Early Differential Resolution of Right and Left Ventricular Obliteration in Löffler Endocarditis After Chemotherapy and Anticoagulation

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A 27-year-old woman diagnosed of T-cell non-Hodgkin lymphoma was referred to our hospital for allogenic hemopoietic stem cell transplantation. In childhood, the patient was diagnosed with hypereosinophilic syndrome. One week before admission, the patient started to develop progressive dyspnea. On chest x-ray, there were signs consistent with congestive heart failure. Her white cell count was 5990/mm³ with 59% eosinophils. A transthoracic echocardiogram disclosed a complete obliteration of the apexes of both ventricles, which were filled with a mildly echogenic material consistent with fibrosis or thrombosis. The right and left atria were enlarged, and pulsed wave Doppler examination showed a restrictive left ventricular (LV) filling pattern (Figure 1A through 1C). All of these findings were compatible with the diagnosis of Löffler endocarditis. The patient was anticoagulated and received conventional treatment for heart failure, resulting in clinical improvement. One week after admission, chemotherapy with fludarabine and melphalan was started, and a nonmyeloablative transplantation was carried out using hematopoietic progenitors from a human leukocyte antigen–compatible brother. Four weeks after chemotherapy, a repeat echocardiogram showed the total disappearance of the LV obliteration and a normal filling flow (Figure 1D through 1F). The right ventricular (RV) obliteration remained unchanged. The patient was discharged in a stable clinical condition with a restrictive left ventricular (LV) filling pattern and a normal filling flow. One week after admission, the patient developed symptoms of heart failure and their rapid resolution. We cannot exclude that chemotherapy also might have contributed to the early differential resolution of right and left ventricular obliteration. Cardiac involvement (Löffler endocarditis) may be present in more than 60% of the patients and may include endocardial thickening; ventricular obliteration by an echogenic material, suggestive of fibrosis or thrombosis; atrial dilation; and a restrictive pattern in echo Doppler. Before the advent of early diagnosis and management, cardiac disease was the leading cause of both morbidity and mortality. Two-dimensional echocardiography is an essential tool for diagnosis and follow-up. Cardiac damage has been attributed to the toxic effects on the myocardium and endocardium of proteins released from the degranulation of eosinophils. This tissue infiltration is responsible for inflammation and later fibrosis. The control of blood eosinophil count is considered crucial to limit the extent of cardiac involvement. Optimal treatment is not well defined. Apart from anticoagulation and conventional treatment of heart failure, steroids and α-interferon may halt the progression of the disease and improve the survival. Anticoagulation, by preventing thrombotic apposition, may contribute to long-term positive ventricular-cavity remodeling. In our patient, soon after the initiation of anticoagulation and chemotherapy, we observed a rapid resolution of the LV occupation. To the best of our knowledge, such fast, extensive, and unilateral improvement has never been reported before. It is not clear why the RV apical occupation persisted when the LV obliteration had resolved. Magnetic resonance imaging is a promising technique for delineation of ventricles’ anatomy and function and for characterizing the composition of the ventricular wall. Gadolinium delayed-enhancement magnetic resonance imaging accurately identifies regions of myocardial fibrosis. This technique identified the material occupying the RV of a fibrotic nature. This differential resolution might suggest that the LV occupation was mainly caused by a relatively recent thrombus formation, whereas the material filling the RV apex had a higher fibrotic content. This hypothesis is also consistent with the recent onset of symptoms of heart failure and their rapid resolution. We cannot exclude that chemotherapy also might have contributed to the

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resolution of the LV occupation. Our findings show that anticoagulation combined with chemotherapy can resolve restrictive heart failure and ventricular obliteration in these patients. It is tempting to suggest that it would be worthwhile to use oral anticoagulation in hypereosinophilic patients before ventricular obliteration develops. Magnetic resonance imaging has become a promising technique in the evaluation and management of such patients.

Disclosures

None.

References


Figure 1. A, Transthoracic echocardiogram in a 4-chamber apical view showing the obliteration of the apical areas of the right and left ventricles. Both atria are enlarged, suggesting long-lasting elevated atrial pressures. B, Detail of the left ventricular (LV) apical area. C, Pulsed-wave Doppler recording showing the classic features of restrictive pattern (E/A ratio, 2.2; deceleration time, 100 ms) consistent with a high LV filling pressure. D, Transthoracic echocardiogram in a 4-chamber apical view obtained 4 weeks after initiation of chemotherapy and 5 weeks after the introduction of anticoagulation. Although the echodense material has completely disappeared from the LV cavity, it is still present within the right ventricle. E, Detail of the empty apical area of the left ventricle after anticoagulation and chemotherapy. F, Pulsed-wave Doppler showing the normalization at this early stage. The E/A ratio has decreased to 1.2, and deceleration time has been prolonged to 180 ms.
Figure 2. A, Magnetic resonance imaging in a 4-chamber view showing the material occupying the right ventricular apex and the empty left ventricular cavity. B, Detail of the right ventricular apex. C, Magnetic resonance imaging in a 4-chamber view after intravenous administration of a gadolinium-based contrast agent, showing delayed enhancement in the right ventricular apex, compatible with fibrosis. D, Detail of the right ventricular apex with delayed gadolinium enhancement.
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