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Clinical Cases

Severe and resistant hypertension in an older woman with claudication

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Abstract

Coarctation of the aorta is an uncommon cause of treatment-resistant hypertension in adults. It is typically detected and treated in infancy or childhood with surgical or endovascular procedures. Most cases of recurrence of coarctation after repair occur in childhood or early adulthood; recurrence in older persons (>70 years) has rarely been reported. A 73-year-old woman was referred to us for the management of treatment-resistant hypertension accompanied by symptoms of claudication and headaches, which had resulted in multiple emergency room visits. Of note, 58 years earlier, a graft from the left subclavian artery had been used to bypass an aortic coarctation. During a hospitalization for severe hypertension accompanied by acute kidney injury and heart failure, diagnostic angiography revealed a complete thrombotic occlusion of the left subclavian-artery-to-descending-aorta bypass graft and a tight coarctation in the descending thoracic aorta. Balloon angioplasty and stenting across the coarctation was only transiently effective; subsequently, an ascending-to-descending graft was placed distal to the coarctation, and within a few days, the blood pressure levels and claudication improved markedly. This case demonstrates that hypertension specialists should suspect the possibility of recurrence of a coarctation in older patients who present with resistant hypertension and have a remote history of coarctation repair. Although such late recurrences are not common, as illustrated in our patient, surgical intervention may contribute to significant improvement in blood pressure control and prevent future complications. J Am Soc Hypertens 2017;■(■):1–5.

Keywords: Aortic coarctation; surgical repair; treatment-resistant hypertension.

Introduction

Coarctation of the aorta is an uncommon secondary cause of treatment-resistant hypertension in adults. Surgical or endovascular procedures to repair the coarctation may improve blood pressure control,[1] as alleviation of the obstruction lowers systemic vascular resistance in the upper body vasculature. Adolescents and adults who undergo surgical intervention are more likely to develop chronic hypertension when compared to those who had corrective surgery as infants and young children.[2] Aortic coarctation is a rare cause of treatment-resistant hypertension in older persons, especially in those who had previous repair as an adolescent or young adult. In this case, we describe a patient who presented with severe, treatment-resistant hypertension nearly 60 years after an aortic bypass graft for an aortic coarctation occluded.

Report of a Case

A 73-year-old woman was referred to the Hypertension and Vascular Diseases practice, at the Calhoun Cardiology Center at UConn Health for the evaluation of

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treatment-resistant hypertension. According to the referring internist, the patient had had several episodes of symptomatic hypertension with blood pressures as high as 220/94 mm Hg, resulting in several visits to the emergency department at her local hospital.

At the initial presentation in our office, the patient's seated blood pressure readings ranged from 152 to 174/92 to 96 mm Hg. Antihypertensive therapies included atenolol (100 mg daily), valsartan (320 mg daily), hydrochlorothiazide (25 mg daily), and amlodipine (10 mg daily). During this time, the patient complained of headaches and bilateral lower extremity edema. Doxazosin (1 mg nightly) was added to her antihypertensive therapy.

Prior to the referral to us, a workup was performed for common secondary causes of hypertension. A renal duplex ultrasound showed no evidence of renovascular disease based on both anatomy and flow velocities. Plasma metanephrines, serum aldosterone, plasma renin activity, serum aldosterone-to-renin ratio, and 24-hour urinary cortisol were all normal or negative.

Of note, the patient reported a history of coarctation of the aorta 58 years earlier at the age of 15 years old that resulted in a bypass graft from the left subclavian artery to descending thoracic aorta to relieve the obstruction in New Britain, Connecticut (Hospital for Central Connecticut). She reported that the graft was revised over the next few years.

Just after her first visit in our office, the patient was hospitalized at Hartford Hospital with severe hypertension, acute kidney injury, and acute congestive heart failure with no evidence of myocardial ischemia or infarction. Ankle brachial indexes were 0.44 and 0.46 on the right and left legs, respectively. Diagnostic angiography revealed a tight coarctation in the descending thoracic aorta over 5 cm in length with a large pressure differential across the coarctation. The graft from left subclavian artery to descending thoracic aorta had become completely occluded by thrombus (Figure 1). Endovascular balloon angioplasty and stenting of her coarctation was performed allowing a small amount of distal aortic flow but only transient improvement in the blood pressure and heart failure symptoms.

While awaiting a surgical bypass procedure, antihypertensive medication adjustments to improve the control of blood pressure were made for medical optimization before surgery. The new regimen included spironolactone (50 mg daily), carvedilol (25 mg twice daily), hydrochlorothiazide (25 mg daily), and doxazosin (4 mg at bedtime). She had difficulties in tolerating a dihydropyridine calcium antagonist due to peripheral edema. Nevertheless, the systolic blood pressure remained in the range of 150–160 mm Hg, and there was persistent claudication with modest ambulation.

After adequate medical optimization, the patient underwent a median sternotomy with placement of a 20-mm Vascutek Gelweave (Ann Arbor, MI) graft from the ascending to the descending aorta in late 2015 (Figure 2).

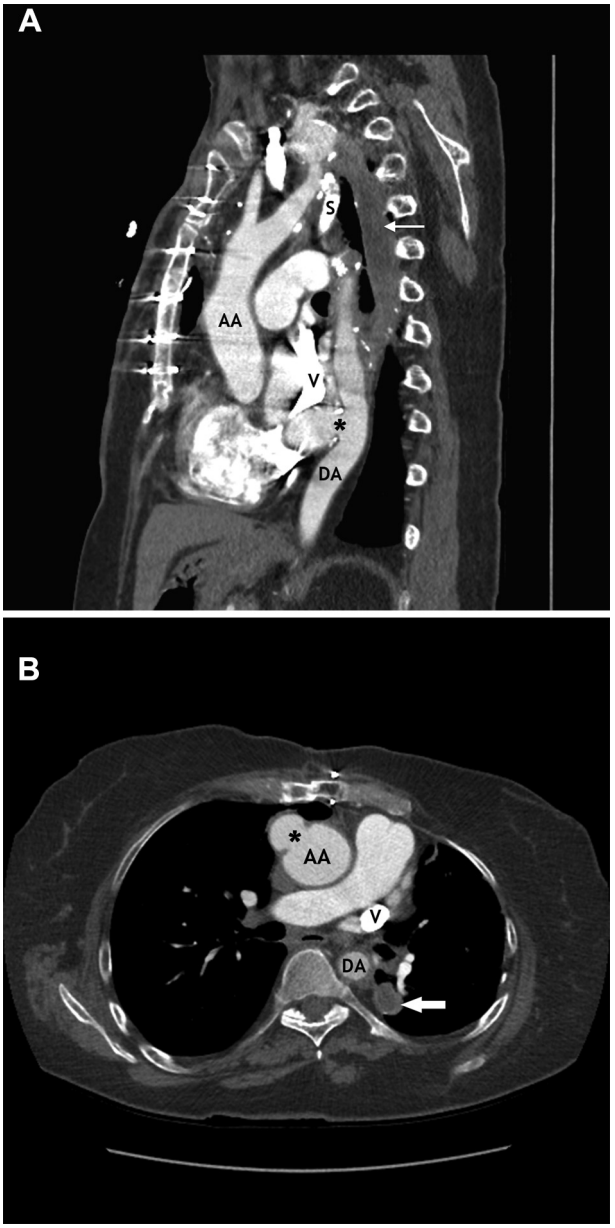

Figure 1. Computerized tomographic angiography of the aortic coarctation, thrombosed subclavian-artery-to-descending-aorta bypass graft, and patent anterior-ascending-to-descending-aorta bypass graft. (A) Oblique sagittal image of the midchest demonstrating occlusion of the subclavian-artery-to-distal-aorta graft and the distal anastomosis of the patent anterior bypass graft. (white arrow = occluded graft; * = distal anastomosis of the patent anterior-ascending-to-descending-aorta bypass graft). (B) Axial image at the level of the right main pulmonary artery demonstrating the occluded subclavian-artery-to-distal-aorta graft and the proximal anastomosis of the patent anterior bypass graft. (white arrow = occluded graft; * = proximal anastomosis of the patent anterior-ascending-to-descending-aorta bypass graft); AA, native ascending thoracic aorta; DA, native descending thoracic aorta; S, stent placed through the coarctation; V, incidental persistent left superior vena cava.