CARDIAC ANGIOSARCOMA CAUSING RIGHT CORONARY ARTERY RUPTURE COMPLICATED WITH CARDIAC TAMPOONADE — A CASE REPORT

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Abstract

Cardiac tamponade is a fatal condition, and affected patients may die quickly if its cause cannot be determined. This case report is of a 41-year-old man who was diagnosed pericardial effusion in the ER. Cardiac tamponade with right ventricle free-wall rupture and right coronary artery transection was noted during the operation. Pathological report revealed angiosarcoma of heart, area near the right coronary artery. Cardiac angiosarcoma is rare, primary malignancy tumor of the cardiac tissues, mostly in the right ventricle. As angiosarcoma and angiosarcoma rupture are rare and easily misdiagnosed, each case of angiosarcoma is a valuable case study. In conclusion, angiosarcoma should be considered when facing cardiac tamponade of unknown etiology.

Key Words: cardiac tamponade, cardiac angiosarcoma, angiosarcoma rupture

Introduction

Cardiac tamponade is a fatal condition. This case is a case of right coronary artery angiosarcoma, a rare etiology of cardiac tamponade.

Case Presentation

This case report is of a 41-year-old man with a history of hypertension and oral leukoplakia. The man experienced a syncope episode, following which he complained of chest pain with cold sweating. No radiation to the back or jaw and no relieving or aggravating factor were observed. In the emergency room triage, consciousness was clear, but radial artery pulsation was weak. Bedside cardiac echography displayed pericardial effusion. Electrocardiography revealed sinus rhythm without specific ST-T change. Laboratory data were 7.2 pg/mL hsTnI, 203 U/L CK-Total, 2.2 ng/mL CK-MB mass. Computed tomography angiography (CTA) (Fig. 1.) was performed, and ascending aortic dissection was suspected by a cardiovascular surgeon. The patient was then sent to the operation room immediately. Consciousness disturbance and weak pulsation were noted. An arterial line was established immediately, and the arterial blood pressure was 65/50 mmHg. Central venous access (by an anesthesiologist) and surgical disinfection were performed.

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Cardiac tamponade is a fatal condition, and affected patients may die quickly if its cause cannot be determined.

The common causes of cardiac tamponade are direct cardiac trauma, aortic dissection with ascending aorta rupture, and acute myocardial infarction (AMI) with free-wall rupture. Our patient was first diagnosed with aortic dissection on the basis of an emergent computed tomography (CT) scan. However, no aortic lesions were noted during open chest operation. Because of the huge hematoma around the right coronary artery, coronary acute obstruction with vessel rupture was suspected by a surgeon. However, the pathology report revealed coronary angiosarcoma, a rare and poor-outcome disease.

Differentiating between these conditions is difficult. Contrast media of the CT not diffusing uniformly in the intima tissue can lead to misdiagnosis.\textsuperscript{1,2}

Cardiac rupture due to coronary infarction has a 14\%-26\% chance of occurring after ST-elevation myocardial infarction,\textsuperscript{3} especially in the case of large area ischemia\textsuperscript{3} or transmural hemorrhage,\textsuperscript{4} which typically occurs in the water-shield area (usually at the anterior wall of the ventricle)\textsuperscript{3,5} or

**Fig. 1.** CTA revealed the presence of high-density pericardial fluid, compatible with the hemopericardium. Thin arrow is pericardial effusion.

**Fig. 2.** Nonenhancing perivascular hematoma can be seen along the right coronary artery, extending along the anterior right ventricular wall; thus, intramuscular hematoma was highly suspected, as was perivascular or myocardial tumor. Dotted arrow is right coronary artery; thin arrow is pericardial effusion; thick arrow is nonenhancing perivascular hematoma.
Late thrombolytic therapy accelerates the occurrence of cardiac rupture and clinically presents as noncoagulated blood after pericardiocentesis.

If patients receive angioplasty in a timely manner, they can be saved, with low incidence of rupture. However, free-wall rupture can happen even days after AMI. However, free-wall rupture can happen even days after AMI.

If the etiology of cardiac tamponade is an ascending aortic dissection, the rupture site is usually at the root of the ascending aorta. In patients with cardiac tamponade, CT may reveal a contrast-fluid level in the hepatic inferior vena cava during the arterial-dominant phase, which is caused by the rupture of the ascending aortic dissection.

Both AMI and ascending aortic dissection can cause cardiac tamponade, but these conditions need different therapies, and determining the true cause is difficult. AMI needs anticoagulant therapy, whereas patients with ascending aortic dissection will die if given anticoagulant therapy. Hence, the early use of CT is crucial. CT can help differentiate aortic dissection from AMI. However, there have been reports of ascending aortic dissection involving the dissection of coronary artery, which may mimic AMI.

Metastasis of tumor thrombus also causes acute coronary artery infarction and AMI. Some tumors may metastasize into the cardiac chamber; the endocardial, subendocardial, and myocardial layers of the left ventricle; and even the pericardium. In addition to metastasized tumors, although unlikely, the pericardium may have primary tumors. Metastasized or primary tumors in the heart can also cause secondary cardiac tamponade.

Cardiac angiosarcoma is rare, primary malignancy tumor of the cardiac tissues, mostly in the right ventricle. Angiosarcoma often grows in the myocardium, resulting in easy bleeding. The prognosis of myocardial angiosarcoma is poor (66% of angiosarcoma cases are at the systemic metastasis stage when first diagnosed). Diagnosis at the early stage is difficult because angiosarcoma does not have any symptoms and does not cause heart failure. Magnetic resonance imaging is a useful tool for diagnosis. However, surgeons may be prone to misdiagnose angiosarcoma of the right ventricle as hematoma because it appears like an inflated cardiac vessel on the MRI and CT images. Surgeons, radiologists, and doctors often misdiagnose angiosarcoma until they receive the tissue report from pathologists. As angiosarcoma and angiosarcoma rupture are rare and easily misdiagnosed, each case of angiosarcoma is a valuable case study. In conclusion, angiosarcoma should be considered when facing cardiac tamponade of unknown etiology.

References

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心臟血管肉瘤導致右冠狀動脈破裂合併心包填塞—病例報告

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摘要

心包填塞的病人如果沒有盡早找出原因是有可能致命的。此病例報告是一位 41 歲男性在急診被診斷心包填塞。手術過程除了發現有心包膜積血，還發現有右心室破裂以及右冠狀動脈斷裂。病理切片結果是“冠狀動脈血管惡性腫瘤”，推翻臨床其他懷疑。心臟血管肉瘤是一種心臟組織的惡性腫瘤，通常好發於右心室。心臟血管肉瘤及心臟血管肉瘤引發心臟破裂非常少見而且很容易被忽略。故在面對心包填塞時，如找不到病因，則需把心臟血管肉瘤列入鑑別診斷中。

關鍵詞：心包填塞，心臟血管肉瘤，心臟破裂