Repair of an Aneurysm of the Pulmonary Trunk in a 5-year-old Patient

Feridoun Sabzi, MD; Abdolrasool Moloudi, MD

Abstract

We report a case of idiopathic aneurysm of the pulmonary trunk associated with moderate insufficiency of the pulmonary valve in a 5-year-old girl. The patient was asymptomatic. The results of echocardiography and angiocardiography showed a pulmonary trunk aneurysm. The aneurysm was excised and the pulmonary valve regurgitation was repaired using cardiopulmonary bypass. The postoperative course was uneventful. **(*Iranian Heart Journal.* 2002, 2003; 3(2&3): 69-70)**

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Main pulmonary artery aneurysm is an exceedingly rare entity. They are mainly caused by Behcet's syndrome,[1] pulmonary hypertension,[2] chronic pulmonary emboli,[3] and pulmonary stenosis.[4]

Idiopathic pulmonary trunk aneurysm sometimes develops in combination with pulmonary insufficiency.[4] This aneurysm presents a low incidence and prevalence, is difficult to diagnose, presents with non-specific symptoms or without symptoms, and may be detected in radiological studies as a widening or mediastinal mass (Fig.1).

Fig. 1. Chest roentgenograph showing huge enlargement of the upper mediastinum with linear calcification.

They rarely cause lethal complications such as fatal hemopericardium[5] and can provoke compression of the trachea, bronchi, or recurrent laryngeal nerve as well.[6]

Case Report

A 5-year-old girl was referred to our hospital for asymptomatic murmur and calcified mediastinal mass (Fig. 1). Two-dimensional echocardiography revealed a huge aneurysm of the pulmonary trunk. Angiocardiography with right ventricular injection showed a dilated right ventricle, an enlarged pulmonary trunk- 4cm in diameter, moderate pulmonary valve insufficiency and mild tricuspid valve regurgitation. The patient was scheduled for surgery. A median sternotomy was performed and because the huge pulmonary aneurysm (Fig. 2) had displaced the ascending aorta posteriorly, access to the aorta was impossible. Consequently, we chose to cannulate the right femoral artery.

From the Department of Pediatric Cardiology, Imam Ali Heart Center, University of Medical Science, Kermanshah, Iran.
Correspondence to F. Sabzi, MD, Imam Ali Heart Center, University of Medical Science, Kermanshah, Iran.
Fax:+(98 831) 760043

Fig. 2. Intraoperative photograph showing the huge pulmonary trunk aneurysm.

The patient was put on cardiopulmonary bypass via right femoral and bicaval cannulation. Maximum flow rates were achieved and cooling was initiated and maintained at 32ºC. The aneurysmal pulmonary trunk was incised cephalad from the pulmonary valve to the right pulmonary artery origin. Examination of the pulmonary valve showed the prolapse of the anterior cusp and a moderate pulmonary valve ring dilatation.

The anterior portions of the pulmonary trunk were excised and the aneurysm was treated by primary anastomosis of the defect of the trunk, and the correction of the anterior pulmonary valve cusp prolapse using subcommissural Teflon pledget sutures (Fig. 3). A cross examination of the pulmonary trunk showed patchy calcification of the wall and light microscopy showed cystic medionecrosis of the elastic pulmonary trunk.

The patient did well 5 months after the operation. Postoperative echocardiography revealed trivial pulmonary regurgitation.

Discussion

A variety of surgical procedures are described in the surgical treatment of aneurysm of the pulmonary trunk, which include resection of the main pulmonary artery aneurysm and replacement with a valve-conduit of bovine pericardium,[7] inter-positioning of a homograft, implantation of a pericardial graft, and replacement of the pulmonary valve with bioprostheses.[8]

Our single case experience suggests that if the pulmonary valve ring is moderately dilated and there is cusp prolapse, aneurysmorrhaphy with the repair of the valve is a valuable alternative if a valve conduit or homograft is not available.

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From the Department of Pediatric Cardiology, Imam Ali Heart Center, University of Medical Science, Kermanshah, Iran.
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