Diagnosis of a Coronary AV Fistula Echocardiography or CT Angiography?!

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Abstract

Coronary fistula is the most frequent hemodynamically significant congenital malformation of coronary circulation. It can originate from any of the three major coronary arteries and drain in all the cardiac chambers and great vessels.

A 28 year-old woman was referred for correction of patent ductus arteriosus. She reported history of few episodes of dyspnea on exertion since several years ago. On physical examination a continuous murmur could be heard mainly at the lower left sternal border. Transesophageal echocardiogrphy showed dilated origin of left main and left circumflex arteries with a continuous flow to the right atrium. Spiral CT coronary angiography revealed an aneurysmal left circumflex artery connecting with the right ventricle. Left system seemed to be dominant. Surgery was done in order to excise the distal part of LCX ***(Iranian Heart Journal 2007; 8 (1): 55-57)***.

Key Words: Coronary Fistula■ Color Flow Doppler■ Ventricle

Case Report

A 28 year-old woman was referred to this center for correction of patent ductus arteriosus. She reported dyspnea on exertion (FC I) and easy fatigability since several years ago.

On examination he was oriented and cooperative. Blood pressure in both arms was 110/70 mm Hg , heart rate=72 beat/min, respiratory rate=14/min, T(oral)=37.2 C. JVP was normal. Heart examination revealed continuous murmur (IV/VI) accompanied by systolic thrill over the lower left sternal border. Initial laboratory tests were normal.

Electrocardiography showed normal sinus rhythm and normal axis without significant ST-T changes.

Chest X-ray showed upper limit cardiothoracic ratio.

Transthoracic echocardiography revealed severely enlarged LV (LVIDd=6.4 cm) with normal LV ejection fraction (LVEF=50-55%). Aneurysmal dilation of left main artery and left circumflex artery was evident on transesophageal echocardiography accompanied by fistula formation between left circumflex artery and right atrium just near the coronary sinus (Fig. 1).

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Fig. I. Transesophageal echocardiography showing dilated origin of left main and left circumflex arteries.

Spiral Coronary CT Angiography showed an aneurysmal left circumflex artery draining to the right ventricle. Coronary sinus had normal size and position without any association with the fistula. (Fig. 2). LCX seemed to be dominant with normal branches. Left anterior descending and right coronary arteries were normal.

Fig. 2. Spiral CT Angiography showing aneurysmal left circumflex artery draining to the right ventricle.

descending artery seemed to be normal (Fig. 3).

Exercise myocardial perfusion scan suggested mild ischemia confined to the apical segment of anterolateral wall.

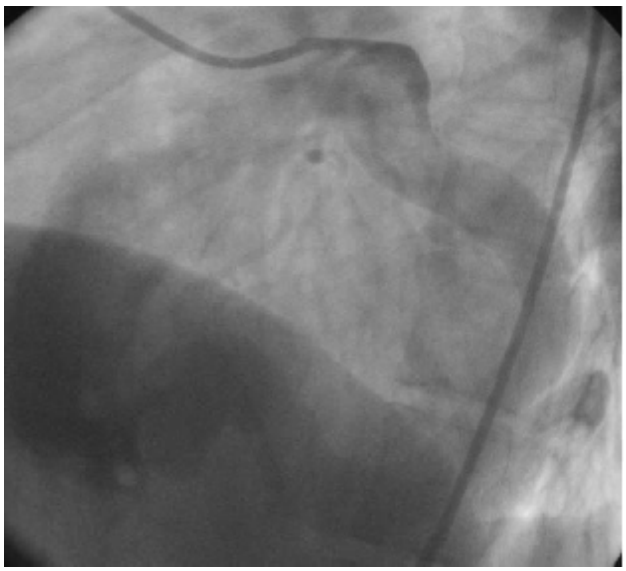

Fig. 3. Coronary angiography showing aneurysmal left circumflex artery seems to be drained to the right ventricle.

On operation , left anterior descending artery and coronary sinus seemed to be normal. The site of drainage was the right ventricle just below the tricuspid valve without any association with right atrium and coronary sinus. (Fig. 4). The branches of LCX were normal. It was decided to excise the end of the circumflex artery in order to annihilate the fistula.

The patient passed the initial postoperative period without complication.

Echocardiography showed normal LV size (LVIDd=4.6 cm) with mildly reduced LV ejection fraction (LVEF=40-45%). Large aneurysmal left circumflex artery was evident without obvious abnormal flow.

Coronary CT angiography revealed Mega LCX without connection to the right ventricle.

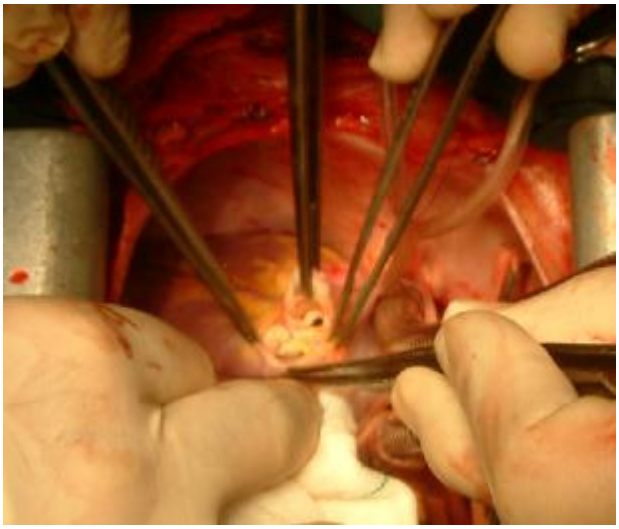

Fig. 4. Aneurysnmal left circumflex artery draining to the right ventricle.

Discussion

Coronary fistula is the most frequent hemodynamically significant congenital malformation of coronary circulation. In this anomaly a coronary artery has a normal origin but it is abnormally drained to cardiac chambers, pulmonary trunk, SVC, IVC, coronary sinus, pulmonary vein,...

Fistula of right coronary artery is more common. UP to 90% of fistulae drain to right side of the heart.

Coronary fistula is sometimes mistaken for PDA.

Complications associated with coronary fistulae are myocardial ischemia, congestive heart failure, sudden death, infective endocarditis and rupture.

Small fistulae have excellent long term prognosis, but untreated large fistulae may lead to premature CAD.

In this case it seems that CT angiography can define the site of drainage more accurately than echocardiography.

Coil embolization is the treatment of choice if it can be done. Nonetheless, surgical correction is usually done to prevent the complications.

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