



Cardiac involvement of malignant lymphoma presenting intra-ventricular-wall nodules

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A 76-year-old woman was referred to our hospital with dyspnea on effort and palpebral edema. She had been treated with methotrexate (MTX) for rheumatoid arthritis until that time. Blood laboratory examination showed leukopenia, anemia, and elevated values of brain natriuretic peptide (237.4 pg/ml) and soluble Interleukin-2 receptor (3730 U/ml). Echocardiography revealed multiple nodules in the thickened left ventricular wall with diffuse mild hypokinesis and moderate amount of pericardial effusion (Fig. 1a, b). Contrast-enhanced computed tomography (CT) showed small abdominal subcutaneous nodules, mediastinal lymph nodes swelling, and an abnormal mass near her left kidney. Based on the clinical history and the pathological findings from subcutaneous tissue biopsy, she was diagnosed as diffuse large B cell lymphoma (DLBCL) subtype of MTX-associated lymphoproliferative disorder complicated with heart failure. We started a conventional chemotherapy (R-THP-COP; rituximab plus pirarubicin, cyclophosphamide, vincristine, and prednisolone) and confirmed disappearance of the intra-left-ventricular-wall nodules without pericardial effusion, improvement of motion of left ventricular wall, and thinning of thickened left ventricular wall to normal range by follow-up echocardiography (Fig. 1c, d). After the first course of the chemotherapy we also confirmed volume reduction of the abdominal-mass by CT. Finally, we performed the total 6 courses of the chemotherapy for 5 months, and then she has been kept free of DLBCL relapse and heart failure without specific medications.

The two most frequently involved sites of cardiac malignant lymphoma are the right atrium and right ventricle [1, 2]. Although intra-left ventricular-wall nodules are rare, they might be also one of echocardiographic manifestations in malignant lymphoma-associated cardiac disorder. In cardiac malignant lymphoma, complications of arrhythmia such as atrioventricular block due to involvement into the conduction pathway have also been reported [1], however, in this case, these complications were not confirmed. It was thought that heart failure occurred mainly due to the left ventricular wall motion decline. This case was diagnosed with heart failure symptoms, and good progress was obtained by starting chemotherapy. On the other hand, cardiac malignant lymphoma is often delayed in diagnosis due to the lack of specific symptoms, some cases which were not confirmed until necropsy after death and were thought to have died suddenly by fatal arrhythmia were also reported [3] [4]. Reports, reporting intra-left ventricular-wall nodules confirmed by echocardiography early in the onset, and the improvement over time of echocardiographic manifestations along with the reduction of nodules by chemotherapy as this case, are rare.

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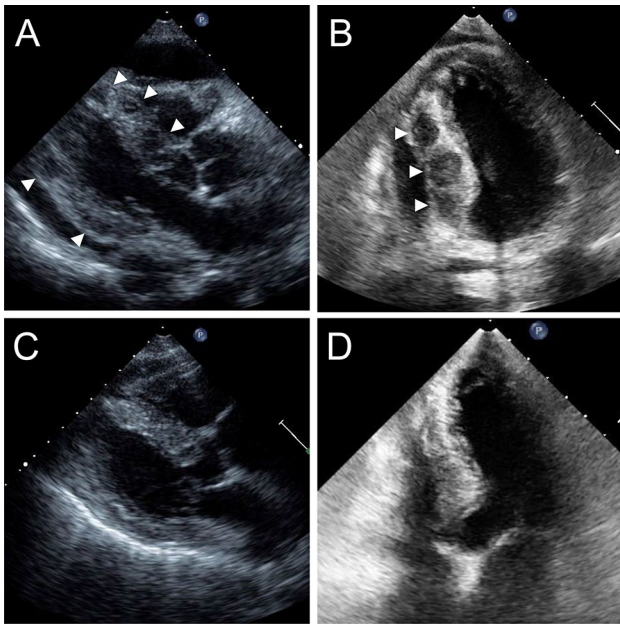


Fig. 1 Two-dimensional transthoracic echocardiography images during diastolic phase at admission (**a, b**) and those after the first course of the chemotherapy (**c, d**) (**a, c**, parasternal long-axis view; **b, d** magnified apical 4-chamber view). **a, b** Multiple low-echoic nodules (white arrowheads) in the left ventricular wall and moderate amount of pericardial effusion. **c, d** Disappearance of the intra-left-ventricular-wall nodules and pericardial effusion

Compliance with ethical standards

Conflict of interest Akira Shikuma, Takahisa Sawada, Hitoji Uchiyama, Jun Shiraishi, Muneo Oshiro, Yuka Kawaji and Nariko Koshi declare that they have no conflict of interest.

Human rights statements All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and later revisions.

Informed consent Informed consent was obtained from all patients for being included in the study.

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