Extensive anterior chest wall ecchymosis as a sign of subacute type A aortic dissection

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Received 8 December 2011; received in revised form 1 April 2012; accepted 4 April 2012

Abstract

A 66-year old man was admitted to the hospital with chest and back pain and wide chest wall ecchymosis. His medical history revealed no chest trauma or resuscitation, but coronary angiography had been performed 20 days previously. Subacute type A aortic dissection was diagnosed. The likely cause of an ecchymosis located in this way, correlated with vasculature of thoracic wall, was thought to be progression of the dissection through the arterial branches feeding the chest wall. Perioperative observation confirmed the diagnosis and a hemiarch replacement was performed with a good outcome.

Keywords: Aortic dissection • Ecchymosis • Late diagnosis

INTRODUCTION

Aortic dissection is one of the most catastrophic diseases of the cardiovascular system. Iatrogenic dissection of the ascending aorta, during coronary angiography and percutaneous intervention, is an uncommon but potentially serious complication. This rare complication of coronary angiography, particularly during angioplasty of the right coronary artery, occurs with a frequency of ~0.008–0.02% [1, 2]. The location, size and etiology of a dissection all impact on the clinical outcome. All arteries may be affected by the dissection, and clinical signs and symptoms such as neurologic, renal and extremity complications may vary depending on the involvement. To date, there is no report on extensive chest wall ecchymosis as a sign of type A aortic dissection. We herein present the case of a 66-year old male patient with late diagnosis of iatrogenic dissection of the ascending aorta, following coronary artery catheterization and angiography.

Case presentation

A 66-year old man was admitted to our hospital with chest and upper back pain and presence of a concomitant anatomically-shaped ecchymosis of the anterior chest wall, as shown in Fig. 1 (a). His medical history revealed that he underwent conventional catheter coronary angiography because of symptomatic but atypical chest pain 20 days previously. In a physical examination of the chest, there were no indications of external injuries, but an extensive, anatomically shaped, anterior chest wall ecchymosis was detected. Expansion of the lungs was symmetrical. There were no concomitant bleeding disorders or other laboratory abnormalities. The electrocardiographic findings and cardiac enzymes were also normal. Transthoracic echocardiography revealed an intimal flap in the ascending aorta. Thoracic magnetic resonance revealed type A aortic dissection and a suspicious para-aortic mass that was thought to be an intramural haematoma and probably associated with type A aortic dissection (Fig. 1b). The patient’s haemodynamic status was stable in the meantime.

The patient underwent emergency open heart surgery, which was performed through a median sternotomy. Perioperative transoesophageal echocardiography revealed that the aorta had moved out of the imaging plane. Other accompanying findings included limited intimal tear and possible thrombus formation, protruding into the lumen (Fig. 2(a) and (b)). After median sternotomy, intraoperative observation revealed intramural haematoma and bruising of the mediastinal tissues. On the other hand, tissues in the jugular region did not seem to be involved. The ascending aorta was opened under profound hypothermic circulatory arrest (18°C) and the intimal tear was discovered in the aortic arch. A hemiarch replacement was therefore performed with a 30 mm diameter Dacron graft (Polythese®, Laboratoires Perouse Implants, Bornel, France). The anastomosis site was reinforced with BioGlue® surgical adhesive (CryoLife Inc., Kennesaw, USA). Cardiopulmonary bypass, aortic cross-clamp and total circulatory arrest times were 290 min, 115 min and 47 min, respectively.

The early postoperative course was uneventful. The patient was transferred to the ward on the postoperative day 3 and acute renal failure developing in the cardiac surgical ward was treated medically. The patient discharged on the postoperative day 16 and was well during the 15-month follow-up.
DISCUSSION

Iatrogenic causes can account for up to 20% of all aortic dissections [3]. They can occur at the time of cardiac catheterization, particularly in those patients undergoing treatment for acute myocardial infarction, or with cardiac surgery including cannulation procedures. These patients may present late- and subsequent atypical findings. Nomura et al. reported a case of subacute aortic dissection, presented 20 days after coronary angiography [4]. In our case, when we re-checked the angiographic images, it appeared that inappropriate engagement of the right coronary ostium with a guiding catheter caused aortic damage during back-up support and triggered further dissection.

The symptoms and clinical signs associated with aortic dissection depend largely on the presence of extra-aortic haemorrhage or changes on the aortic branches, such as compression or shear. A sharp pain is usually experienced around the chest, referring to the back. If branch vessels have been involved, additional signs may be apparent, depending on which blood vessel is affected. In our case, clinical progress was different, related to the trigger factor, which was taken to be the previously-performed coronary angiography. The signs and symptoms developed insidiously.

Trauma to the aorta is one of the frequent causes of mediastinal haemorrhage. In acute type A aortic dissection, leakage of blood from the aorta into the para-aortic region is frequently observed. This might be one of the causes of chest wall ecchymosis but, in our patient, it seemed to be caused by dissection of the arteries which supply the chest wall (the internal mammary arteries) rather than diffusion of the bleeding, such that it was quite well matched with vascular anatomy. Operative observation revealed both periaortic and intramural haematomata but not compression on the vascular structures. There was no distinct connection between the mediastinum and anterior chest wall as it was shown in the picture in which there was no bulging jugular notch (Fig. 1a). To date there has been no report on chest wall ecchymosis as a sign of aortic dissection, except by Hashimi et al., who reported a case presented with ecchymosis in the suprasternal region, due to acute aortic dissection [5].

Computed tomography, angiography and intraoperative TEE are the preferred diagnostic tools in an emergency setting. In our patient, magnetic resonance imaging had already been performed, showing a suspicious intramural haematoma and, apparently, a dissection flap on the descending aorta. The patient’s condition precluded CT angiography that it was also not available in our hospital. Intraoperative TEE revealed the significant tear line in the intima, which allowed blood to escape from the true lumen to the false lumen. Whenever the intimal tear is localized in the lesser curvature of the arch, hemiarch replacement, as performed in our patient, is recommended to improve overall surgical results. One of the determinants of good outcome in our case was presence of partially thrombosed false lumen in the ascending aorta.

In conclusion, aortic dissection presents itself through a wide range of manifestations and findings, and every finding represents an important possibility for diagnosis. The noteworthy point here is that this type of clinical presentation is also possible.

Figure 1: (a) Physical findings of extensive chest ecchymosis; (b) Transverse magnetic resonance images of type A aortic dissection demonstrate dissection flaps (arrows) in the ascending- (AA) and descending aorta (DA) and suspicious images of para-aortic haematoma (arrowheads). PA: pulmonary artery.

Figure 2: (a) True lumen and false lumen separated by an intimal flap; (b) Differential filling of the true and false lumen seen on perioperative transoesophageal echocardiography.
and chest wall ecchymosis should be kept in mind as a clinical sign of subacute/delayed type A dissection.

Conflict of interest: none declared.

REFERENCES


eComment. Unusual presentation of acute aortic dissection

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doi: 10.1093/icvts/vs358
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We read with great interest the report by Yazici et al [1]. The authors presented a case of a 66-year-old patient with bilateral anterior chest wall ecchymosis suffering from a subacute type A aortic dissection. The patient was successfully managed, and the postoperative course was uneventful. However, we believe that there are some issues that need to be addressed.

Firstly, the authors stated that the intimal tear was located in the aortic arch. On the other hand in the discussion, they assumed that during coronary angiography the inappropriate engagement of the right coronary ostium with the guiding catheter was responsible for the aortic dissection. Iatrogenic aortic dissection in this setting would have been presented with an intimal tear in the vicinity of the coronary ostium.

Secondly, they speculated that the extensive anterior chest wall ecchymosis in this patient was due to the extension of the dissection to both internal thoracic arteries. The precise mechanism accounting for the bilateral chest bruising remains to be demonstrated.

Thirdly, ecchymosis in the suprasternal region in the context of acute aortic syndrome was previously depicted in two patients. Hashimi et al. [2] described a 72-year-old female patient with progressive periortioaortic haemotoma of the arch and descending aorta. Al-Hity et al. [3] presented a case of a 66-year-old female patient with acute aortic dissection (DeBakey type III). These two patients presented with ecchymosis in the suprasternal region secondary to the leakage of blood from the pathologic aortic arch to the neck area.

Although acute onset of severe chest or back pain is the most common presenting symptom, some patients may present with nonconforming symptoms and signs. There is a plethora of clinical presentation of this dreadful entity with varied symptomatology, including but not limited to syncope, headache, hemiparesis, atrial fibrillation, and superior vena cava syndrome [4]. Establishing a prompt diagnosis of aortic dissection can be difficult in the presence of atypical symptoms, especially in the absence of pain.

Conflict of interest: none declared

References