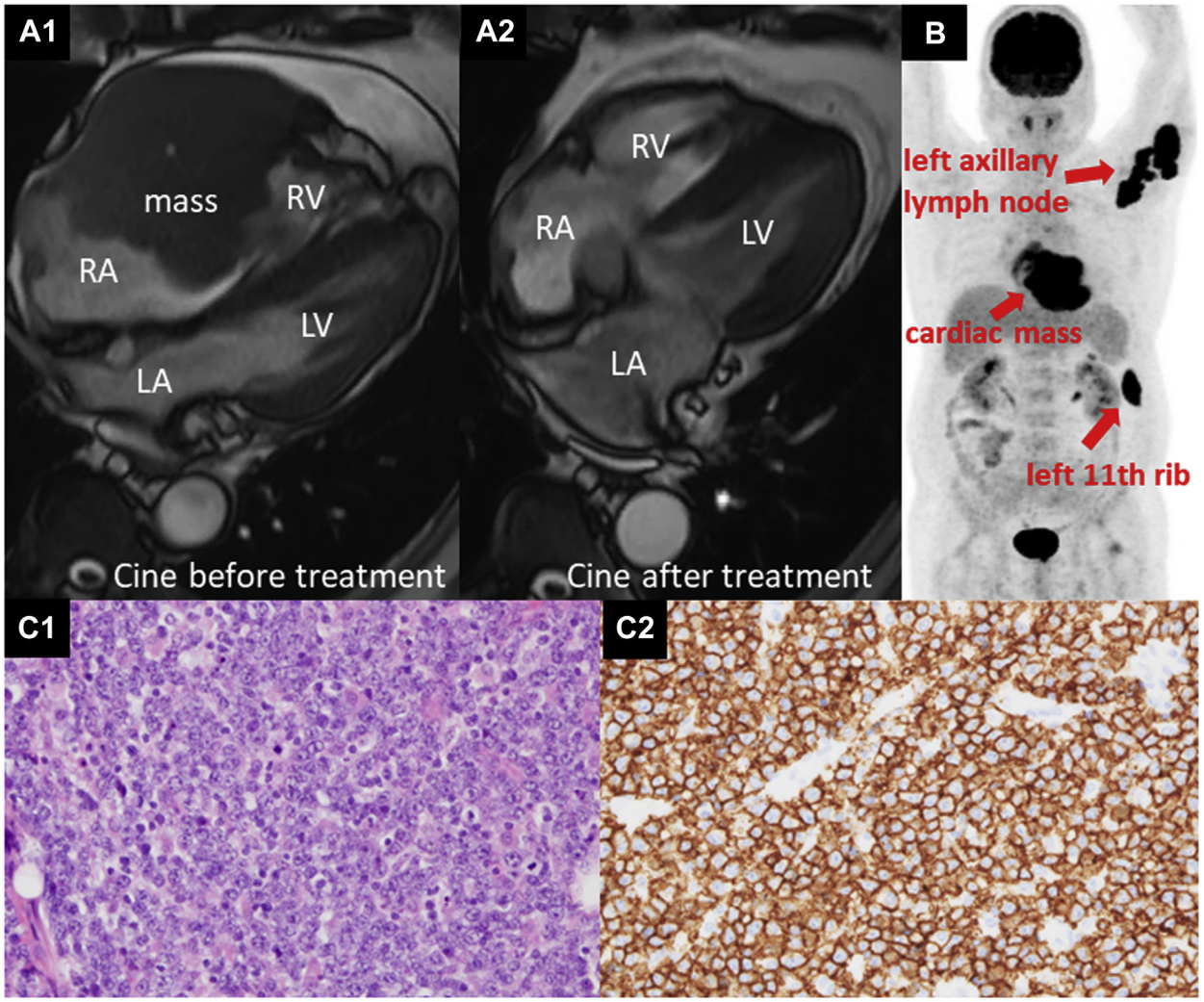
was placed until sinus rhythm returned spontaneously; his symptoms improved within 2 weeks. He was discharged 71 days after admission. Twenty-one months after the first chemotherapy cycle, his clinical condition was much improved, and a repeated CMR imaging revealed that the cardiac tumor had disappeared (**Figure 1A2,** Video 2).

ABBREVIATIONS AND ACRONYMS

CMR = cardiac magnetic resonance

Primary cardiac lymphomas are rare, accounting for approximately 1% of all primary cardiac tumors (1). In this case, the CMR features were more suggestive of a cardiac lymphoma than other malignant cardiac masses (2). CMR can be helpful for differentiating cardiac lymphomas from other forms of malignancies, but a definitive tissue diagnosis is still necessary. This case provides a dramatic example of how a large cardiac lymphoma responded with complete resolution following chemotherapy. Written informed consent has been

FIGURE 1 **Imaging of Diffuse Large B-Cell Lymphoma**



(A1) Cardiac tumor occupying the right atrioventricular groove on cardiac magnetic resonance (CMR) before chemotherapy. **(A2)** Cardiac tumor has disappeared on CMR after chemotherapy. **(B)** Positron-emission tomography–computed tomography shows focal uptake in the cardiac mass, left axillary lymph node, and left 11th rib. **(C1)** Lymph node biopsy reveals a diffuse large B-cell lymphoma (DLBCL) with hematoxylin-eosin staining. **(C2)** Lymph node biopsy reveals a DLBCL with immunohistochemical staining for CD 20.

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obtained from the patient in line with Committee on Publication Ethics guidance for submission and publication of this case report including images and associated text.

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ADDRESS FOR CORRESPONDENCE: Dr Yuta Watanabe, Division of Cardiology, Uwajima City Hospital, 1-1, Goten-machi, Uwajima, Ehime 798-8510, Japan. E-mail: piriken12tigers25@gmail.com.

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APPENDIX For supplemental figures and videos, please see the online version of this paper.