Coarctation of Aortic Arch with Aneurysm

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Abstract

A 28- year- old woman was admitted because of uncontrolled hypertension following delivery. Aortography showed severe coarctation of the aortic arch, and a large- sized aneurysm that was located in the aortic arch distal to the left common carotid artery. The patient was scheduled for surgery. The coarctation was removed and the aortic arch was replaced with a 28-mm Dacron tube, and the left subclavian artery was reimplanted to the Dacron tube. The patient tolerated the procedure well and was discharged from hospital 15 days later. **(*Iranian Heart Journal.* 2002, 2003; 3(2&3): 66-68)**

Key words: Aneurysm < Aorta < Coarctation

A 28- year- old female patient was admitted to Shahid Madani Hospital because of uncontrolled hypertension following delivery. Her blood pressure was 180/90 mmHg in the right arm and 95/65 mmHg in the left arm. Clinical examination revealed grade III/VI systolic murmur at the left sternal border. Both femoral pulses were absent. There was left ventricular hypertorophy criteria in EKG. In echocardiogram, coarctation of the aorta was seen in suprasternal view. Doppler studies showed about 88 mmHg gradient across the coarctation.

The patient was scheduled for cardiac catheterization and aortography. Aortography showed a large- sized aortic aneurysm, which was located in the root of the left subclavian artery after coarctation. Sever segmental narrowing was seen after aneurysm at the distal part of the aortic arch (Fig 1).

For the prevention of the rupture of the aneurysm and the treatment of hypertension, the patient was scheduled for surgery. Median sternotomy was done, and all the branches of the aortic arch was exposed. For controlling the distal part of the aorta, a left lateral thoracotomy was performed in the 4th intercostal space.

Fig. 1. Aortography showing huge sacular aneurtsm of distal part of aortic arch.

Fig. 2. Aortography one week after surgery showing removed Aortic aneurysm and reimplanted Dacron tube.

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With cardiopulmonary bypass, the coarctation was removed and the aortic arch was replaced with a 28-mm Dacron graft and the subclavian artery was anastomosed to the descending aorta (Fig 2).

The patient was disconnected from cardiopulmonary bypass without complication and transferred to ICU. She was discharged 15 days after the operation with normalization of her blood pressure. At the operation of this case, the combination of the two approaches; median sternotomy and left 4th thoracotomy, was useful.

Discussion

Coarctation of the aorta is one of the causes of surgically correctable hypertension. In most cases of coarctation in adult there is an abnormal ridge of posterior aortic wall media protruding into the aortic lumen[1] opposite the insertion of ligmentum arteriousm.

Aneurysm areas of focal or diffuse dilatation of the aorta develop at sites of congenital or acquired medical weakness. Hypertension frequently presents in patients with aneurysm.[2] The great majority of aortic aneurysms have been labeled "atherosclorotic". Coarctation with aneurysm formation in the aortic isthmus is a very rare condition[3] A rare case of the aortic arch aneurysm and tuner syndrome was reported by kyobuj,[4] and another by Sato,[5] and Elmaci[6] and Imaiy.[7] A review of literature between 1990 to 2000 showed rare case reports.[8,9] The overall prevalence of aneurysm formation is about 10% by the end of the second decade of life and 20% in the 3rd decade of life in patients with coarctation of the aorta. In our case, hypertension due to coarctation was a predisposing factor for aneurysm formation. Patients with thoracic aneurysm may be asymptomatic, although most give a history of hypertension.

Symptoms and signs of thoracic aneurysms are related to their size and location and are caused primarily by their impingement upon adjacent structures. In this case, because of the compressive effect of aneurysm on the left subclavian artery, there was a significant pressure gradient between the two arms (95/80 in the left arm VS 180/90 in right one). Large aneurysms have a particular tendency to rupture, so surgery must be done earlier. The risk of surgery is 5-25%[3] and requires aneurysm excision and in some cases the reimplantation of the arch vessels. The aortic arch aneurysm is approached through median sternotomy, but in some instances like this case performing a second thoracotomy may be needed for better exposure.

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