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Case Report

Obtuse marginal coronary artery aneurysm on CT coronary angiogram

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ABSTRACT

Coronary artery aneurysms are rare. We present an unusual case of an isolated coronary artery aneurysm in the obtuse marginal artery detected on a computed tomographic coronary angiogram, which is unlikely to be significant for the patient. A Medline literature search did not find a similar case.

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1. Introduction

The incidence of coronary artery aneurysms is low, varying between 0.2% and 5%, based on several angiographic studies [1–9]. The lowest incidence of 0.2% was found in Tunick et al.'s study of 8422 patients [7]. The largest study, the Coronary Artery Surgery Study registry, involves approximately 20,000 patients, and found a 4.9% prevalence of coronary artery aneurysm [10].

Atherosclerotic coronary artery aneurysms are the most common types in Western countries [1,2], followed by congenital causes [1,2]. Congenital causes include vascular malformations such as coronary fistulas and coronary arteriovenous malformations, as well as genetically inherited disorders such as Marfan syndrome, neurofibromatosis, and polycystic kidney disease [9]. Less common acquired causes include infection, drug use, Kawasaki syndrome, connective tissue

diseases, and trauma [2,9]. A patient with a coronary artery aneurysm at an unusual location is presented.

2. Case report

A 77-year-old female patient with a history of hypertension, hypercholesterolemia, and recurrent chest pain presented for an outpatient computed tomographic coronary angiogram (CTCA) in April 2016. This revealed an isolated 4 × 4 mm saccular aneurysm arising from the midsegment of the first obtuse marginal branch (Figs. 1 and 2). Her obtuse marginal branch is a small-caliber vessel. The aneurysm demonstrated no internal thrombus. This was managed conservatively. She represented a year later with recurrent chest pain and had a repeated CTCA in April 2017, which demonstrated no change in the aneurysm. Other findings included mild proximal left

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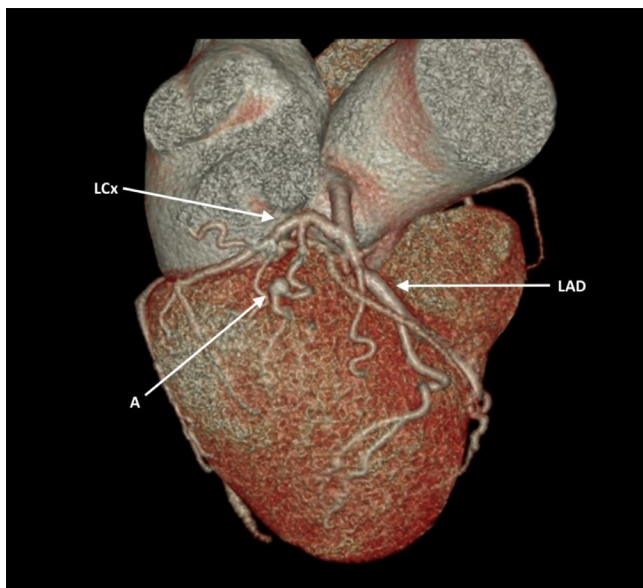


Fig. 1 – Three-dimensional image of saccular aneurysm.



Fig. 2 – Annotated aneurysm.

anterior descending and posterior descending artery stenosis and 4 × 4 cm ascending thoracic aortic dilatation.

In our patient, the aneurysm is likely to be acquired, given her age, her geographic location in a Western country, and presence of coronary artery disease. Given the small size of the aneurysm, the small caliber of the involved obtuse marginal branch, the lack of thrombosis, the patient's mild atherosclerotic disease, and the lack of change in appearances over 1 year, the aneurysm is considered unlikely to be significant, and unlikely to be the cause of her chest pain. She was continued on conservative management after the repeated CTCA.

3. Discussion

Coronary artery aneurysms are most commonly found in the right coronary artery, followed by the left anterior descending and left circumflex arteries [2]. Branch vessel aneurysms are very rare. To our knowledge, there is no existing publication regarding an isolated mid-obtuse marginal artery aneurysm on Medline search. There has only been a case report of a very small aneurysm at the origin of the obtuse marginal artery, associated with 2 other aneurysms in the left main and right coronary arteries [11].

While invasive coronary angiography remains the gold standard imaging technique for coronary artery aneurysms, CTCA is now a sensitive and specific noninvasive technique [12]. CTCA provides additional information about the presence of intraluminal thrombi [1,13] or plaque formation. CTCA further provides information about the anatomical location, relationship to adjacent structures [1], and vessel wall thickness, and may provide clues as to the etiology. Conventional coronary angiography may underestimate the size of aneurysms due to internal thrombi, or may miss aneurysms when they are occluded [1].

Most coronary artery aneurysms are asymptomatic, but some may present clinically with angina, myocardial infarction, congestive heart failure, or sudden death [12]. Complications from coronary artery aneurysms include thrombosis, embolism, spasm, and rupture [12].

The management of aneurysms depends on the etiology and whether there are any complications [9]. In atherosclerotic aneurysms, most patients are managed with medical therapy, with cardiovascular disease risk management, and consideration of antiplatelet or antithrombotic therapy [14]. Invasive options, when required, are coronary artery bypass surgery and percutaneous treatment, such as with covered stenting and coiling [12,14].

4. Conclusion

We present a rare case of a small isolated aneurysm at the mid-obtuse marginal branch. CTCA is considered as a better imaging method than conventional angiography for aneurysm characterization.

REFERENCES

- [1] Diaz-Zamudio M, Bacilio-Perez U, Herrera-Zarza MC, Meave-Gonzalez A, Alexanderson-Rosas E, Zambrana-Balta GF, et al. Coronary artery aneurysms and ectasia: role of coronary CT angiography. *Radiographics* 2009;29(5):1939–54.
- [2] Cohen P, O'Gara PT. Coronary artery aneurysms: a review of the natural history, pathophysiology, and management. *Cardiol Rev* 2008;16(6):301–4.
- [3] Markis JE, Joffe CD, Cohn PF, Feen DJ, Herman MV, Gorlin R. Clinical significance of coronary arterial ectasia. *Am J Cadiol* 1976;37(2):217–22.

- [4] Hartnell GG, Parnell BM, Pridie RB. Coronary artery ectasia: its prevalence and clinical significance in 4993 patients. *Br Heart J* 1985;54:392–5.
- [5] Robertson T, Fisher L. Prognostic significance of coronary artery aneurysm and ectasia in the Coronary Artery Surgery Study (CASS) registry. *Prog Clin Biol Res* 1987;250:325–39.
- [6] Alfonso F, Pérez-Vizcayno MJ, Ruiz M, Suárez A, Cazares M, Hernández R, et al. Coronary aneurysms after drug-eluting stent implantation: clinical, angiographic, and intravascular ultrasound findings. *J Am Coll Cardiol* 2009;53:2053–60.
- [7] Tunick PA, Slater J, Kronzon L, Glassman E. Discrete atherosclerotic coronary artery aneurysms: a study of 20 patients. *J Am Coll Cardiol* 1990;15(2):279–82.
- [8] Packard M, Wechsler HF. Aneurysms of coronary arteries. *Arch Internal Med* 1929;43:1–14.
- [9] Chrissoheris MP, Donohue TJ, Young RSK, Ghantous A. Coronary artery aneurysms. *Cardiol Rev* 2008;16:116–23.
- [10] Swaye PS, Fisher LD, Litwin P, Vignola PA, Judkins MP, Kemp HG, et al. Aneurysmal coronary artery disease. *Circulation* 1983;67(1):134–8.
- [11] Saleh WK, Aljabbari O, Reardon MJ. Case report: a rare case of a giant right coronary artery aneurysm. *Methodist Debaque Cardiovasc J* 2015;2:135–6.
- [12] Johnson PT, Fishman EK. CT angiography of coronary artery aneurysm: detection, definition, causes, and treatment. *Cardiopulm Imaging* 2010;195(October):928–34.
- [13] Forte E, Aiello M, Inglese M, Infante T, Soricelli A, Tedeschi C, et al. Coronary artery aneurysms detected by computed tomography coronary angiography. *Eur Heart J Cardiovasc Imaging* 2016;18(11):1229–35.
- [14] Sherif SA, Tok OO, Taşköylü O, Goktekin O, Kilic ID. Coronary artery aneurysms: a review of the epidemiology, pathophysiology, diagnosis, and treatment. *Front Cardiovasc Med* 2017;4(24) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5418231/>.