Case Report

Chronic Expanding Intrapericardial Hematoma after Coronary Artery Bypass Surgery Presenting with Congestive Heart Failure

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We report the successful treatment of a rare case of chronic expanding intrapericardial hematoma that had slowly developed into a large mass after coronary artery bypass surgery. An 85-year-old man with a history of coronary artery bypass surgery presented with dyspnea on exertion and leg edema in 2006. Chest roentgenograph demonstrated right pleural effusion and severe pulmonary edema. An echocardiographic study demonstrated a mass located posterior to the left ventricle that severely compressed the left ventricle toward the ventricular septum. Surgical resection of the mass was planned to release the symptoms and to confirm the diagnosis of the mass. The mass was completely resected through a left thoracotomy, and the histological findings confirmed the diagnosis of a chronic expanding intrapericardial hematoma. The patient's postoperative course was uneventful, and his symptoms improved markedly. There has been no sign of recurrence 1 year after the operation. (Ann Thorac Cardiovasc Surg 2008; 14: 52–54)

Key words: chronic expanding intrapericardial hematoma, congestive heart failure, coronary artery bypass surgery

Introduction

Chronic expanding intrapericardial hematoma is a rare disease that occurs after open heart surgery, chest trauma, or epicardial injury. This disease can occur at any location in the body, and the symptoms are related to the anatomical location. We describe the case of a chronic expanding intrapericardial hematoma 5 years after the coronary artery bypass surgery presenting with congestive heart failure.

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Case Report

An 85-year-old man, who had a history of the two-vessel coronary artery bypass grafting 5 years previously, was admitted to our hospital as a result of dyspnea on exertion and leg edema. A chest roentgenograph showed right pleural effusion and severe pulmonary edema. An echocardiographic study demonstrated a heterogeneous mass, 47×24 mm, localized posterior to the left ventricle (Fig. 1). The mass severely compressed the left ventricle toward the ventricular septum with the restrictive pattern of the mitral valve inflow. Chest computed tomography (CT) also revealed the right pleural effusion and an encapsulated tumor posteriorly compressing the heart (Fig. 2). On magnetic resonance imaging (MRI), T1-weighted images demonstrated a high-intensity area surrounded by a low-intensity rim (Fig. 3a). T2-weighted images demonstrated a mixture of low- and high-intensity areas surrounded by a low-intensity rim (Fig. 3b). Pleural paracentesis was performed and a serious discharge was removed. Bacterial and tuberculous cultures of pleural ef-

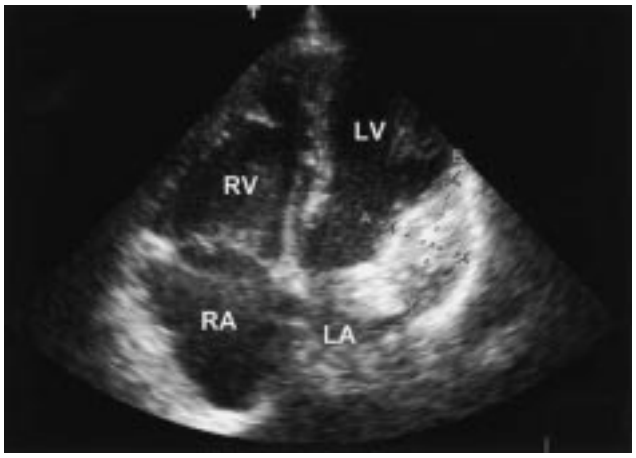

Fig. 1. An echocardiographic study demonstrated a heterogeneous mass, 47×24 mm, localized posterior to the left ventricle.

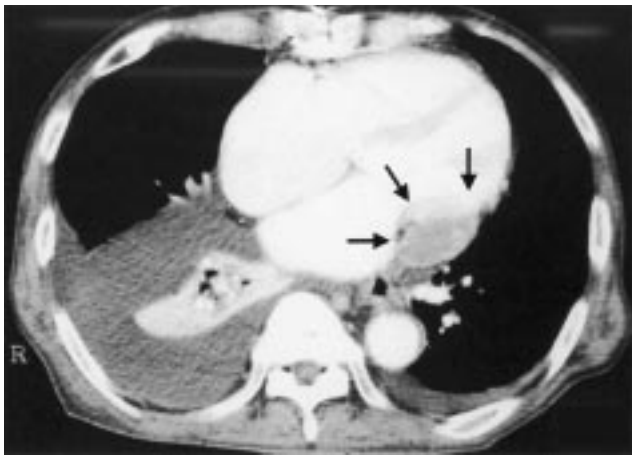

Fig. 2. Chest computed tomography (CT).
The encapsulated mass, which was not enhanced by the administration of intravenous contrast material, posteriorly compressed the heart.

fusion were both negative.

Surgical removal of the mass was planned to release the compression of the heart and to confirm the diagnosis of the mass. After the induction of general anesthesia, the central venous pressure (CVP) was 16 mmHg, and the mean pulmonary artery pressure (mPAP) was 29 mmHg. Through a left thoracotomy, the thick pericardium was opened. The dark red, partially organized hematoma containing a small amount of liquid was located posterior to the left ventricle. It was severely adhered to the myocardium, which was carefully detached. Partial pericardiectomy and complete removal of the hematoma were successfully performed. The location of the mass was distinct from the anastomosis site in the left circumflex artery, and the source of bleeding was unclear. Postoperatively, CVP was decreased to 11 mmHg and mPAP to 22 mmHg.

Histopathology of the mass showed a peripheral wall of dense fibrous tissue and a central space containing fresh and old hematomas. Focal infiltration of lymphocytes was observed in the outer zone of the peripheral wall. Neither malignant nor bacteriological evidence was observed. These findings confirmed the diagnosis of chronic expanding intrapericardial hematoma. The patient's postoperative course was uneventful and his symptoms improved markedly. Postoperative echocardiographic evaluation demonstrated improved expansion of the left ventricle and a normal pattern of mitral valve inflow. There has been no sign of recurrence 1 year after the operation.

Discussion

Chronic expanding hematoma was first described by Reid et al.[1] as a lesion that persists and increases in size more than 1 month after the initial hemorrhage. This disease can occur at any location in the body. A thorough search of the literature revealed a few cases that occurred after open heart surgery, chest trauma, or epicardial injury.[2–4] In the present case, the patient had a history of the coronary artery bypass grafting (CABG), 5 years previously. Symptoms and duration before clinical discovery are related to the anatomical location of the hematoma.[1] In the present case, the mass was located posterior to the left ventricle, and it severely compressed the left ventricle toward the ventricular septum. Mitral valve inflow was severely restricted, and the patient developed congestive heart failure, presenting with pulmonary edema.

The mechanism for the expansion of a hematoma is similar to the formation of a subdural hematoma, but the detail of this mechanism has not been clarified yet.[1] Experimental evidence favors an inflammatory cause.[5] Inflammation appears to lead to continued bleeding from fragile capillaries, and bleeding leads to further inflammation in a cycle that allows the development of a chronic expanding hematoma in virtually any anatomical location. In the present case, the mechanism was supposed to be associated with inflammation, because focal infiltration of lymphocytes was observed in the histopathological findings.

Hirai et al.[2] recommend MRI as the best diagnostic

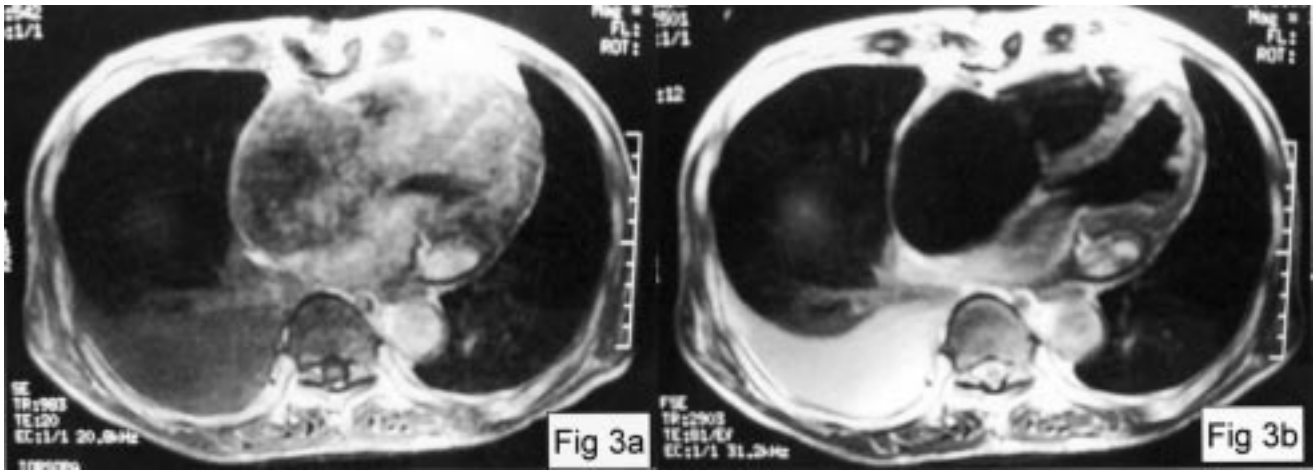

Fig. 3. Magnetic resonance imaging (MRI).
T1-weighted images demonstrated a high-intensity area surrounded by a low-intensity rim (**a**). T2-weighted images demonstrated a mixture of low- and high-intensity areas surrounded by a low-intensity rim (**b**).

modality for chronic expanding hematoma, because the findings of T1- and T2-weighted images have characteristics, including high-intensity areas, similar to those found in a hemangioma because of the presence of fresh and old hematoma. Although the same finding was observed in the present case, a differential diagnosis from the malignant tumors would have been difficult, and histopathological diagnosis would be required.

The management of such hematomas should be complete surgical resection at an early stage before cardiac and mediastinal compression.[2)] Because the patient described here presented with congestive heart failure resulting from cardiac compression, we immediately planned to remove the mass, despite his advanced age and the risk of re-do surgery. A left thoracotomy enabled an easy approach to the posterior wall of the left ventricle, even during re-do surgery. In conclusion, chronic expanding hematoma remains a rare disease, but should be considered when an expanding mass is found in the chest after cardiac surgery; an earlier surgical resection may be recommended to make a definitive diagnosis and release the symptoms associated with compression by the mass.

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