

Title:

Association of Coral Reef of the Aortic Arch with Renal Artery Stenosis: A Case Report

Authors:

Phan T Saligrama<sup>1</sup>, Preethi William<sup>2</sup>, Kapildeo Lotun<sup>2</sup>

Affiliations:

<sup>1</sup>Internal Medicine Residency Program, The University of Arizona College of Medicine, Tucson, AZ 85724;

<sup>2</sup>University of Arizona Sarver Heart Center, Tucson, AZ 85724

Introduction:

Coral reef aorta is a rare finding characterized by rock-hard calcifications growing into the lumen of the aorta, estimated to be 6 in 1000. A literature search revealed an association of suprarenal, juxtarenal, and abdominal coral reef aorta causing occlusions with clinical manifestations of lower limb, visceral, or renovascular arterial hypertension in women in their 50s. We report a case of coral reef of the aortic arch in association with renal artery stenosis.

Case Description:

A 68-year-old Caucasian female with resistant hypertension, depression, severe emphysema with a 30-pack-year tobacco abuse history, and a history of breast cancer (remission x 12 years, s/p mastectomy and radiation therapy) was admitted to the hospital for 2 weeks of progressively worsening dyspnea on exertion, orthopnea, paroxysmal nocturnal dyspnea, and bilateral lower extremity swelling. On initial presentation, physical exam revealed blood pressure of 245/140, oxygen saturation of 54% on room air, JVP 10cm H<sub>2</sub>O, tachycardia with systolic murmur, bibasilar rales and prolonged expiratory wheeze on lung exam, abdominal bruit, and no lower extremity edema. Chest x-ray revealed flash pulmonary edema and transthoracic echo found LVEF 61%. Treatment was initiated with BiPAP, IV furosemide drip, and IV nitroglycerin drip. Renal ultrasound showed an atrophic left kidney with possible renal artery stenosis. Cardiac and renal catheterization showed non-obstructive coronary artery disease, calcified aortic arch, and severe left renal artery stenosis with 95% ostial calcified discrete lesion. A 4 x 18mm Rx Herculink Elite bare metal stent was placed in the left renal artery and she was started on dual antiplatelet therapy. A CT chest was performed and noted global cardiomegaly and severe exophytic calcifications protruding into the lumen of the aortic arch resulting in severe luminal narrowing of at least 80% suggestive of coral reef aorta. She was weaned from BiPAP to home oxygen and transitioned to oral medications, including furosemide, labetalol, lisinopril, amlodipine, and imdur with blood pressure controlled upon discharge.

Discussion:

Although renal artery stenosis has been associated with coral reef aorta, cases thus far have mainly reported suprarenal, juxtarenal, and abdominal coral reef aorta. To date, this case report highlights the rare phenomenon of coral reef of the aortic arch in association with flash pulmonary edema in the setting of hypertensive emergency due to renal artery stenosis treated with renal artery stent.

References:

1. Qvarfordt, Peter G. et al. "Coral reef" atherosclerosis of the suprarenal aorta: A unique clinical entity. *Journal of Vascular Surgery*, Volume 1, Issue 6, 903 – 909.
2. Grottemeyer D, Pourhassan S, Rehbein H, Voiculescu A, Reinecke P, Sandmann W. The coral reef aorta – a single centre experience in 70 patients. *The International Journal of Angiology: Official Publication of the International College of Angiology, Inc.* 2007;16(3):98-105.
3. Palcau L, Gouicem D, Cameliere L, Berger L. Calcified obstructive disease of the aortic arch. *Interact Cardiovasc Thorac Surg.* 2014 May;18(5):683-4. doi:10.1093/icvts/ivt503. Epub 2014 Feb 3. PubMed PMID: 24497606.

4. Rantner, B. et al. Successful Treatment of a Patient with a Severely Calcified Aorta by an Ascending Aorta to Iliac Artery Graft – A Case Report. *European Journal of Vascular and Endovascular Surgery* , Volume 36 , Issue 3 306 – 309.
5. Takuma Satsu, Toshihiko Saga, Toshio Kaneda, Masato Imura; Congestive heart failure due to coral reef thoracoabdominal aorta, *Interactive CardioVascular and Thoracic Surgery*, Volume 13, Issue 6, 1 December 2011, Pages 684–685.
6. Minnee, R.C. et al. Coral Reef Aorta: Case Reports and Review of the Literature. *EJVES Extra* , Volume 9 , Issue 3 , 39 – 43.