Interesting Case Report

Aneurysm of the Saphenous Vein Graft after Coronary Artery Bypass Surgery

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Abstract

Aortocoronary graft aneurysms are rare; it develops as a late complication of coronary artery bypass surgery. We reported here an incidental finding of a saphenous graft aneurysm detected during routine evaluation by echocardiography and confirmed by computed tomography coronary angiography.

Keywords: Aneurysm, coronary bypass graft, Echocardiography

Introduction

Aneurysmatic transformation of coronary bypass graft is rare; it occurs many years after coronary artery bypass surgery.[1] Aneurysm develops in venous graft, mainly due to atherosclerotic changes and systemic hypertension and also due to the injury occurring during vein-graft harvesting.[2,3] Here, we report a case of aneurysm of Saphenous vein graft to posterior descending coronary artery (SVG–PDA), which was found incidentally during the evaluation for noncardiac surgery.

Case Report

A 67-year-old gentleman was referred to cardiology outpatient department for fitness to paraumbilical hernia repair. He had inferior wall myocardial infarction 15 years back; coronary angiogram revealed critical stenosis in the left anterior descending (LAD) coronary artery, PDA, and ramus intermedius (RI), and he underwent coronary bypass surgery with three grafts: left internal mammary artery graft to LAD coronary artery (LIMA to LAD), SVG-to-PDA), and SVG-to-RI. He was a hypertensive and dyslipidemic.

Clinically, he had no anginal symptoms or dyspnea. Clinical examination was normal. Electrocardiogram showed sinus rhythm with a heart rate of 65/min with pathological Q waves in inferior leads. Chest X-ray showed no cardiomegaly, and transthoracic echocardiogram was done for a routine preoperative cardiac evaluation.

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There was dilation of the left ventricle with a diameter of 6.1/4.6 with the left ventricular ejection fraction of 47%; there was left atrial dilatation with 5 cm. There was scaring noted in the basal inferior wall in view of old inferior wall myocardial infarction. Apical four-chamber view showed a cystic shadow seen near the right atrium shown in Figure 1, which was partly cystic and partly solid. Short axis showed the cystic shadow measures 4.7 cm × 4.8 cm in diameter shown in Figure 2, which was round in shape. It originated near the right atrioventricular groove and projected into the right atrium. The wall of the cyst was thick and showed layered thrombus. We also noticed that there was an increase in the size of the cyst during diastole. Color flow imaging showed blood flow seen inside the cyst. We also noticed that there was blood entering into the cyst. Hence, a computed tomography (CT) coronary angiogram was done.

Multiple views of a three-dimensional surface rendered CT coronary angiography study showed native triple-vessel disease. Left main coronary artery bifurcated into LAD artery and left circumflex artery. Mid LAD was totally occluded after the first diagonal branch and distal part of LAD showed

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retrograde filling. LCX was totally occluded after proximal part, and the distal LCX had some retrograde flow from collaterals. Right coronary artery was totally occluded proximally after a short stump. There is a sacculo-fusiform aneurysm at the distal part of SVG-to-PDA graft was noted in Figure 3. The aneurysm appeared to be originating from the junction of the SVG–PDA graft and it continued as PDA shown in Figure 4. Patent LIMA graft to LAD and Saphenous Vein graft to ramus intermedius were also visible. The CT coronary angiogram could show only the anatomy of the aneurysm, but the echocardiogram could demonstrate the blood circulation inside the graft.

Surgery was advised and the patient was informed about the possible complications such as infection, aneurysm rupture and sudden cardiac death. The patient deferred any surgical procedure, and hence, he was started on anticoagulation.

Discussion

Aneurysmal transformation of aortocoronary SVGs was first described by Riahi *et al*. in 1975[4] and it is a rare complication which occurs 10–20 years after surgery[5] Postoperative atherosclerosis of the SVG is not rare, and Liang *et al*. reported that only 40%–45% of grafts remain normal angiographically after 10 years of coronary artery bypass surgery.[6] Different complications of the venous grafts such as the development of fistula and compression of the pulmonary artery and graft aneurysm compression of the right atrium and ventricle have been reported.[7-9] Here, we reported a case of SVG aneurysm found incidentally during cardiac evaluation. The treatment options are surgical resection of the saphenous aneurysm, revascularization, and therapeutic embolization.[10] The recommendation is aneurysm repair and surgical revascularization of symptomatic patients with aneurysms to prevent further complications.[4,11,12] For asymptomatic patients in whom the aneurysm diameter exceeds 1 cm or in patients with diminished graft flow, surgical revascularization should be recommended.[13] A study from Mayo clinic reported a survival rate of 83% at 5 years and 72% at 10 years after SVG aneurysm repair.[14]

Conclusion

Aneurysmatic transformation of a venous graft after coronary

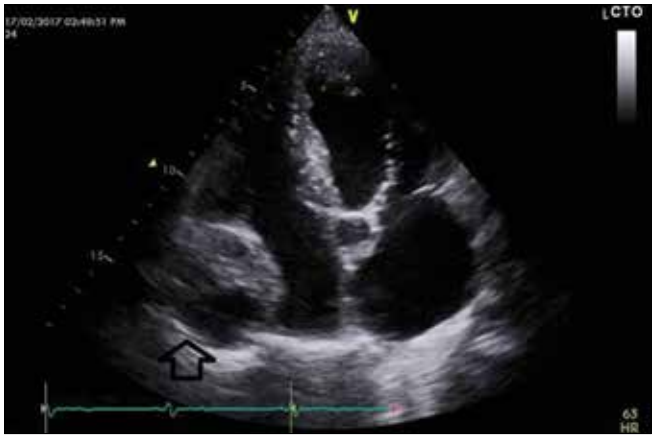

Figure 1: Four-chamber view showing the aneurysm

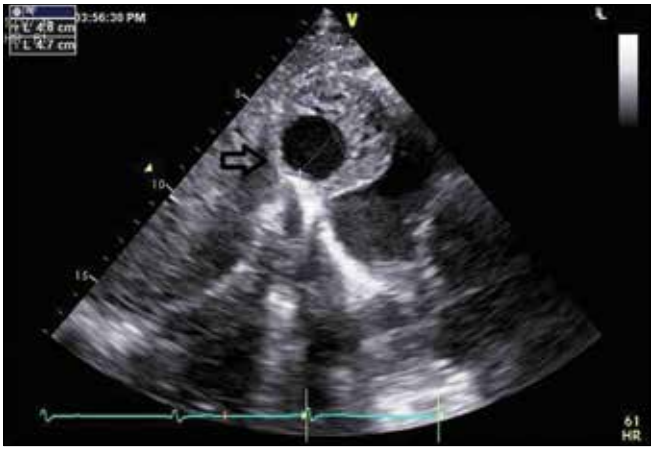

Figure 2: Subcostal view showing the aneurysm

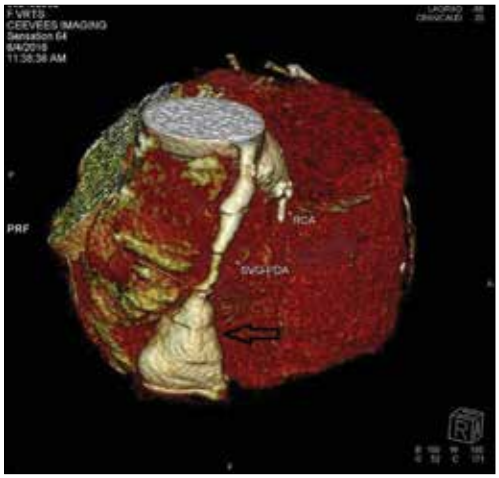

Figure 3: Computed tomography coronary angiography showing the aneurysm

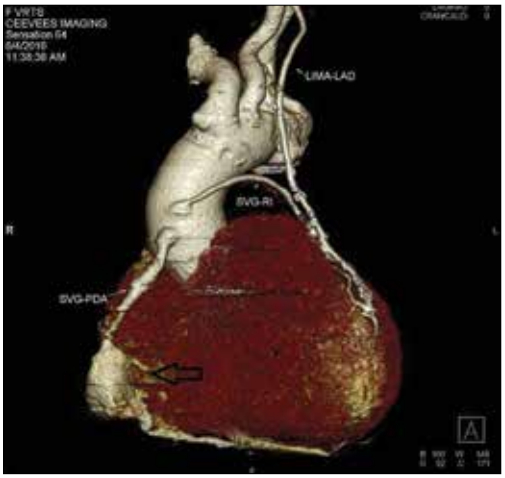

Figure 4: Computed tomography coronary angiography showing the aneurysm and posterior descending coronary artery

bypass surgery is rare, and it leads to fatal complications. It can be diagnosed by multiple noninvasive imaging modalities. Depending on the location of the venous graft, the aneurysm can induce major complications which require surgical intervention. The primary treatment remains surgical, but transcatheter embolization is an alternative in high-risk or inoperable patients.

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Conflicts of interest

There are no conflicts of interest.

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