Brief communication - Vascular thoracic

Perforation of the ascending aorta with a hematoma extending into the left-side upper extrapleural cavity

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Abstract

We herein present an extremely rare case of a perforation of the ascending aorta with a hematoma extending into the left-side upper extrapleural cavity. A 62-year-old male with a sudden onset of severe chest pain was referred to our institution because of an abnormal shadow in the left-side upper lung field. Computed tomography revealed a small fusiform aortic arch aneurysm and a hematoma extending to the left-side upper extrapleural cavity. We diagnosed the patient to have acute aortic syndrome and urgent surgery was thus performed. Major bleeding which might be caused by a progression of the perforation was seen during a dissection of the aorta. The aortic arch was transected and a total arch replacement was performed with a 26 mm Dacron graft. No findings of a rupture of the aortic arch aneurysm or dissection were observed. The histopathology of the aorta revealed a severe atheromatous lesion with calcification and thinning disarrayed elastic fibers. The postoperative course was essentially good except for the development of pericardial effusion which required drainage.

Keywords: Acute aortic syndrome; Thoracic aorta; Hemothorax; Penetrating atherosclerotic ulcer

1. Introduction

Acute aortic syndrome (AAS) describes the acute presentation of patients with characteristic aortic pain including aortic dissection, intramural hematoma (IMH) or penetrating atherosclerotic ulcer (PAU) [1]. An abnormal shadow at the left-side upper lung field due to hematoma is seen in traumatic transaction of the aorta. However, it is extremely rare in a perforation of the ascending aorta. Therefore, we describe a case of AAS which occurred due to a perforation of the ascending aorta with the hematoma extending into the left-side of the upper extrapleural cavity.

2. Case presentation

A 62-year-old male with a sudden onset of severe chest pain was referred to our institution. The patient also had mild dyspnea and chest discomfort. His chest X-ray film performed at a previous hospital showed a large abnormal shadow in the left-side upper lung field, and a wide upper mediastinum shadow (Fig. 1). Computed tomography revealed a small fusiform aortic arch aneurysm (45 mm), a hematoma around the aorta concomitantly extending to the left-side upper extrapleural cavity, and little pericardial effusion (Fig. 1). Finally, we diagnosed the patient to have AAS and urgent surgery was performed.

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After a median sternotomy, the cardiopulmonary bypass was established and the patient was cooled to 25 °C. Major bleeding, which might be caused by a progression of the perforation, was seen during a dissection of the ascending aorta without any specific injury. During hypothermic circulatory arrest, the antegrade cerebral perfusion was maintained with the right axillary arterial graft and the perfusion balloon catheters into the left common carotid and the left subclavian arteries. An examination of the ascending aorta revealed a severe atheromatous change with no findings of a dissection or a rupture of the wall (Fig. 2). No findings of a rupture of the arch aneurysm were observed. A total arch replacement was performed with a 26 mm collagen-coated woven Dacron graft. The histopathology revealed a severe atheromatous lesion with calcification and thinning disarrayed elastic fibers (Fig. 2). The postoperative course was essentially good except for the development of pericardial effusion which required drainage.

3. Discussion

In patients with ruptured thoracic aorta, the manifestations commonly include a cardiac tamponade and a hemothorax. Sometimes a hematoma extends to the left-side upper lung field in a traumatic transaction of the aorta. However, it is extremely rare to see a perforation of the ascending aorta. Moreover, this possibility should be considered when making a differential diagnosis to rule out idiopathic spontaneous hemomediastinum or hemothorax [2].
A rupture of a small fusiform aortic aneurysm is thought to be rare although some cases have been reported [3, 4]. In fact, the aortic arch aneurysm did not rupture in our case [5]. On the other hand, spontaneous perforation or rupture of a non-aneurysmal aorta have been reported [5, 6]. In this case, the ascending aorta revealed a severe atheromatous lesion or the thinning disarrayed elastic fibers based on a histopathological examination. Therefore, a PAU in the ascending aorta is thought to be the cause of the perforation of the aorta.

In conclusion, we herein describe an extremely rare case of a perforation of the ascending aorta with a hematoma extending into the left-side upper extrapleural cavity. Surgeons should, therefore, be aware of the wide variety of manifestations, make a correct and timely diagnosis and select the optimal treatments.

References