Case Report

An unknown cause of hemoptysis—Left anterior descending coronary artery to left upper lobe bronchus fistula

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ABSTRACT

We report a case of left anterior descending coronary artery to left upper lobe bronchus fistula arising out of the coronary artery aneurysm, secondary to drug eluting balloon angioplasty done for in-stent restenosis in the left anterior descending coronary artery in a 54-year-old male. This is an unreported entity yet.

KEY WORDS: Aneurysm, drug eluting balloon angioplasty, left anterior descending coronary artery to left upper lobe bronchus fistula

INTRODUCTION

Coronary artery aneurysm is defined as coronary dilatation, which exceeds the diameter of normal adjacent segments or the diameter of the patient’s largest coronary vessel by 1.5 times. Coronary aneurysms represent anomalies identified in 0.15–4.9% of patients undergoing coronary angiography. Aneurysms are observed most commonly in the right coronary artery, and least frequently in the left main coronary artery. Among the causes of coronary artery aneurysm, aneurysms following drug eluting stent implantation has also been described. We present the case of a patient who had infective coronary artery aneurysms that developed after percutaneous intervention (PCI), leading to coronary artery to bronchial fistula and manifested as massive hemoptysis. This entity has never been described in the literature before.

CASE REPORT

A 54-year-old male with history of hypertension initially presented with acute onset chest pain. On evaluation, he was detected to be having critical stenosis in left anterior descending artery (LAD) and left posterior descending artery (LPD) for which drug eluting stenting was done. However, he had a recurrence of angina after 6 months and on subsequent re-evaluation, in-stent restenosis of the LAD was diagnosed. He underwent drug eluting balloon dilatation for the same, but his angina persisted. Subsequently, he started having continuous fever and progressively increasing hemoptysis. There was no cough, pleuritic chest pain, loss of appetite and weight loss. He denied any contact h/o pulmonary tuberculosis. On physical examination he was febrile (temp 102°F), blood pressure was 104/70 mmHg, pulse 90/min, respiratory rate 18 breaths/min. S1, S2 was audible and regular. Rest of the systemic examination was unremarkable.

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Chest was done, which showed the coronary stent in the position in the left anterior descending and posterior descending arteries. A thick-walled lesion was seen in relation to LAD stent. A post contrast study displayed extravasation of contrast into this soft-tissue density with identifiable communication with LAD [Figure 2a]. These findings were indicative of aneurysm arising from LAD in the vicinity of the stent. There was patchy consolidation in lingular segment abutting mycotic aneurysm suggestive of communication between the aneurysm and lung [Figure 2b].

Coronary angiography [Figure 3] confirmed the findings of CECT chest showing aneurysm involving LAD in the vicinity of stent with normal left circumflex and right coronary arteries and extravasation of contrast. He was taken up for open-heart surgery. Intraoperative findings revealed dense adhesion between proximal LAD, pericardium and adjoining lung. After opening pericardium aneurysm was dissected off the pericardium and left lung. LAD aneurysmectomy, extraction of stents and coronary artery bypass grafting (CABG) with left internal mammary artery (LIMA) to LAD was done. Lung surface was under run to achieve hemostasis. After surgery, the patient improved symptomatically with cessation of hemoptysis and subsidence of fever. Thereafter, he was continued on medical management in the form of dual antiplatelet agents, antianginal and antihypertensive drugs.

**DISCUSSION**

Coronary artery aneurysm is most commonly considered to be atherosclerotic in origin. Other causes of coronary artery aneurysm include Kawasaki disease, Percutaneous coronary interventions (PCI), Inflammatory arterial diseases, Systemic lupus erythematosus, Syphilis, Takayasu disease, Chest traumas and Connective tissue disorders. Coronary artery aneurysms after PCI are sporadic (0.3-0.6%) being described in few case reports only. Our patient developed coronary artery aneurysm, as a complication of PCI, which is a rare entity. Coronary artery aneurysm in our patient was further complicated by coronary artery to bronchus fistula leading to hemoptysis. Coronary artery aneurysm complicating into the coronary artery fistula in connection with lung has not been reported yet. Previously coronary artery fistula (post coronary artery aneurysm) has been described in relation to cardiac chambers only.

Residual dissection and deep arterial wall injury (rupture or resection of the vessel media) caused by oversized balloons or stents, high-pressure balloon inflations, atherectomy, and laser angioplasty have all been associated with coronary artery aneurysms after coronary intervention. Drug-eluting stents (DES), which locally elute antiproliferative drugs, can dramatically inhibit neo intimal growth, thereby suppressing re-stenosis but at the same time potentially causing coronary aneurysms due to other mechanisms, such as delayed re-endothelialization, inflammatory changes of the medial wall, and hypersensitivity reactions. Coronary infection after stenting can present days to weeks after intervention, most frequently as an acute coronary syndrome, in gross contrast to this, our patient presented with hemoptysis, which has not seen in earlier studies. Our patient
had a fistulous connection with left bronchus as the complication of the aneurysm which was quite evident on bronchoscopy, computed tomography and intraoperatively. There was associated consolidation of lingular segments due to trickling down of blood from fistula.

Treatment options for coronary aneurysm consist of medical management with the use of antiplatelet and anticoagulation therapy to prevent thrombus formation within the aneurysm. Surgery should be considered for patients with large aneurysms because of the high risk of rupture. Surgical revascularization procedures include saphenous vein grafting alone or in combination with aneurysm resection. Our patient had developed the fistula as a result of the mycotic coronary artery aneurysm for which he underwent LAD aneurysmectomy, extraction of stents and CABG with LIMA to LAD.

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