Case report - Vascular thoracic

Mediastinal hematoma: another lethal sign of aortic dissection

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Abstract

Acute compressive hemomediatinum due to type A acute aortic dissection in a 70-year-old man caused acute simultaneous obstruction of pulmonary artery and superior vena cava, leading to sudden death, presenting acute progressive bruising of the upper half of the body and subsequent massive hemoptysis. Computed tomography scanning revealed acute severe stenosis of the superior vena cava and right pulmonary artery by mediastinal hematoma. Mediastinal hematoma combined with simultaneous obstruction of pulmonary artery and superior vena cava is a rare entity and should be recognized as one of the acutely fatal signs of type A dissection.

Keywords: Acute aortic dissection; CT findings; Mediastinal hematoma

1. Introduction

In type A acute aortic dissection, the leakage of blood from the aorta into the periaortic space is frequently observed, and mediastinal hematoma due to aortic dissection may not always have been reported as one of the lethal signs. However, superior mediastinal obstruction caused by acute aortic dissection concomitant with pulmonary artery compression is a very rare entity carrying a high mortality [1, 2]. We would like to report an uncommon case with simultaneous pulmonary artery and superior vena cava obstruction relevant to mediastinal hematoma in patients with acute type A aortic dissection, presenting hemoptysis and sudden death.

2. Case report

A 70-year-old man with a history of systemic hypertension was emergently admitted due to transient chest pain. At the emergency room, the patient was in hemodynamically stable condition; blood pressure was 124/76 mmHg, pulse rate was 64 beats/min and regular sinus rhythm. He was free from any symptoms indicating organ ischemia. A chest X-ray revealed widening of the mediastinum, a cardiothoracic ratio of 58%, and normal lung fields. His abdomen was unremarkable. Laboratory examinations revealed a white blood cell count of 14,000/µl, red blood cell count of 436×10^6/µl, hemoglobin of 14.4 g/dl, and platelet count of 19.6×10^4/µl. Arterial gas analysis on 10 l/min oxygen inspiration was pH 7.38, PaCO₂ 6.6 mmHg, PaO₂ 288.1 mmHg, SaO₂ 98.8% and HCO₃⁻ 15.6 mmol/l. Ultrasonographic examination revealed no aortic regurgitation and slight pericardial effusion. Computed tomographic scanning revealed type A acute aortic dissection and mediastinal hematoma with severe compression of the right pulmonary artery (Fig. 1) and superior vena cava (Fig. 2) between the aorta and the vertebral body. Emergency operation was readied for the type A acute aortic dissection, but as soon as the patient was intubated in the operating room, acute progressive bruising of the upper half of the body appeared and subsequently massive hemoptysis occurred, followed by hemodynamic collapse and he died within 3 h of presentation.

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massive airway hyperemia and subsequent hemoptysis occurred and the patient was strangulated by acute pressure caused right ventricular failure, and combined along the pulmonary artery. Acute pulmonary arterial indicated acute extension of the mediastinal hematoma along the pulmonary artery and of superior vena cava due to mediastinal hematoma, which might not appear in the check list of the important signs of type A acute dissection, was only observed in venous system. This case indicates that, despite lethal signs of left heart and arterial system, mediastinal hematoma by itself could be an acutely fatal sign of type A acute aortic dissection, potentially causing acute simultaneous compression of the right pulmonary artery and of superior vena cava [3].

As the right pulmonary artery and the ascending aorta share a common adventitia, the perfused false lumen of type A acute aortic dissection with high blood pressure directly compress pulmonary arterial system with lower pressure [4]. And the common adventitia also restricts decompression of mediastinal hematoma around the pulmonary artery, and hematoma spreads along the adventitial planes of the pulmonary arteries out into the lungs [5, 6]. Concomitant hemoptysis without aorto-bronchial fistula indicated acute extension of the mediastinal hematoma along the pulmonary artery. Acute pulmonary arterial compression caused right ventricular failure, and combined with acute superior vena cava obstruction, massive hemoptysis occurred and the patient was strangulated by acute massive airway hyperemia and subsequent hemoptysis [7].

In conclusion, mediastinal hematoma should not be underestimated, especially presenting obstruction of pulmonary artery and superior vena cava caused by thoracic aortic dissection, and should be recognized as one of the acutely fatal signs of type A dissection, and emergency surgical repair should be performed to avoid subsequent catastrophic events.

References


eComment: Aortic dissection and confusing nomenclature

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I read Inoue and colleagues case description of a mediastinal haematoma in type A dissection with interest [1].

There is looseness in our use of terms when we talk of aortic dissection. Whether we address type A or B. Everyone knows one affects the ascending aorta, the other the descending. Emotions rise, however, when addressing categorisation of an isolated dissected arch! Of course the point of interest is the presence of aortic dissection within or without the pericardium as it is intra pericardial involvement that leads to the complications of dissection that we, surgeons, can do something about (tamponade, myocardial ischaemia or acute heart failure with valvular regurgitation).

There is also confusion in our profession between dissection of the aorta and aneurysmal dilatation often leading to inappropriate use of the term dissecting aneurysm. A mediastinal haematoma immediately suggests aortic rupture, not the complication of further dissection (that is enlargement of the false lumen that has formed within the problematic media of the aorta). In this intriguing report by Inoue et al, the mediastinal haematoma has been confined – it appears – to track along the pulmonary arterial tree. For this to occur it is clear that blood has escaped the confines of the false lumen through rupture out of the aortic media. I do believe that these authors have not described further dissection but an unusual rupture of a previously dissected aorta. Trivial point perhaps but only with clarity of labelling will we better understand the problems we deal with. It is always through better understanding that more effective treatment can be achieved with a reasonable expectation of better patient outcomes.

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Reference