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Right Coronary Artery Post-stenotic Giant Saccular Aneurysm that is Managed by Graft Stenting after Revascularization of Aneurysmatic Lad Lesion for Acute Anterior STEMI

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Abstract

Coronary artery aneurysms (1.5 times dilation the reference-vessel) are uncommon and have been diagnosed with increasing frequency with coronary angiography. The frequency of CAA varies widely, from 0.3% to 5%, and complications include thrombosis, embolic phenomena, arteriovenous fistulisation, spasm, rupture with haemopericardium and sudden death [1]. We present a case giant saccular RCA aneurysm that requiring urgent revascularization by graft stenting without surgical intervention after successful culprit LAD revascularization in 65 year old patient for anterior STEMI.

Keywords: Giant coronary saccular aneurysm; Ventricular fibrillation; Graft stenting

Introduction

Coronary aneurysms are observed in 0.15–4.9% of patients undergoing coronary angiography [2]. We present a case of anterior myocardial infarction with post mı heart failure .CAAS are classified mainly based on the shape and two different types have been proposed: a saccular aneurysm and fusiform aneurysm. The first has a spherical-shaped distension, characterized by a transverse diameter > longitudinal diameter; in the second type, the longitudinal diameter is larger than the transverse diameter, describing a spindle shape [3]. The risk factors for developing a CAA are atherosclerosis, inflammation, and non-inflammation causes. Atherosclerosis is the most frequent risk factors in adults, reaching a frequency of 50% in all CAAs, independent of the presence of coronary artery plaque [4]. Hormonal and genetic causes are reported in literature. Phaeochromocytoma is related to coronary artery aneurysm . Von Hippel Lindau and MEN syndromes that are related to phaeochromocytoma present coronary and intracranial aneurysm of arteries [8].

CAAs can present in other syndromes, such as connective tissue disease (Marfan syndrome, Ehlers-Danlos syndrome, fibromuscular dysplasia, neurofibromatosis), vasculitis (lupus, rheumatoid arthritis, ankylosing spondylitis, scleroderma), infections (human immunodeficiency virus, bacterial, mycobacterial, syphilis, Lyme disease, mycotic aneurysm, septic emboli), drug use (cocaine, amphetamine, protease inhibitors), neoplastic lesions, and cardiac lymphoma. In addition to these risk factors there is also risk of developing coronary artery aneurysm after pcı with coronary artery drug eluted stenting and drug eluted ballons. Treatment options are cardiac surgery, pcı and medical treatment. Medical treatment with DAPT showed lower rate mortality in Coronary Artery Aneurysm Registry (CAAR study), which conducted an average follow-up of 37.2 months in approximately 1500 patients [5]. CABG is suitable for the aneurysms involving especially involving large collateral branches; left main aneurysm; giant or multiple aneurysms; mechanical complications, compression of structures, or fistula formation; signs of rupture; Kawasaki disease or infected aneurysms; symptomatic venous graft aneurysms; or those causing significant downstream flow reduction [6]. Aneurysm and other coronary stenoses can be treated by either a PTFE-covered stent, alongside other drug-eluting stent implantations in tracts outside the aneurysm, or the so-called 'stent-assisted' embolization, which involves percutaneous treatment using membrane-covered stents and coil embolization, with a strong limitation in patients with large or multiple CAAs [7]. Another described off-label technique is the use of carotid stent implantation for the treatment of CAAs but data is limited.

Case Presentation

65 year old woman with hypothyroidism with in her mother's medical history involving cranial berry aneurysm had been presented with chest pain and had been admitted to our clinic by emergency transportation after diagnosis of anterior stemı ,ecg showing widespread v1-v6 st segment elevation. Coronary angiography was showing proximal lad containing 100% stenosis after successful stenting for culprit vessel patient was followed in our coronary intensive care unit (Figure 1). Post MI heart failure developed and echocardiographic imaging showed ejection fraction 35% anterior and apical segments had aneurysmatic dilatation. Patient had been evaluated by cardiac surgery department for RCA giant aneurysmal post-stenotic saccular aneurysm but before evaluation patient rhythm showed ventricular fibrillation that followed by cardiac arrest and resuscitation. Because of high risk and clinical deterioration patient had been evaluated for high risk pcı for rca giant saccular aneurysm after extubation. İnformed consent was taken from her and first degree relatives for high risk procedure. Patient was taken to cath lab by femoral access percutaneus coronary intervention was performed succesfully. RCA proximal 95% stenosis and poststenotic saccular aneurysm, RCA distal had retrograde flow from LAD (Figure 2A). Predilatation by 1.5 x 20 mm and 2.75 x 25 mm SC ballons were applied .Without occlusion of conal branch and rv branch of rca 3.5 X 35 FİREHAWK STENT implanted to rca lesion after that covering rca saccular aneurysm BENTLEY GRAFT stent 3.5 x 24 mm was implanted. Control angiography showed small leakage proximal to graft stent. Another graft stent 3.5 x 16 mm was implanted to proximal to first graft stent. Post dilatation performed by 4.5 x 15 mm NC balloon. Control angiography didn't show any leakage and procedure was successfully ended (Figure 2A-F).

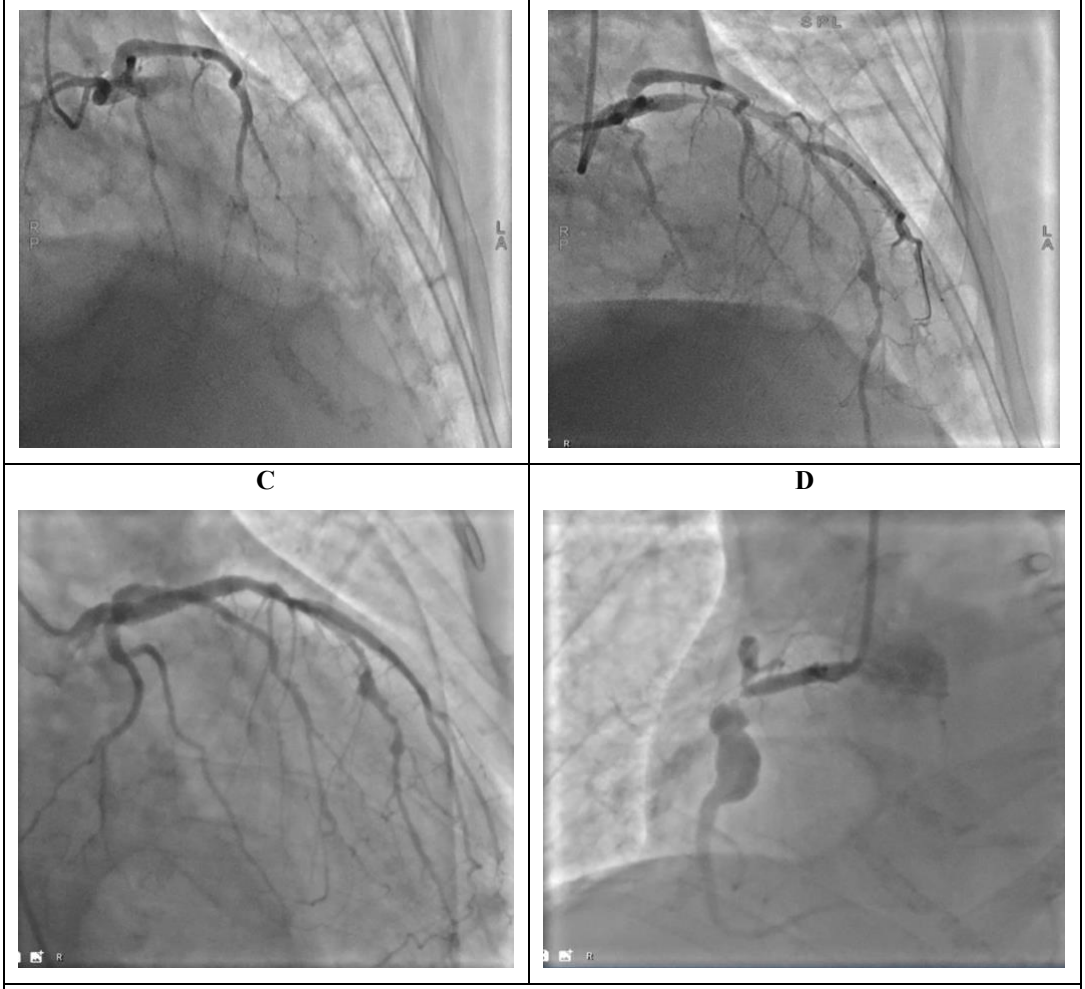

Figure 1: Presentation with acute anterior stemi coronary angiography proximal lad stenosis 100% (A). After successful pcı LAD was revascularized (B and C). RCA showed proximal 90% stenosis and poststenotic giant saccular coronary aneurysm (D).

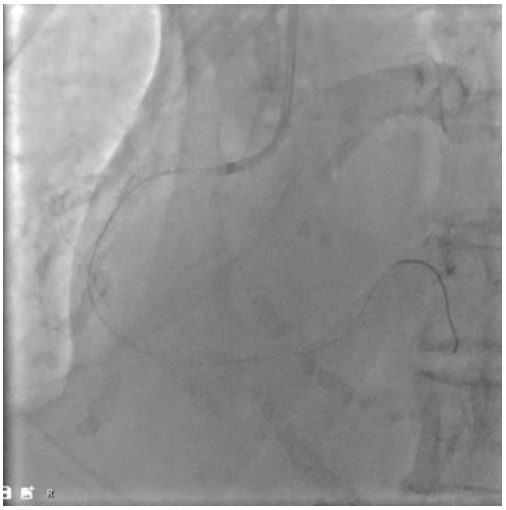

Figure: 2A

Figure: 2B

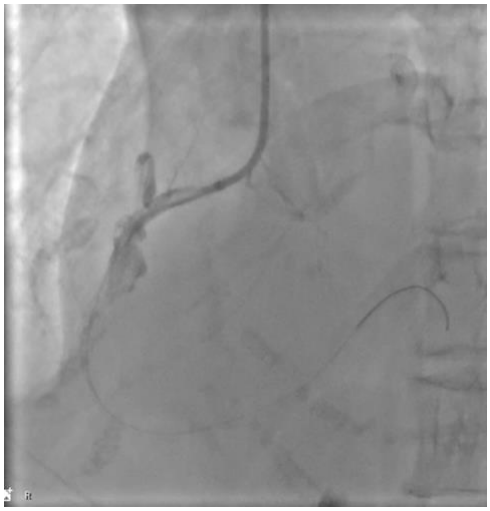

Figure: 2C

Figure: 2D

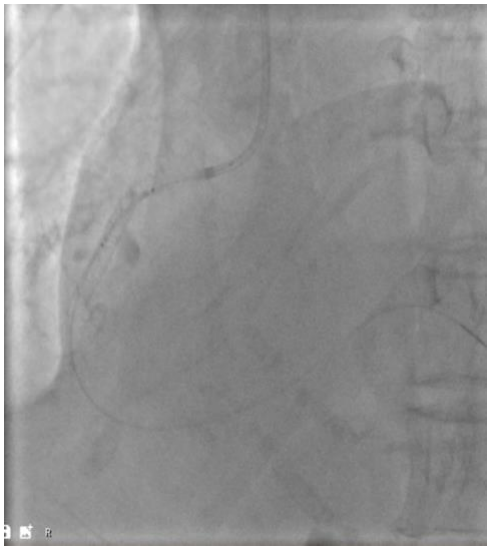

Figure: 2E

Figure: 2F

Conclusion

The case we present demonstrates a giant saccular rca aneurysm requiring urgent revascularization because of patient high risk clinic including ventricular fibrillation due to high grade rca occlusion and poststenotic aneurysm. This case shows beside the surgical treatments; some patient requires urgent revascularization so needs optimal percutaneous technic. İn literature best treatment option is still a debate. Our patient was hypertensive in hospitalization required doxazosin in addition to standard antihypertensive management. Her mother was diagnosed intracranial berry aneurysm related family history has directed us to genetic causes. Takatsubo syndrome, malign arrhythmia and coronary artery aneurysm are reported same patient with pheochromocutoma. In our case aneurysm is treated successfully with DES and GRAFT stenting without needing anticoagulant treatment at follow up patient was event free on dapt treatment. This case report presents a ventricular fibrillation due to proximal RCA giant saccular aneurysm needing surgery that requiring urgent revascularization that is successfully treated with graft stenting.

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