

Ultrasound in Emergency Medicine



LEFT ATRIAL COMPRESSION CAUSED BY AN INTRAPERICARDIAL HEMATOMA AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

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Abstract—Background: Left atrial compression (LAC) is an uncommon condition that causes left ventricular inflow obstruction. The clinical and pathologic features are similar to those of mitral stenosis. Impaired left ventricular filling may cause hypotension, syncope, or shock. The increased left atrial pressure causes retrograde increase of the pressure throughout the pulmonary circulation with subsequent signs of congestion. **Case Report:** An 84-year-old man presented with LAC caused by a focal tamponade related to a pericardial hematoma as a complication of coronary artery bypass graft (CABG) surgery. The formation of the hematoma occurred 3 weeks postsurgery. The echocardiographic study before discharge at day 12 after CABG surgery showed neither a focal hematoma nor a tamponade. The diagnosis was made 6 days later. **Why Should an Emergency Physician Be Aware of This?:** Intrapericardial tamponade caused by bleeding is a known complication of CABG surgery in the early postoperative stage. However, emergency physicians should be aware that a postoperative hematoma may also present as a focal tamponade because of postoperative adhesion by scar formation. The literature of LAC is limited. The most reported causes of LAC are compression caused by structures of the gastrointestinal tract, followed by thoracic aortic pathology. A Medline search for the terms

“left atrial compression and hematoma” and “left atrial compression and intrapericardial hematoma” found only 31 and 4 hits, respectively. We also briefly discuss the important role of bedside echocardiography in the diagnostic process of LAC in the emergency medicine department. © 2016 Elsevier Inc. All rights reserved.

Keywords—echocardiography; focal pericardial tamponade; intrapericardial hematoma; left atrial compression

INTRODUCTION

We describe an 84-year-old man who presented to the Department of Emergency Medicine because he was in cardiogenic shock. He had developed a focal tamponade caused by an intrapericardial hematoma in the third week after coronary artery bypass graft (CABG) surgery. The hematoma caused left atrial compression (LAC).

Intrapericardial tamponade is a known complication of CABG in the early stages of the postoperative period. In a recent study, postoperative tamponade was identified as one of the causes of prolonged stay in the intensive care unit after CABG surgery (1). Postoperative tamponade after CABG surgery within the first weeks after discharge is encountered by most cardiologists a few times during their career. However, a local tamponade caused by a hematoma causing LAC is a rare condition. LAC causes left

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ventricular inflow obstruction. Consequently, it may mimic the symptoms of mitral stenosis. The diagnosis of LAC caused by an intrapericardial hematoma is often challenging. Our case shows the important role of echocardiography in the emergency department.

CASE REPORT

An 84-year-old man with a medical history of hypertension underwent CABG surgery because of unstable angina pectoris. His coronary angiographic study revealed 3-vessel disease with severe left main stenosis.

The initial postoperative course was complicated by paroxysmal atrium fibrillation. His CHADSVASC score, to determine the embolic risk due to atrial fibrillation, was 4, and oral anticoagulant therapy was initiated. The postoperative recovery of this octogenarian was unremarkable. He was discharged at day 14 in good condition.

However, he presented to the emergency department on postsurgery day 18 with complaints of chest pain and signs of shock. He mentioned an episode of interscapular chest discomfort that began the night before admission. The complaints began approximately 12 hours before arrival at the hospital.

The physical examination revealed that his blood pressure was 89/54 mm Hg with a pulse of 64 beats/min. The patient was pale. There was neither a murmur nor pulsus paradoxus. The auscultation of the lungs was unremarkable and there was no edema on the limbs.

The laboratory results were as follows: hemoglobin 6.0 mmol/L (6.5 mmol/L before discharge 5 days earlier), an international normalized ratio of >8 , preserved kidney function, a lactate level of 1.9 mmol/L, an N-terminal of

the prohormone brain natriuretic peptide of 425 pmol/L, and a C-reactive protein level of 25.

An electrocardiogram revealed a sinus rhythm of 68 beats/min. There were mild intraventricular conduction disturbances. The repolarization was unchanged compared with previous electrocardiograms. A chest radiograph did not show pleural effusion. There were signs of mild congestion without pulmonary edema.

A transthoracic echocardiogram (TTE) study performed by an experienced cardiac ultrasonographer revealed preserved left and right ventricular function and a large mass at the left atrial site of the heart (Figure 1). However, the TTE study could not accurately confirm whether the mass was located within the left atrium (LA) or within the pericardial cavity. In addition, dissection of the aorta could not be excluded.

Given the patient's medical history and international normalized ratio of >8 , focal tamponade caused by an intrapericardial hematoma with left atrial obstruction was thought to be the most likely diagnosis. Nonetheless, it was felt that the aforementioned questions had to be answered correctly before referring the patient for cardiac surgery. The cardiologist was called for an urgent consultation. He proposed an urgent transesophageal echocardiography (TEE) study in the emergency department to provide a definite, quick bedside response to these important issues.

TEE was performed without sedation by a cardiologist, was able to resolve the 2 questions. TEE allowed a clear delineation of mass from the atrial wall, confirming the intrapericardial localization of the hematoma (Figure 2; Videos 1 and 2, available online at www.jem-journal.com). The TEE study also excluded dissection of the ascending aorta.

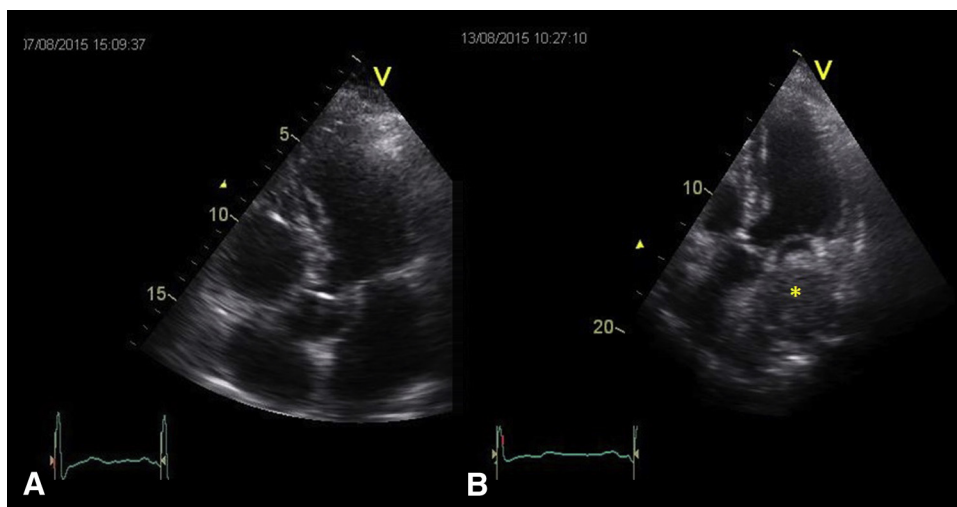


Figure 1. (A) 5 chamber view 12 days after cardiac artery bypass graft surgery. Note the absence of the intrapericardial mass. (B) The same view on admission to the emergency department 6 days later. There is a mass (*) obliterating the left atrium. This image does not allow delineation of the mass from the atrial wall.

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