

Case report

The blue man: an unusual happy end of a spontaneous rupture
of a coronary arteryMarie L. Moonen^{a,1}, Michel Hanssen^a, Marc A. Radermecker^b, Patrizio Lancellotti^{a,*}^aDepartment of Cardiology, University Hospital Sart Tilman, B-4000 LIEGE, Belgium^bDepartment of Thoracic and Cardiovascular Surgery, University Hospital Sart Tilman, B-4000 LIEGE, Belgium

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Abstract

We report the case of spontaneous rupture of a coronary artery. It was that of a 56-year-old man admitted for dyspnoea and anterior thoracic pain. The most striking feature on physical examination was the marked cyanosis of his face, upper part of the thorax and the upper limb. The patient was haemodynamically unstable with tachycardia and hypotension. Cardiac tamponade was confirmed by echocardiography and computed tomography of the thorax. The patient was transferred for surgery. Emergency sternotomy revealed pericardial bloody effusion and a continuous bleeding around the posterior interventricular artery. No other perioperative findings could explain the haemopericardium. Haemostasis was obtained by a suture of the bleeding coronary artery.

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1. Introduction

Coronary artery rupture is a rare disorder and is associated with a dismal prognosis. Various causes have been reported including aneurysm, Kawasaki's disease, trauma, localised infection, coronary artery dissection, percutaneous coronary intervention and so on. However, spontaneous coronary artery rupture without any underlying disease is even rarer. We report the case of a patient presenting a tamponade due to coronary artery rupture without any underlying disease.

A 56-year-old man was admitted to our hospital for increased resting dyspnoea that appeared suddenly a few hours before admission. He also described anterior thoracic pain radiating to right shoulder. The patient's previous medical history only included a surgical correction of a pulmonary stenosis at the age of twelve. Otherwise, he did not take daily medication and said he felt in good health. The most striking feature on physical examination was the marked cyanosis of his face, upper part of the thorax and upper limbs (Fig. 1A–C). There were jugular vein stasis and profuse sweating. The patient appeared to be very uncomfortable and haemodynamically unstable with hypotension and tachycardia. Among laboratory data, cardiac enzymes were normal. The electro-

cardiogram revealed a normal sinus rhythm without signs of acute myocardial ischaemia. Chest X-ray demonstrated slight cardiomegaly. On echo performed at bedside, in which the images were of poor quality, the parasternal view revealed preserved left ventricular function. The apical views were even more difficult to get but the right ventricle was quite absent and seemed to be constrained by an external structure arising from the pericardium (Video 1). By truncating the classical parasternal short axis views, a pericardial effusion appeared to encompass the entire left ventricle. There was no direct sign of ventricular free wall rupture. Indeed, when a contrast echo was performed, there was no active feeling of the pericardium. The right ventricle was effectively constrained (Video 2). No pseudoaneurysm was observed and no sign of cancer was viewed. The chest angio CT performed at the admission showed a 50 H.U. pericardial effusion (Fig. 2), corresponding to the density of a haemopericardium. There was no aortic dissection. To note, there was no history of traumatism before admission. Soon after hospitalisation, the patient had a sudden cardiac arrest, received cardiac resuscitation and was transferred to the operating theatre. Emergency sternotomy showed pericardial bloody effusion and a continuous bleeding around the posterior interventricular artery. No other perioperative findings could explain the haemopericardium. The decision to go off-pump was made because the patient was particularly unstable. Haemostasis was obtained by a direct suture of the bleeding coronary artery and no coronary artery bypass grafting was made. After surgery, the patient was transferred to our intensive care unit

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Fig. 1. (A) Marked cyanosis of his face, upper part of the thorax and upper limbs contrasting with the normal colouration of the lower part of the body. (B–C) Larger views of the patient's face showing well the marked cyanosis. There were also profuse sweating and jugular vein stasis. (D) After surgery.

(Fig. 1D). He left a few days after the operation and fully recovered without notable complications.

2. Comments

Spontaneous coronary artery rupture without any underlying disease is a very uncommon disorder. Only three cases have been published in the last few years [1–3]. Even though few reports exist, we believe the disease might be under-reported because an acute bleeding in the pericardium is often lethal and thus not recognised [2].

Different features of this case were particularly interesting. First, the patient was haemodynamically stable enough to be transported to our emergency department, which is quite

rare in case of acute bleeding in the pericardium and tamponade. Then the patient described clinically a superior vena cava syndrome, responsible for the marked cyanosis of his face, upper part of the thorax and upper limbs. The very first exams accomplished in the admission of the patient were not suspicious of a cardiac aetiology: cardiac enzymes were normal and the electrocardiogram did not reveal signs of acute myocardial ischaemia. Then we performed an echocardiography at bedside and observed that the right ventricle was quite absent and constrained by a pericardial effusion. Unfortunately, soon after admission, as the patient was quickly haemodynamically unstable and, without other alternatives, was transferred in the operating room. A coronary angiography was not thus able to be realised. Emergency sternotomy confirmed the pericardial bloody effusion and showed a coronary artery rupture. No other perioperative findings could explain the haemopericardium. Haemostasis was obtained by a direct suture of the bleeding coronary artery. Due to the poor haemodynamic conditions, the surgeon did not have the possibility to proceed to a coronary artery bypass grafting. The patient's face cyanosis, evocating superior vena cava syndrome, could be explained, according to us, by the fact that the venous return was compromised by the haemopericardium. In fact, the previous medical history of surgical correction of a pulmonary stenosis at the age of twelve is probably responsible for a fibrous reorganisation of the pericardium and then for the constitution of a compartmentalised effusion, what probably saved his life in this case.

Since we did not find any underlying pathology, genetic tests were performed for Ehlers–Danlos syndrome and were negative; we suggested that the rupture was spontaneous.

So in conclusion, in patients with acute cardiac tamponade with no obvious underlying pathology detectable on CT, angiography or echocardiography, spontaneous coronary



Fig. 2. Chest angio CT revealed a 50 H.U. pericardial effusion.

rupture should be considered [2]. If coronary angiography is performed and the bleeding source identified, the coronary vessel might be treated by a stent [4]. However, the acute and often dramatic nature of the haemopericardium with cardiac tamponade advocates immediate pericardial drainage and prompt surgical intervention. The bleeding site might be treated by ligation of the coronary with subsequent bypass grafting, especially in patients with proximal coronary artery ruptures [2].

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.ejcts.2008.08.031](https://doi.org/10.1016/j.ejcts.2008.08.031).