CASE REPORT

Concurrent coronary artery and subclavian arterial aneurysms in Takayasu arteritis

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Abstract

Background: Aneurysmal coronary artery involvement and subclavian artery aneurysm are extremely uncommon in Takayasu arteritis.

Case presentation: We present a case with concurrent coronary artery and subclavian artery aneurysms.

Conclusions: This case report stresses multimodality and multisystem imaging in Takayasu arteritis to know the disease load in the patient and to know the possibility of a rare type of involvement (medium and large vessel) in Takayasu arteritis patient.

Keywords: Takayasu arteritis, Left main coronary artery aneurysm, Coronary artery aneurysm, Subclavian artery aneurysm, Computed tomography, Magnetic resonance imaging

Background

Takayasu arteritis is a large vessel vasculitis involving the aorta and its branches with occasional coronary artery involvement. Clinical presentation as multiple aneurysms and distal embolic complication from aneurysm usually makes the possibility of arteritis less likely. We present a case who presented with complications secondary to coronary occlusion with aneurysms in coronary arteries in a male patient, who was subsequently diagnosed with Takayasu arteritis.

Case presentation

A 28 years old man with no conventional risk factors for coronary artery disease presented with history of NYHA functional class II exertional dyspnea for 2 months. He did not have angina or documented acute coronary syndromes in the past. On detailed interrogation, easy fatigability of both upper limbs with mild claudication was noted. The arterial pulses were absent in both upper limbs suggesting a pulseless stage of disease. The blood pressure in the upper limbs was 80/60 mm Hg against a pressure of 120/80 mm Hg in the right lower limb suggesting normotensive status. Bilateral subclavian bruit and carotid artery tenderness were noted. Electrocardiography showed loss of R waves in anterior precordial leads and T wave changes suggestive of remote anterior wall myocardial infarction. The anterior and basal anteroseptal segments were hypokinetis with preserved thickness in echocardiogram. Arterial doppler interrogation showed bilateral subclavian artery stenosis with dampened distal flow. The abdominal aorta was also aneurysmal with stenotic involvement of the celiac axis, superior mesenteric artery and right renal artery. A CT peripheral angiogram and MR angiogram confirmed short segment occlusion in bilateral subclavian arteries and saccular aneurysm involving proximal left subclavian artery(Fig. 1), left main coronary artery (LMCA) aneurysm (Fig. 2), aneurismal dilation of right coronary ostium (Figs. 1, 2)and abdominal aortic aneurysm (Fig. 3). There was a fusiform aneurysm involving LMCA with total occlusion of left anterior descending artery. The proximal right coronary artery (RCA) also showed a small aneurysm followed by significant
stenosis distally. Work up for tuberculosis was negative. Both C-reactive protein (20 mg/dl) and erythrocyte sedimentation rate (84 mm/h) were elevated. A diagnosis of Takayasu arteritis type 5 (Fig. 3) was made based on American College of Rheumatology criteria [1]. He was started on lifelong low dose Aspirin (75 mg once daily) to prevent thrombosis and embolic complications and heart failure medications. He was also started on disease modifying drugs for controlling disease activity of Takayasu arteritis with regular follow-ups. Considering poor results for surgical and interventional management in Takayasu arteritis, surgical interventions
were deferred till he becomes more symptomatic (myocardial infarction or limb claudication) or lesion progresses.

Discussion
Coronary artery involvement in Takayasu arteritis has been documented in up to 10% of cases [2]. This may occur as coronary stenosis, occlusion, diffuse or focal coronary arteritis or aneurysm formation [3]. Coronary artery aneurysm formation is distinctly uncommon in aortoarteritis, with fewer than 1.5% of Takayasu arteritis cases associated with it [4]. Multiple mechanisms have been postulated for aneurysm formation in this scenario, one being accelerated atherosclerosis (following Systemic hypertension and systemic inflammatory response occurring in Takayasu Arteritis) and the other due to Arteritis proper [5, 6]. The chronic inflammation involving large to medium sized arteries and related edema have also been documented to result in active vasculitis leading to coronary and vascular lesions [5]. It is believed that the majority of coronary lesions in aortoarteritis are related to the extension of chronic aortic inflammation into the coronary media and adventitia, as substantiated by predominant ostial coronary involvement. [5] It is known that coronary artery aneurysms are associated with increased mortality [6]. While in general, coronary artery aneurysms have been most commonly noted in the RCA, both the left and right have been equally implicated in coronary aneurysms in Takayasu arteritis (Fig. 2) [7, 8].

Other diseases which may present with peripheral arterial aneurysm and in the setting of coronary artery aneurysm are Kawasaki disease, atherosclerosis and polyarteritis nodosa. However, characteristic involvement of the aorta and its branches in our case clinched the diagnosis of Takayasu arteritis.

While aneurysmal involvement of the aorta is common in aortoarteritis, subclavian artery aneurysm is extremely rare [9]. The subclavian arteries generally show stenotic involvement of the proximal or middle third in aortoarteritis. In the index case, there was aneurysmal involvement of the ostioproximal left subclavian artery with short segment occlusion distal to it. Distally the subclavian artery assumed normal caliber with contribution from cervical collaterals Fig. 1c.

Identification of disease activity is also important in these situations for which MR contrast administration and T2 weighted imaging are useful. [10]. Interventions are deferred in the active phase of the disease.

Conclusions
This case constitutes a rare report of simultaneous aneurysmal involvement of the subclavian artery and coronary artery in Takayasu arteritis though it’s considered as a large vessel vasculitis. Thorough clinical examination and screen for multivessel involvement by choice of appropriate imaging modality is essential in management.

Abbreviations
3D bSSFP: 3-Dimensional balanced steady state free precession; CT: Computed tomography; LMCA: Left main coronary artery; MIP: Maximum Intensity Projection; MR: Magnetic resonance; NYHA: New York Heart Association; RCA: Right coronary artery; VRT: Volume rendered technique.

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Declarations

Ethics approval and consent to participate
Institutional Ethical Approval was obtained. Consent to participate is considered as consent to publish as ours is a case report.

Consent to publish
Appropriate consents for publishing the clinical and imaging details of the patient were obtained.

Competing interests
The authors declare that they have no competing interests.

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