

Cardiac Tamponade due to Coronary Artery Erosion

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ABSTRACT

This report describes two patients with cardiac tamponade secondary to bleeding from a coronary artery, which had been eroded by a foreign body. In one patient the foreign body had been ingested and in the other patient, the cause was iatrogenic. This report highlights varied and unusual causes of cardiac tamponade.

INTRODUCTION

Cardiac tamponade is an uncommon, life-threatening condition. The causes are subdivided into traumatic and non-traumatic. Cardiac tamponade is a key differential diagnosis in patients with a clear history of penetrating or blunt truncal trauma. When there is no history of trauma the diagnosis may be more obscure, as the initial presenting signs and symptoms may be nonspecific.

Nontraumatic causes of cardiac tamponade include pericardial malignancy, postinfarction myocardial rupture, aortic dissection, and coronary artery aneurysm rupture. Often it is the underlying aetiology that dictates the therapeutic approach. In those patients who present with cardiovascular collapse and little or no past history, the time available to determine the underlying aetiology is limited. We describe two such cases of cardiac tamponade due to rare and unusual causes.

CASE REPORTS

A 25-year-old male presented to his local hospital after collapsing at home and being successfully resuscitated by his family. He had reported some chest pain two weeks earlier but otherwise had no significant past history. A transthoracic echocardiogram was performed which showed a large peri-

cardial effusion with signs of tamponade but no evidence of the cause. The ascending aorta appeared normal. The effusion was drained percutaneously and the patient remained stable overnight. The next morning the pericardial drain was noted to be draining bright red blood and the patient's hemoglobin fell. It was decided to transfer him to a tertiary hospital for definitive management. During transfer he became hemodynamically unstable and arrested with pulseless electrical activity approximately 10 minutes prior to arrival. An emergency left anterolateral thoracotomy was performed immediately on his arrival and a tense hemopericardium decompressed. Internal cardiac massage followed by countershock restored a spontaneous output. Bleeding which appeared to be originating from the posterior aspect of the heart was noted and the patient was transferred to the operating room. Cardiopulmonary bypass was instituted immediately. Profuse bleeding was noted from a small hole in a posterolateral ventricular branch of the right coronary artery. The adjacent epicardium was macerated. A nonsurgical staple was noted directly opposite this vessel in the posterior pericardium and protruding into the pericardial cavity (Figure). The staple was lying directly over the esophagus and had presumably migrated through to the pericardium after being swallowed. The staple was removed, the bleeding controlled and the patient returned to the intensive care unit in a hemodynamically stable condition.

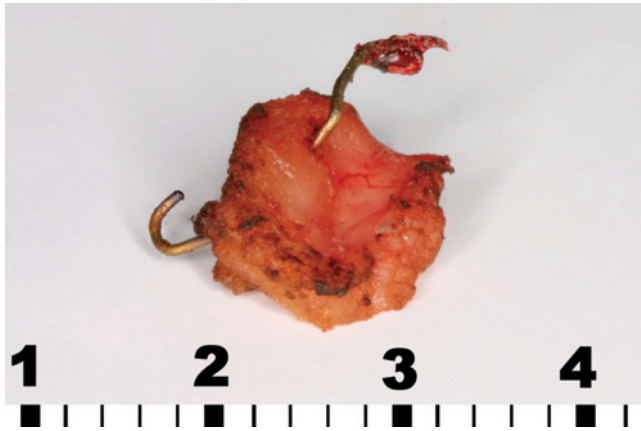
The second patient was a 65-year-old man who presented with crushing central chest pain. He collapsed with hypotension on arrival at hospital and was resuscitated. Transthoracic echocardiography showed cardiac tamponade and transesophageal echocardiography excluded an acute aortic dissection. Coronary angiography was performed and showed normal coronary arteries.

The patient's history included noninsulin-dependent diabetes and a partial hepatectomy of segments 2 and 3 in 1999 for angiomyolipoma.

The patient was taken to the operating room where a median sternotomy was performed, the pericardium opened and the tamponade relieved. Inspection revealed an ulcer on the diaphragmatic surface of the right ventricle, which had eroded into the posterior descending artery (PDA) which was actively bleeding. The ulcer appeared to have been caused by a knot in a nylon suture, which was protruding through the

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Paper Staple in Posterior Pericardium (scale in centimeters).

diaphragm, and was presumably placed during his partial hepatectomy four years earlier. The suture was excised. Using cardiopulmonary bypass, aortic cross-clamp and antegrade cardioplegia, the PDA was bypassed distally with an aorto-coronary saphenous vein graft and the PDA ligated on either side of the ulcer. The patient made an uneventful postoperative recovery.

DISCUSSION

Cardiac tamponade due to bleeding from a coronary artery is most commonly described in association with coronary dissection or rupture of a coronary aneurysm.

Cardiac tamponade secondary to ingested foreign bodies has been previously described with a sewing needle [Cekird-ekci 2003] and a fish bone [Sharland 1993] as the culprit objects.

Other rare causes of apparently spontaneous cardiac tamponade have been described in the literature and include erosion of a coronary artery by a *Staphylococcus Aureus* myocardial abscess [Fan 1994] and rupture of a malignant mediastinal lymph node into the pericardial cavity causing tamponade [Seki 2001]. The rather novel treatment in that case was a percutaneous, transcatheter arterial embolization of the internal thoracic artery to control the bleeding.

There are an increasing number of reports concerning iatrogenic cardiac tamponade after percutaneous interventions [Atar 1999]. This is not surprising given the exponential rise and expanding indications for both diagnostic and therapeutic percutaneous catheter procedures. Tamponade following central venous interventions [Forauer 2003], angioplasty [Howlett 1995], stent insertion [Fasseas 2004, Gunning

2002], pacemaker insertion [Asano 1996] and endomyocardial biopsy [Deckers 1992] have all been described.

Coinciding with this is the more widespread access to emergency ultrasonography and CT scanning facilitating the earlier diagnosis of cardiac tamponade.

The two case reports described here highlight the varied and unusual etiologies that can be responsible for spontaneous cardiac tamponade. In the second patient, extensive investigations were undertaken to exclude causes such as an acute aortic dissection or acute myocardial infarction complicated by free wall rupture. These cases highlight the need to remain vigilant with a high index of suspicion in any patient presenting with signs of tamponade, particularly when no obvious reason for tamponade can be found.

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