

Clinical Image

Pulsatile neck mass

Mohammad Omar Faruq¹, Sabria Islam²

A 60 years old non-diabetic, hypertensive female patient from Dhaka was admitted to the ICU with the complaints of drowsiness and breathlessness for a couple of hours following postponement of haemodialysis owing to low blood pressure. She also had a high grade intermittent fever for 7 days. The fever had followed an intra-articular steroid injection given to the left knee for osteoarthritis. She was diagnosed with hypertension 20 years back and was on antihypertensives but not on regular follow up. 8 years prior to admission she was diagnosed with CKD and was on MHD twice weekly for 7 years via a brachiocephalic arteriovenous fistula in the right cubital fossa. For the last 6 years, after having the AV fistula, she developed a gradually growing pulsatile swelling on her right neck, which according to her attendants did not cause any problem other than a cosmetic one and for which they did not seek any medical attention. A similar but smaller swelling developed on the left. There was no history of trauma to the neck or upper limbs. On examination, patient was drowsy and disoriented. She was moderately anemic, dehydrated and had bilateral leg edema. Her neck veins on the right were engorged more than on the left and there was a pulsatile swelling along the right side of the neck (Fig 1). It had a palpable thrill and had a systolic flow murmur heard over it. The AV fistula in the right cubital fossa was active. There was a similar but smaller pulsatile swelling on the left side of the neck. Pulses were diminished in left upper limb, left anterior tibial artery and arteria dorsalis pedis pulses were absent in both lower limbs. She was hypotensive and tachycardic. Breath sound was vesicular with bilateral basal creps. Chest findings were otherwise normal.

Investigations showed anemia, a low WBC count and thrombocytopenia with a markedly raised CRP, uremia and electrolyte imbalance. Sonography of abdomen revealed splenomegaly with ascites and pleural effusion and features consistent with CKD. Bedside echocardiography showed moderate concentric LVH with preserved systolic function



Fig 1

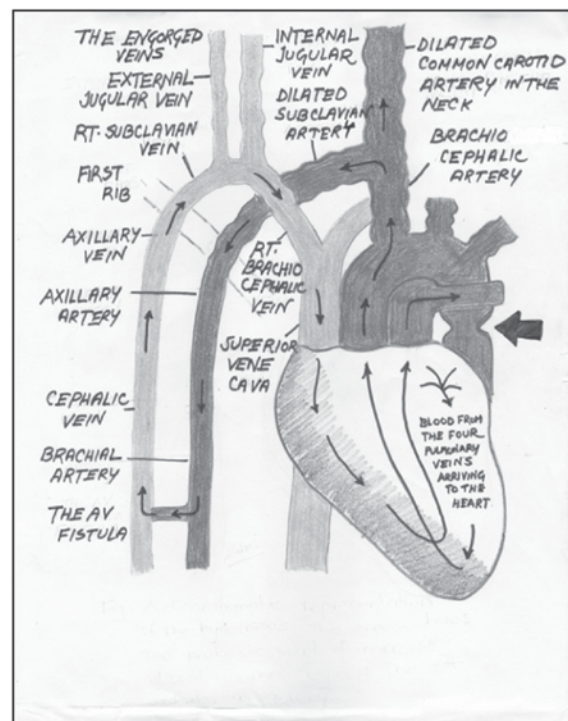


Fig 2

1 Prof. Mohammad Omar Faruq, MD, FACP, FACEP, FCCM, FCPS. Prof. of Critical Care Medicine, Ibn Sina Hospital, Dhaka 1209 Bangladesh.

2 Dr. Sabria Islam, MBBS, Honorary Medical Officer, Department of Medicine, Dhaka Medical College Hospital, Dhaka-1209, Bangladesh.

Corresponding Author:

Prof. Mohammad Omar Faruq
MD, FACP, FACEP, FCCM, FCPS.
Prof. of Critical Care Medicine,
Ibn Sina Hospital, Dhaka-1209, Bangladesh.
E mail : faruqmo@yahoo.com

and no regional wall motion abnormality. There was mild MR with SAM, mild TR with PASP of 31 mmHg and mild pericardial effusion. CT showed pneumonitis with mild pleural effusion but no other abnormality including that of the mediastinum. Duplex study showed moderate dilatation of the brachiocephalic trunk and its two divisions, the left common carotid artery and the left subclavian artery. The right upper limb had a well functioning fistula with a normal artery system. The left ulnar artery was occluded with scanty flow. The lower limbs revealed occluded right and left posterior tibial artery and stenosis in left anterior tibial artery. She was treated for septicemia but went into a septic shock and later died from multiorgan failure.

DISCUSSION

A case series of nine pulsatile neck masses reported by Takeuchi Y et al¹ diagnosed using Color Doppler revealed 7 vascular masses, 3 of which were due to tortuosity of the common carotid, two of the brachiocephalic artery, one a pseudoaneurysm and one a traumatic AV fistula. The others were a neurofibroma and a metastatic lymph node.

A review article by Calderelli C et al² elaborating on acquired AV fistulas involving the carotid artery and internal jugular vein described features very similar to the ones in this patient, viz. a pulsatile neck swelling, systolic murmur, palpable thrill, and dilated superficial veins. This is the result of hemodynamic alteration caused by sudden diversion of blood flow from the arterial circuit into the venous one. Physiologic effects of this rearrangement of blood flow are affected by general factors, such as concomitance of pre-existing cardiac diseases and factors related to fistula itself, such as its size, the volume of flow through it, the calibre of the vessel involved, and the proximity to the heart. A proportion of these cases were iatrogenic due to a history of placement of a CV line in the internal jugular vein and the rest were traumatic. But no such history was known by this patient's attendants. Aneurysms of arteries and veins at the site of fistula for haemodialysis have been reported to be up to 5-6% of cases

by Stolic³ though none of these studies mention any effect on the feeding arteries away from the site. Hence we currently are unable to provide any evidence that the AV fistula was directly responsible for the dilatation of the arteries.

Known contributors of carotid artery aneurysm and/or dissection^{4,5} include congenital defects, heritable connective tissue disorders, oral contraceptives, smoking, hypertension, and atherosclerosis, the last two of which were present in this patient.

One hypothesis that can be considered is that there was an undiagnosed coarctation of aorta distal to the left subclavian artery, or narrowing of that part of the artery due to other reasons such as atherosclerosis (Fig 2). The impediment to blood flow combined with the hyperdynamic circulation within that circuit following the making of the AV fistula caused the arteries to dilate. Upon expiry of the patient, further investigations could not be carried out. Hence the true reason will remain unknown until another similar case with a thorough investigation including a CT or MR angiography becomes available.

References

1. Takeuchi Y, Numata T, Suzuki H, Konno A, Kaneko T. Differential Diagnosis of Pulsatile Neck Masses by Doppler Colour Flow Imaging. *Ann Otol Rhinol Laryngol*. 1995 Aug; 104(8): 633-8.
2. Caldarelli C, Biricotti M, Materazzi G, Spinelli C, and Spisni R. Acquired Carotid-Jugular Fistula: Its Changing History and Management. *ISRN Vascular Medicine*. 2013 Apr; vol. 2013.
3. Stolic R. Most Important Chronic Complications of Arteriovenous Fistulas for Haemodialysis. *Med Princ Pract* 2013; 22: 220-8.
4. Garg K, Rockman CB, Lee V, Maldonado TS, Jacobowitz GR, Adelman MA et al. Presentation and management of carotid artery aneurysms and pseudoaneurysms. *Journal of Vascular Surgery*. 2012 June; 55(6): 1618-22.
5. Zohrabian D. Carotid Artery Dissection. *Medscape*. Updated 2016 Dec