


Usefulness of Transesophageal Echocardiography in Patients With Hemodynamic Deterioration Late After Cardiac Surgery*

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Two patients with large pericardial thrombi following cardiac surgery presented as having right cardiac tamponade. Transesophageal echocardiography (TEE) identified a large pericardial hematoma compressing the right atrium and was well tolerated by these critically ill patients. These case reports demonstrate the diagnostic value of TEE in the identification of this severe complication in the late postoperative period. (Chest 1993; 104:1631-32)

In two patients with severe hemodynamic deterioration following cardiac surgery, a large pericardial hematoma, which was missed by transthoracic echocardiography, was diagnosed with transesophageal echocardiography. This report stresses the importance of transesophageal echocardiography in the evaluation of complications following cardiac surgery.

CASE REPORTS

Case 1

A 55-year-old white man was referred to the coronary care unit 3 weeks after autograft aortic valve replacement. The patient presented with chest pain, dyspnea, and hypotension. A two-dimensional transthoracic echocardiographic examination, performed a few hours before hospital admission, revealed a mass in the right atrium. At the time of admission, the pulse rate was 90 beats/min and BP was 100/70 mm Hg. The jugular veins were moderately distented. Inspiratory crackles were heard over the lower third of the left lung. Auscultation of the heart revealed no abnormalities.

The electrocardiogram showed right bundle branch block. A chest radiograph showed an enlarged cardiac silhouette. Transthoracic two-dimensional echocardiography was repeated and demonstrated a moderate pericardial effusion and an echodense structure that obliterated most of the right atrial cavity. A transesophageal echocardiogram was performed and showed the presence of a large

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Figure 1. Transesophageal echocardiogram, Case 1. Note the presence of a large pericardial thrombus compressing the right atrium. RA = right atrium; LA = left atrium; T = thrombus; RV = right ventricle; LV = left ventricle.

Pericardial thrombus compressing the right atrium.

The patient underwent urgent surgical reintervention that confirmed the presence of an organized thrombus that was removed from the pericardial space. No site of active bleeding was found and the postoperative course was uneventful.

Case 2

A 75-year-old white woman had undergone implantation of a Ionescu-Shiley valve prosthesis in aortic, mitral, and tricuspid position in 1985. Because of severe aortic and mitral regurgitation, a Bjork-Shiley valve replacement was performed in July 1991. The postoperative course was complicated by total atroventricular block, requiring the implantation of a pacemaker. The pacemaker lead was inserted via the right subclavian vein after puncture. This procedure was complicated by a right-sided hemothorax. Transthoracic drainage was performed.

Twenty days after pacemaker implantation, the patient presented to the emergency department with abrupt onset of thoracic pain, accompanied by nausea, sweating, and dyspnea. Immediately afterwards, cardiogenic shock developed. The jugular venous pressure was markedly increased. Inspiratory crackles were heard over the lower third of both lungs. Auscultation of the heart revealed normal opening and closing sounds of the artificial valves. An electrocardiogram, obtained during chest pain, showed 2-mm ST

Figure 2. Case 2. Transesophageal echocardiogram. Note the severe compression of the right atrium. RA = right atrium; LA = left atrium; RV = right ventricle; LV = left ventricle; T = intrapericardial hematoma.
Massive Macroglossia as a Presenting Feature of Hypothyroid-Associated Pericardial Effusion*

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An 81-year-old woman presented with massive macroglossia and signs of both hypothyroidism and pericardial tamponade. Drainage of the pericardial effusion produced dramatic resolution of the macroglossia. Marked elevation of central venous pressure may result in macroglossia, possibly because of anomalous venous drainage of the tongue.

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Early studies of overtly hypothyroid patients suggested that pericardial effusion was a relatively common associated feature.1,2 More recent echocardiographic studies of the hypothyroid population show a widely varying incidence of pericardial effusion from as low as 3 percent to 88 percent. No correlation appears to exist between development of pericardial effusion and severity or duration of hypothyroidism.3,4 Available descriptions of hypothyroid-associated pericardial effusion suggest that patients present far more commonly with signs and symptoms of the underlying endocrine disorder, rather than with sequelae of pericardial effusion.5

We describe a patient presenting with acute massive macroglossia and cardiac tamponade due to a large pericardial effusion. Biochemical evaluation confirmed an initial impression of hypothyroidism. Drainage of the pericardial effusion resulted in dramatic resolution of the macroglossia.

CASE REPORT

An 81-year-old woman presented with a 6-h history of massive tongue swelling. Her medical history included chronic congestive heart failure for which she regularly took captopril and furosemide. Clinically, dramatic macroglossia was apparent (Fig. 1) and the tongue could not be retracted intra-orally. There was, however, no associated upper airway obstruction. Examination also revealed features of both right-sided heart failure (pulsatile jugular venous pressure elevated to 10 cm, hepatomegaly palpable 5 cm below the right subcostal margin, pitting ankle edema) and hypothyroidism (inauthentic bradycardia, loss of outer third of eyebrows, very slowly relaxing ankle jerks). Pulsus paradoxus of 25 mm Hg was present. The thyroid gland was palpable. There were no features to suggest superior vena cava obstruction. The chest radiograph showed a markedly enlarged cardiac silhouette with mild pulmonary venous congestion. Electrocardiogram showed sinus rhythm of 80 beats per minute and low-voltage complexes only. Monitoring revealed no significant dysrhythmia. Echocardiography demonstrated a large circumferential echo-free space consistent with a significant pericardial effusion. There was evidence of right atrial
depression segment elevation in leads 2, 3, and aVF and 2.5-mm ST-segment depression in leads V5 through V6. The creatine kinase level was 315 U/L, with a 18 percent MB-fraction.

Transthoracic two-dimensional echocardiography revealed only a moderate pericardial effusion, whereas transesophageal echocardiography demonstrated a pericardial hematoma that compressed the right atrium and a portion of the right ventricle. Urgent surgical exploration confirmed the presence of a large pericardial thrombus, compressing the right atrium, the upper part of the right ventricle, and the right coronary artery. An active bleeding site was not found. Rapid hemodynamic improvement was noted after evacuation of the hematoma. The patient had an uneventful postoperative course.

DISCUSSION

Isolated atrial tamponade caused by a localized pericardial hematoma is an uncommon but well-known complication after cardiac procedures. A localized pericardial effusion or thrombus can occur as a result of pericardial adhesions.1 Although localized compression by a hematoma can cause life-threatening hemodynamic deterioration, it may easily be overlooked by transthoracic echocardiography. The compression of an atrium may not affect the normal function of the remaining chambers.4 Moreover, transthoracic two-dimensional echocardiography is often technically suboptimal in the postoperative period.1 These two cases illustrate the diagnostic potential of transesophageal echocardiography in detecting localized pericardial thrombus.4

In the first patient, the clinical picture and the transthoracic two-dimensional echocardiogram were not typical for tamponade. An echodense structure at the level of the right atrium was visualized, but the precise localization (intracardial or pericardial) could not be defined.

In the second patient, the initial clinical findings suggested an acute ischemic event. The electrocardiographic findings and the moderate rise of creatine kinase levels were indeed suggestive of acute inferior infarction. Transthoracic two-dimensional echocardiography demonstrated the presence of a moderate pericardial effusion.

In both cases, emergency transesophageal echocardiography was performed. A large hematoma was easily visualized as a well-delineated echodense structure, obviously localized in the pericardial space and compressing the right atrium. In the second patient, this hematoma caused ischemia by compressing the right coronary artery.

In contrast to other reports, these two cases demonstrate the occurrence of isolated right atrial compression by localized pericardial hematoma in the late postoperative period.

In conclusion, this report highlights the usefulness of transesophageal echocardiography for detecting large pericardial thrombi compressing the right atrium in patients following cardiac surgery. Transesophageal echocardiography provides excellent image quality, especially of the posterior part of the heart, because of the proximity of the transducer to these cardiac structures. Moreover, transesophageal echocardiography is well tolerated in critically ill patients.3,4

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Massive Macroglossia (Meares, Braude, Burgess)

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