Hemoptysis caused by saphenous vein graft aneurysm late after coronary artery bypass grafting

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Saphenous vein graft (SVG) aneurysm after aorta-coronary bypass is a rare but potentially lethal complication after coronary artery bypass grafting (CABG).¹⁻⁵ This report presents an unusual case of SVG aneurysm, which ruptured into the right lung, causing hemoptysis late after CABG.

Clinical Summary

A 67-year-old man was admitted to our hospital with hemoptysis. He had a history of hyperlipidemia and CABG 17 years previously at the age of 49, with SVGs to the posterior descending and obtuse marginal arteries, and a left internal thoracic artery graft to the left anterior descending artery at another institute. From the previous surgical findings, the SVG was large, showing a diameter of 4.5 mm. Therefore, proximal anastomotic sites for the SVG on the ascending aorta were carefully selected to avoid a large atheromatous plaque that had been identified intraoperatively.

On physical examination at this admission, the patient was hemodynamically stable although hemoptysis persisted. An electrocardiogram did not show any ischemic change, and cardiac enzymes were normal. A chest radiograph showed a right hilar mass and an additional density in the right upper lung. A computed tomographic scan demonstrated a 4.0×2.0 -cm aneurysm with a mural thrombus abutting the right side of the ascending aorta and consolidations in the right upper lung adjacent to the aneurysm (Figure 1). Cardiac catheterization demonstrated a patent left internal thoracic artery graft. However, both SVGs to the posterior descending and obtuse marginal arteries had occluded. An aortogram demonstrated a saccular aneurysm originating from the right side of the ascending aorta (Figure 2).

At surgery, cardiopulmonary bypass was established, and a cannula was inserted in the right axillary artery before a reentry median sternotomy. On exploration, the aneurysm was densely adherent to the right upper lobe of the lung. After cardioplegic arrest was obtained, the aneurysm was resected, and the mural thrombus was removed. The aneurysm had ruptured into the lung. The orifice of the aneurysm in the ascending aorta was 1.5 cm in diameter. Patch angioplasty of

the ascending aorta was performed with the use of a polyester graft, and partial resection of the right upper lobe of the lung adherent to the aneurysm was performed concomitantly. Revascularization of the posterior descending artery was not performed because there were no ischemic symptoms and the right gastroepiploic artery was too small to be useful as a possible graft to the posterior descending artery. The patient was easily weaned from bypass and made an uneventful recovery, without hemoptysis. Thereafter, he was discharged home.

Discussion

SVG aneurysm late after CABG is a rare complication. The presenting symptoms of SVG aneurysm previously reported include compression on the right atrium or pulmonary artery, myocardial infarction by distal embolization from the aneurysmal graft, and fistula formation into the adjacent cardiac structure.¹⁻² As seen in our case, rupture of the SVG aneurysm into the lung is very unusual.

Previously reported possible explanations of the formation of SVG aneurysm are atherosclerotic change of the SVG, mycotic vasculitis, vein wall weakness, and suture line breakdown due to suture material or technical failure.¹⁻³ In the presented case, concern was focused on hyperlipidemia, the atheromatous plaque in the ascending aorta, and the large-caliber SVG in the previous operation. Hyperlipidemia, which was considered one of the sig-

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Figure 1. Computed tomographic scan demonstrating a 4.0×2.0 -cm aneurysm with mural thrombus abutting the right side of the ascending aorta and with consolidations in the right upper lung adjacent to the aneurysm.

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Figure 2. Aortogram demonstrating a saccular aneurysm originating from the right side of the ascending aorta.

nificant findings in patients with SVG aneurysm in some reports, induced a chronic degenerative process in the ascending aorta and SVG after initial surgery.⁴ Then, the stumps of the SVG became aneurysmal, creating a blind-ending pouch against aortic high pressure after SVG occlusion.

Most SVG aneurysms have been treated with either exclusion or resection of the aneurysm and, if necessary, with revascularization. It is emphasized that a patent SVG aneurysm should not be manipulated because myocardial infarction could be induced by distal embolization.³ In our case, partial resection of the lung was required to control hemoptysis and to avoid infection through the lung fistula into the mediastinum.

In conclusion, an SVG aneurysm after a CABG caused hemoptysis after a rupture in this case and should be included as a late complication of saphenous vein aorta-coronary bypass surgery.

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