Case report - Vascular thoracic

Superior vena cava syndrome secondary to chronic dissecting aortic aneurysm after aortic valve replacement

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Abstract

Ascending aortic aneurysm is a rare cause of superior vena cava syndrome. Herein, we describe a case of superior vena cava syndrome caused by a chronic dissecting aortic aneurysm after aortic valve replacement. A successful replacement of the aortic root and ascending aorta led to an improvement of edema of the face and bilateral upper limbs caused by superior vena cava syndrome.

Keywords: Aortic dissection; Aortic operation; Venous disease

1. Introduction

Ascending aortic aneurysm is a rare cause of the superior vena cava syndrome. Herein, we report a case of superior vena cava syndrome caused by a chronic dissecting aortic aneurysm after aortic valve replacement.

2. Case

A 67-year-old male had undergone aortic valve replacement because of aortic regurgitation at another hospital six years before. At that time his postoperative course was uneventful. However, facial edema gradually appeared two weeks before referral to our hospital. A course of diuretic drugs did not improve his symptoms. He was referred to our hospital with severe edema of the face and bilateral upper limbs. Chest X-ray revealed enlargement of the superior mediastinum. Contrast-enhanced computed tomography showed aneurysmal enlargement of the ascending aorta with dissection (DeBakey type II) (Fig. 1). His aortic root was also dilated with a previously implanted mechanical aortic prosthesis. The superior vena cava and the right atrium were collapsed by the dissecting aneurysm. The maximum diameter of the aneurysm was 90 mm. The operation was performed in the semi-elective setting. After dissection of the adhesion around the heart, cardiopulmonary bypass was initiated with cannulation of both the right femoral artery and the inferior vena cava. The innominate vein was cannulated for additional venous drainage as the superior vena cava was collapsed and severely attached to the aneurysm. The patient’s body temperature was decreased to 25 °C, systemic perfusion was temporarily arrested, and retrograde cerebral perfusion was started through the innominate vein. The ascending aorta was resected and replaced with a 24-mm knitted Dacron graft with one branch. The primary tear of the intima was located in the sinus of Valsalva. We decided to perform aortic root replacement with removal of the previously implanted mechanical aortic prosthesis, as the sinus of Valsalva was severely dissected and enlarged. After the completion of distal aortic anastomosis, systemic perfusion was resumed through the side branch of the graft. After the removal of the previously implanted mechanical aortic valve, aortic root replacement was performed using a commercially available composite valved conduit (25–28 mm; Carbosureal, CarboMedics, Austin, TX, USA). The total cardiopulmonary bypass time was 190 min. The superior vena cava was not fully expanded at that time. The postoperative course was uneventful, and no neurological deficit occurred. The patient’s facial edema gradually improved and contrast-enhanced computed tomography showed improved expansion of the superior vena cava (Fig. 2).

3. Discussion

The most common cause of superior vena cava syndrome is a malignant tumor [1], while cardiovascular disease is only rarely causative [2, 3]. In the present case, the superior vena cava was gradually compressed and obstructed by enlargement of the ascending aorta caused by aortic dissection. Optimal surgical intervention to the ascending aorta improved the syndrome with marked relief from facial edema. There are a number of potential causes of aortic...
dissection as a late complication after cardiac surgery [4]. In our case, the primary intimal tear was located at the sinus of Valsalva, which may have been caused by an asymmetric flow pattern due to the mechanical aortic valve prosthesis. As the patient had no obvious chest pain after aortic valve replacement, the onset of the aortic dissection was unknown. We performed aortic root replacement with removal of a previously implanted mechanical aortic prosthesis because the sinus of Valsalva was severely dissected and enlarged. It was previously reported that aortic valve reoperation including aortic root replacement was not an independent predictor of mortality [5]. In conclusion, chronic aortic dissecting aneurysm after aortic valve replacement is a rare cause of superior vena cava syndrome. Careful continuous follow-up is required after aortic valve replacement as ascending aortic dissection may occur without symptoms in these patients.

References