

**An 82 year-old man with chest discomfort****Neelima D. Ravi MBBS, MPH, Harry J. Bigham MD, Yuri A. Deychak MD,
and Mevan Wijetunga MD****Case Report**

An 82 year old man with a history of emphysema, hypertension and previous shrapnel injury in the back, presented with a band like sensation on the chest. His vital signs and physical examination were unremarkable. He was ruled out for myocardial infarction. Subsequent dipyridamole myocardial perfusion scan revealed a small sized, reversible defect in the inferior wall of the left ventricle. Coronary angiography revealed a complex of aneurysms in the proximal left anterior descending artery with a fistulous connection to the pulmonary artery. The aneurysm complex consisted of multiple isolated and interconnected chambers, with the largest chamber measuring 16mm in diameter by intravascular ultrasound. (Figures 1-4) There was no evidence of significant obstructive atherosclerotic disease in any of the epicardial coronary arteries. Right heart catheterization showed pulmonary artery pressure of 55mmHg. No left to right shunting was identified by a serial oxygen saturation study. The work up for vasculitis was negative.

Discussion

A coronary artery fistula is an abnormal communication between an epicardial coronary artery and a cardiac chamber or major vessel.¹ The reported angiographic prevalence of this anomaly ranges from 0.1% to 0.2%.² Coronary artery aneurysm is defined as an arterial segment with a diameter greater than 1.5 times the adjacent segment. The angiographic prevalence of isolated coronary artery aneurysms is in the range of 1.5-5.0%.³ The combination of Coronary artery fistula and aneurysm is rare.⁴

Coronary artery fistulae are usually congenital, but may rarely be post traumatic.⁵ The majority of patients remain asymptomatic. The natural history is variable, with long periods of stability in some and sudden onset or gradual progression in others. Symptoms usually begin when the patients are more than 50 years of age and are usually the result of a coronary steal (myocardial ischemia, arrhythmia, sudden death), volume overload (congestive heart failure or isolated right heart failure) or an infection (bacterial endocarditis).⁶ Asymptomatic fistulae may also be managed conservatively with beta blockers or calcium channel antagonists.⁷ Fistula closure by surgery or percutaneous catheter based technique is recommended for symptomatic patients and asymptomatic patients who are considered at high risk for future complications.⁸

Coronary artery aneurysms may have a congenital etiology. The common acquired causes include atherosclerosis, Kawasaki disease and other vasculitides.³ The natural history is unclear. Thromboembolism from the aneurysm may cause symptoms of

unstable angina. Diagnosis is often incidental and made during coronary angiography. Management of coronary artery aneurysm often depends on coexisting obstructive coronary artery disease rather than the sole presence of the aneurysm.⁹ Antiplatelet therapy and anticoagulation are often considered in medical management. Surgical options include coronary artery bypass grafting usually in conjunction with ligation, and resection of the aneurysm with end to end anastomosis of the affected coronary artery.¹⁰

Conclusion

In our patient, considering the age, presence of co-morbidities and lack of flow limiting coronary artery disease, surgical options were not pursued. The decision to place a covered stent was delayed until conservative management was attempted. Anti-platelet therapy with aspirin and clopidogrel along with treatment of angina with a beta-blocker was begun. At 3 months follow up the patient remained asymptomatic.

References

1. Vavuranakis M, Bush CA, Boudoulas H. Coronary artery fistulas in adults: Incidence, angiographic characteristics, natural history. *Cathet Cardiovasc Diagn.* 1995; 35:116-120.
2. Yamanaka O, Hobbs RE. Coronary artery anomalies in 126,595 patients undergoing coronary arteriography. *Cathet Cardiovasc Diagn.* 1990; 21:28-40.
3. Syed M, Lesch M. Coronary artery aneurysm: A review. *Prog Cardiovasc Dis.* 1997; 40:77-84.
4. Hirose H, Amano A, Yoshida S, et al. Coronary artery aneurysm associated with fistula in adults: Collective review and a case report. *Ann Thorac Cardiovasc Surg.* 1999; 5:258-264.
5. Maitre B, Jouvesshomme S, Isnard R, Riquet M, Pavie A, Derenne JP. Traumatic coronary-pulmonary artery fistula. 23 years after a stab wound. *Ann Thorac Surg.* 2000; 70:1399-1400.
6. Atmaca Y, Altin T, Ozdol C, Pamir G, Caglar N, Oral D. Coronary-pulmonary artery fistula associated with right heart failure: Successful closure of fistula with a graft stent. *Angiology.* 2002; 53:613-616.
7. Hackett D, Hallidie-Smith KA. Spontaneous closure of coronary artery fistula. *Br Heart J.* 1984; 52:477-479.
8. Dorros G, Thota V, Ramireddy K, Joseph G. Catheter-based techniques for closure of coronary fistulae. *Catheter Cardiovasc Interv.* 1999; 46:143-150.
9. Dagalp Z, Pamir G, Alpman A, Omurlu K, Erol C, Oral D. Coronary artery aneurysms. report of two cases and review of the literature. *Angiology.* 1996; 47:197-201.
10. Firstenberg MS, Azoury F, Lytle BW, Thomas JD. Interposition vein graft for giant coronary aneurysm repair. *Ann Thorac Surg.* 2000; 70:1397-1398.

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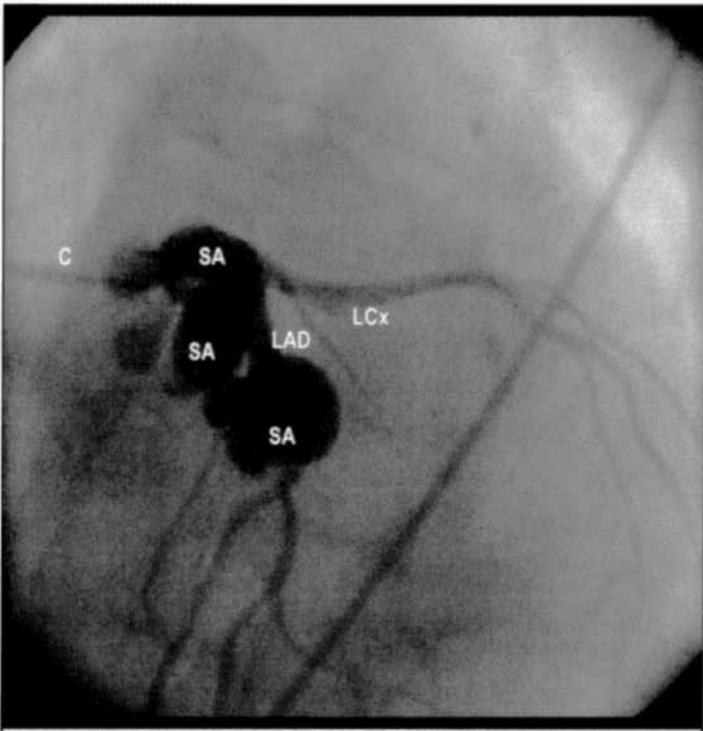


Figure 1.— Left coronary angiography: Anterior view of the left coronary artery showing multiple saccular aneurysms (SA) on the proximal left anterior descending artery (LAD). C= Left Judkins coronary catheter, LCx=left circumflex artery.

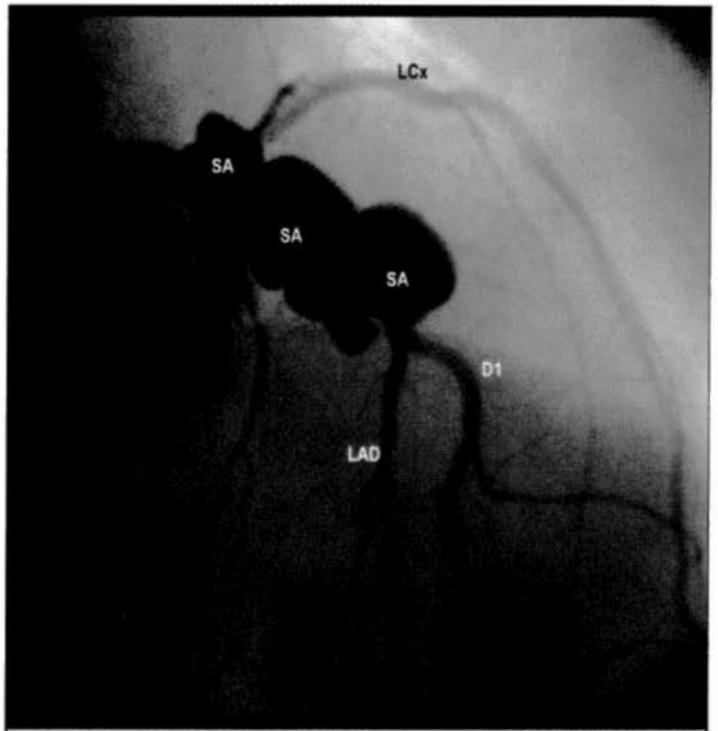


Figure 2.— Left coronary angiography: Right anterior oblique 20° view with cranial tilt of 20° showing multiple saccular aneurysms (SA) on the proximal left anterior descending artery (LAD). LCx=left circumflex artery, D1=first diagonal branch of the left anterior descending artery.

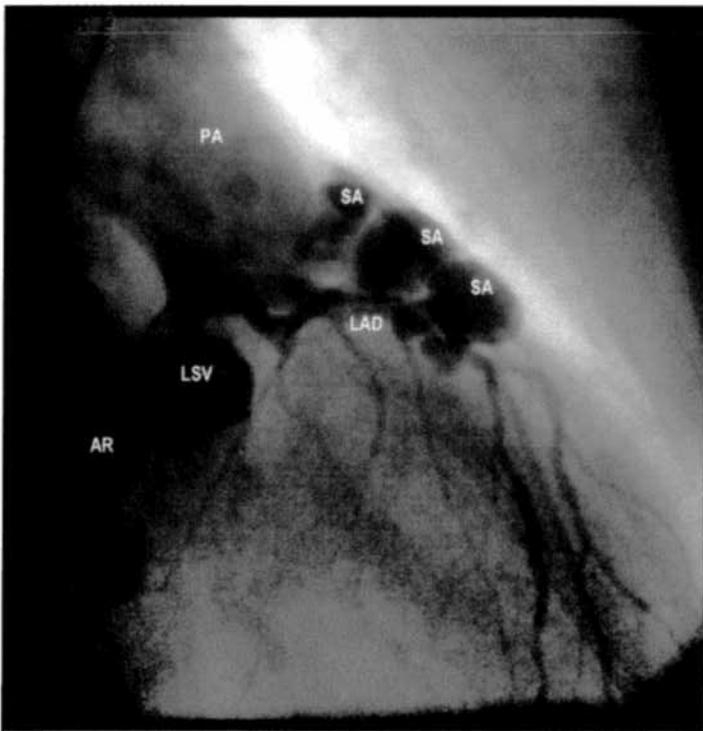


Figure 3.— Left coronary angiography: Right anterior oblique 30° view showing multiple saccular aneurysms (SA) on the proximal left anterior descending artery (LAD) with contrast flowing into the pulmonary artery (PA). AR =aortic root, LSV=left sinus of Valsalva.



Figure 4.— Intravascular ultrasound (IVUS) image of proximal left anterior descending artery. SA=saccular aneurysm, C= cross section of the IVUS catheter.