

Surgical Repair for Left Coronary Artery-right Atrium Fistula With Giant Coronary Aneurysm: Case Report

Yan Jin

West China Hospital of Medicine: Sichuan University West China Hospital

Mengfei Zhang

West China Hospital of Medicine: Sichuan University West China Hospital

Juan He (✉ hejuan813@163.com)

Sichuan University West China Hospital

Case report

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Abstract

Background: Coronary artery fistula is a rare coronary anomaly which is defined as a communication between coronary artery and other heart chambers or vascular structures. The coronary artery which supply the fistula with blood can dilated, as a consequence, coronary aneurysm developed.

Case introduction: Coronary artery fistula is frequently asymptomatic in its early stage, here we report a 26-year-old woman with left coronary artery fistula and left coronary artery aneurysm who presented in our hospital with dyspnea, fatigue and palpitation. The orifice of fistula was closed by continuous suture via right atriotomy. The wall of the aneurysm and enlarged LCA were partially resected along its longitudinal axis so that we can reduce the diameter of LCA to approximately normal.

Conclusion: This technique provides a safe method for surgical repair of the giant coronary artery aneurysm with CAF.

Background

Coronary artery fistula (CAF) is an uncommon heart anomaly which is defined as an abnormal connection between coronary artery and other heart chambers or vessels. The estimated prevalence of CAF is about 0.002% in general population and account for 0.2-0.4% of congenital heart disease and represent 14% of all the abnormalities of coronary [1,2]. Ectasia of the coronary artery which supply the fistula with blood is a chronic effect which will lead to formation of coronary artery aneurysm [3]. CAF with coronary aneurysm is more prone to cause severe complications such as myocardial ischemia and aneurysm rupture so that it necessitates surgery treatment.

Case Report

A 26-year-old woman was referred to our hospital with dyspnea, fatigue and palpitation after exercise for a year. We found a continuous heart murmur during physical examination, heart beat was regular. Colored-Doppler echocardiography detected a giant coronary aneurysm originated from distal left coronary artery (LCA) (Figure 1) and terminated in right atrium, proximal part of LCA was enlarged (Figure 2). Multislice computed tomography angiography and coronary angiography confirmed the diagnosis, the measured diameter of the coronary aneurysm was 45 × 56mm and of the orifice of fistula was 9mm (Figure 3).

The surgery was performed through median sternotomy, cardiopulmonary bypass was initiated though aortic and bicaval cannulation. Antegrade cardioplegia was administrated for cardiac arrest. The orifice of fistula was closed by continuous suture via right atriotomy. The wall of the aneurysm and enlarged LCA were partially resected along its longitudinal axis so that we can reduce the diameter of LCA to approximately normal. The postoperative period was stable, she was discharged from the hospital uneventfully on the fifth postoperative day.

Discussion

The exact incidence of CAF is as yet unknown because the undiagnosed rate still remains high. Most of the CAF is asymptomatic and diagnosed incidentally during the routine physical examination. For the CAF can bring about bad consequences at an older age, the early diagnosis and treatment are very important.

Cardiac catheterization is considered to be the gold standard for the diagnosis of CAF, it can not only detect the cardiac structural involvement, but also achieve an interventional closure with a proper device [4]. Dual-source computed tomography (DSCT) has been widely used in clinical diagnosis of CAF because of its superiorities of short examining time, low radiation dose and excellent image quality [5]. Except that DSCT cannot be used to treat CAF, DSCT can provide detailed structural information about the fistula and concomitant cardiac malformations which are helpful for the therapeutic decision making. Echocardiography is the most common imaging modality for CAF owing to its repeatable and noninvasive features.

The treatment for these coronary fistula is depend on the characteristics of fistula and coronary artery, it include two main options: surgical or transcatheter technique [6]. Simple CAF which means there is no coronary artery ectasia along the coronary that supply the fistula could be treated by transcatheter closure. Coronary artery aneurysm resulted from fistula is very rare and cannot be eliminated by transcatheter so that surgical repair is the optimal option. The surgical intervention through which we can close the fistula, meanwhile fix the dilated coronary artery to approximately its normal size. In this case we chose surgical repair due to the giant coronary artery aneurysm, the risk of aneurysm rupture and thrombosis could be reduced to the most extent.

Conclusion

This technique provides a safe method for surgical repair of the giant coronary artery aneurysm with CAF.

Abbreviations

CAF: Coronary artery fistula; LCA: Left coronary artery; RCA: Right coronary artery; DSCT: Dual-source computed tomography; RV: Right ventricle; RA: Right atrium; AO: Aorta; PA: Pulmonary Artery.

Declarations

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Authors' contributions

JY and HJ contributed to data collection and analysis; JY wrote this article; HJ and ZMF support and encourage the study. All authors read and approved the final manuscript.

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Availability of data and materials

The datasets used are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

None.

Consent for publication

Consent was obtained from the patient for the publication of this report.

Competing interests

The authors declare that they have no conflict of interest.

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Figures

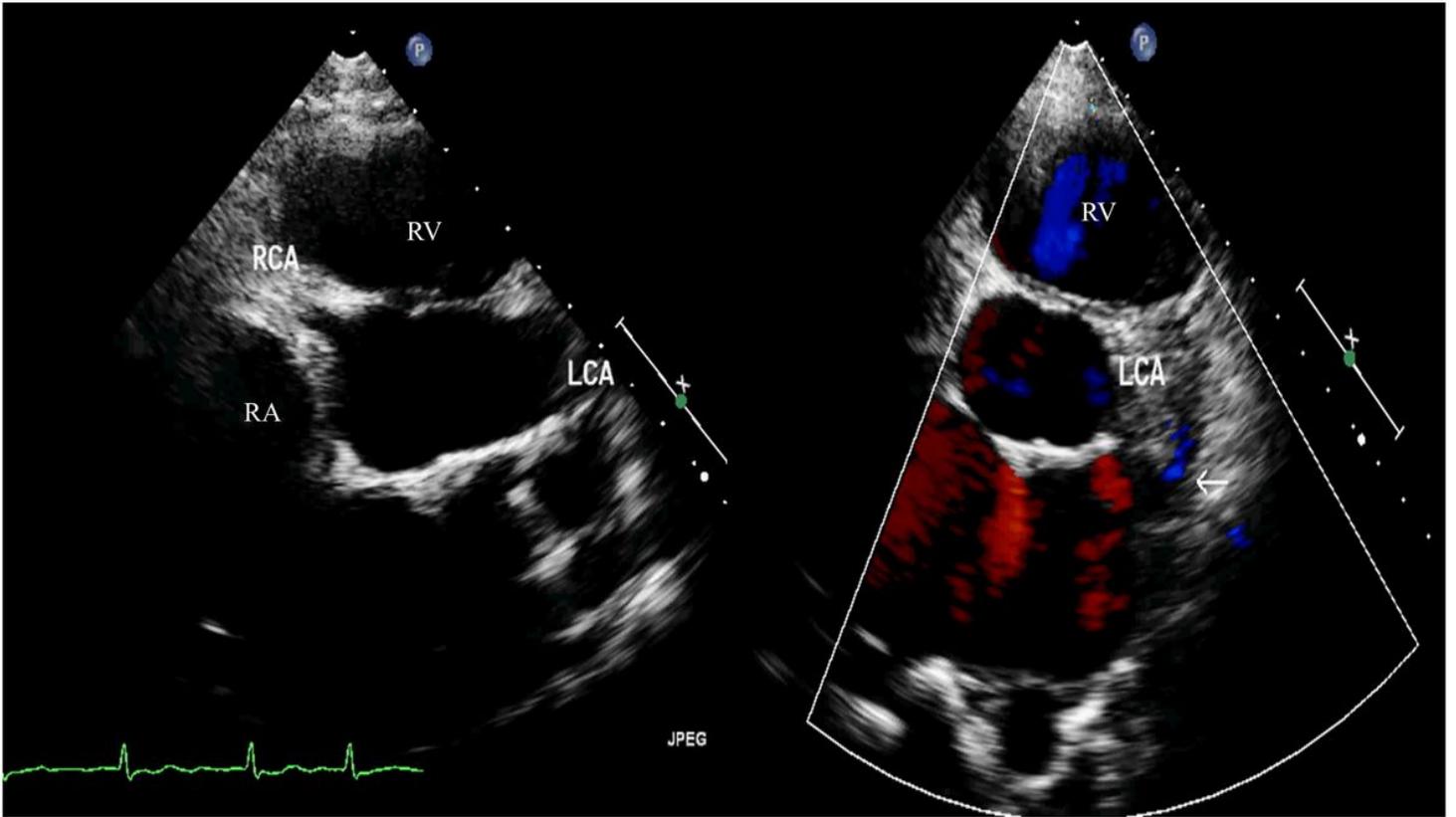


Figure 1

Transthoracic echocardiography showed a giant coronary aneurysm originated from distal left coronary artery and normal right coronary artery. LCA: Left coronary artery; RCA: Right coronary artery; RV: Right ventricle; RA: Right atrium.

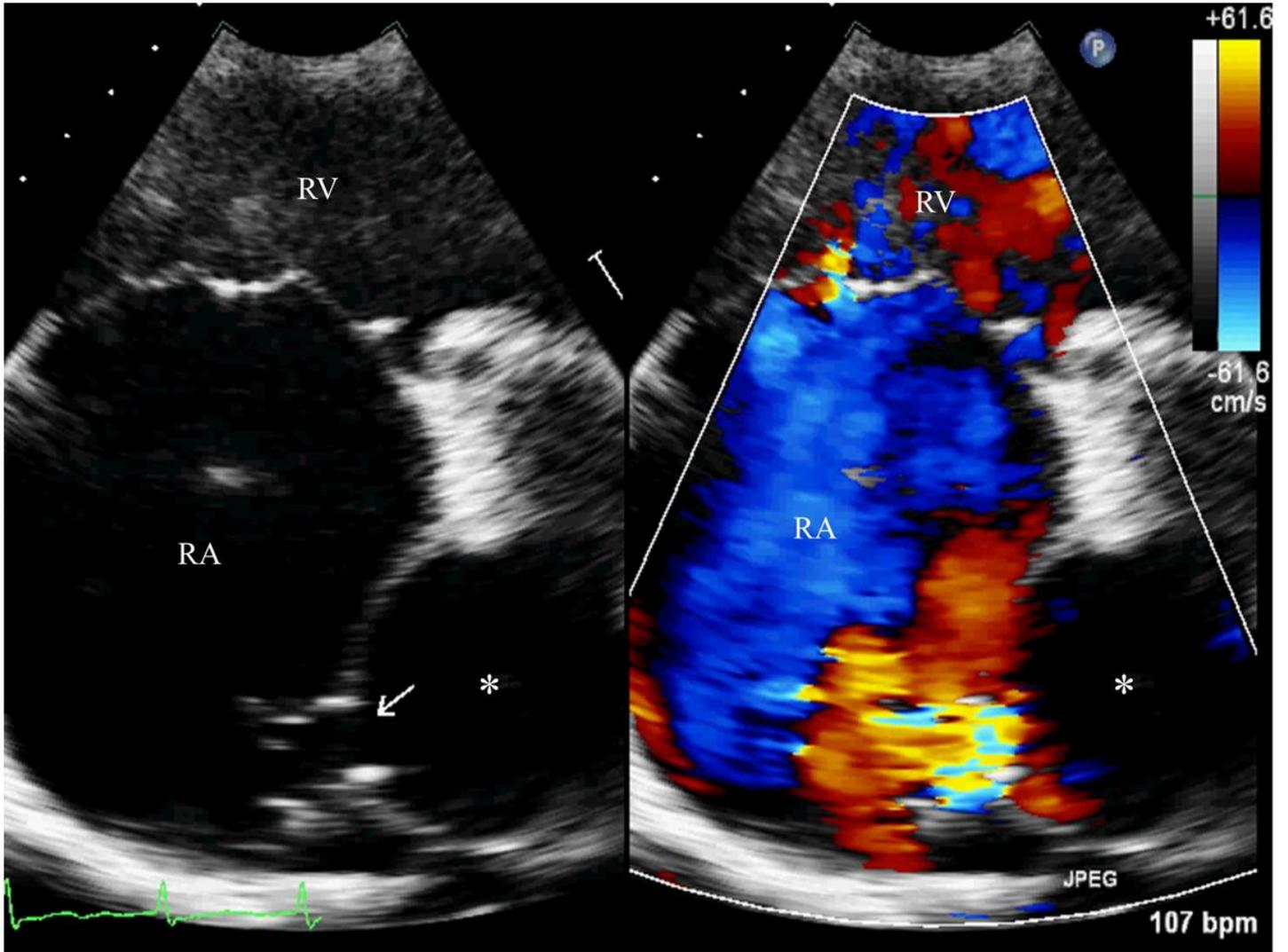


Figure 2

Transthoracic echocardiography revealed the LCA terminated in right atrium, proximal part of LCA was enlarged and the aneurysm was measured 56*45 mm. RV: Right ventricle; RA: Right atrium.



Figure 3

Multislice computed tomography angiography confirmed the diagnosis of LCA to right atrium fistula, the measured diameter of the coronary aneurysm was 45×56mm and of the orifice of fistula was 9mm. LCA: Left coronary artery; RV: Right ventricle; RA: Right atrium; AO: Aorta; PA: Pulmonary Artery.

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