

CASE REPORT

Giant Aneurysm of Extracranial Left Internal Carotid Artery (LICA) / Distal Left Common Carotid Artery (LCCA): Role of CT Angiogram and Colour Doppler StudyM Tajul Islam¹, Md. Oobaidul Haque², Md. Faruque³, Md. Nurul Islam⁴**Abstract:**

A 40 year old middle aged female patient came for CT Angiogram (CTA) of her neck vessels. She was having a large pulsatile swelling over the left side of her neck since last four months. According to her statement, she developed it almost suddenly. Since then she had several syncopal attacks, difficulty in swallowing, could not eat properly and was significantly losing weight. CTA revealed a huge, almost round, contrast filled saccular mass arising from proximal part of her left internal carotid artery extending from C6 to C2. The aneurysm was posterolateral to the artery and having a slit like hole with the left internal carotid artery. The left carotid arterial system was seen pushed and displaced antero-laterally. She was treated surgically and the aneurysm was removed. The patient has recovered well and resumed her activities.

Introduction:

Spontaneous giant carotid artery aneurysm is very rare. Cerebral embolism is the commonest complication but gravest one is rupture^{1,2}. The patients may also had syncopal attacks, discomforting pulsatile neck mass and difficulty in swallowing³. The underlying pathologies like arteriopathies, fibromuscular dysplasia, cystic medial necrosis⁴, Marfan

syndrome^{5,6} or Ehlers-Danlos syndrome may predispose the condition. Carotid artery aneurysms could be intra or extracranial. The most common extra-cranial site is the internal carotid artery slightly distal to the carotid bifurcation^{7,8}. Vertebral artery aneurysm/dissections are half as common as those involving the internal carotid artery. Symptoms are usually headache, neck pain, vascular bruits, Horner's syndromes, syncopal attacks, focal neurological deficits and difficulty in swallowing. Stroke is often delayed particularly when the lesion is extracranial.

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Fig-1



Fig-2



Fig-2

Fig-1: A large pulsatile left neck swelling in a 40 year old female.

Fig-2: CTA 3D VRT Image, saccular aneurysm and relation with parent carotid artery A/P view.

Fig-3: 3D VRT image, aneurysm, relation with parent carotid artery, left anterior oblique view.



Fig-4

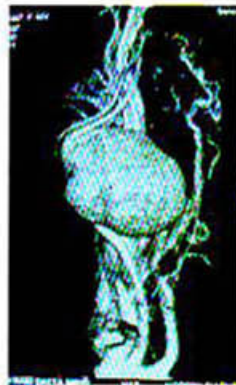


Fig-5



Fig-6



Fig-7

Fig-4: CTA 3D VRT image demonstrating aneurysm, left lateral view.

Fig-5: CTA 3D VRT image demonstrating aneurysm, posterior view.

Fig-6: Colour Doppler image, transverse section, demonstrating aneurysm blood depicted in red colour, neck (hole) of aneurysm.

Fig-7: Colour Doppler image, longitudinal section, demonstrating aneurysm, relation with parent carotid artery depicted in red colour.

Case report:

An average built lean and thin village woman of 40 years of age suddenly developed a large swelling over the left antero-lateral aspect of her neck four months ago. The 6 cm mass was clearly visible during inspection and slightly deforming the symmetry of her neck. On palpation the mass was cystic to firm in nature and definitely pulsatile.

She had several sudden syncopal attacks since then. She was also having difficulty in swallowing (dysphagia). Dysphagia was progressively worsening. Since she could not take adequate food she was losing weight significantly. She gave no history of trauma. She had no vascular risk factor, in particular any hypertension or diabetes. There was no traumatic or infectious event in her recent past medical history. The patient was moderately anaemic. Her pulse was regular with normal rate (78 bpm). Her blood pressure was normal (115/ 75mm of Hg). Chest X-ray and ECG revealed no abnormality. Neck X-ray showed no abnormality other than soft tissue swelling over the left lateral aspect. Echocardiography was also normal. Due to pulsatile nature of the mass the local doctor referred her to a vascular surgeon. She was then advised for colour doppler study of her neck vessels and CT Angiogram (CTA). Conventional CT has no significant role in diagnosing aneurysm. CTA was performed by Siemens somatom 64 slice MD CT scanner. The conventional axial, sagittal and coronal images were reconstructed using MIP (Maximum Intensity Projection), MPR (Multiplanar Reconstruction) and VRT (Volume Rendering Technique) with 3D reconstruction. CTA and colour doppler study was done which revealed a huge (6.7 x 5.2 x 4.8 cm) saccular aneurysm arising out of

proximal LICA from its postero-lateral wall (Fig: 6-7).

Prompt surgical treatment was undertaken and the life of the patient was thus saved.

Discussion:

A pulsatile neck swelling is the commonest presentation of carotid artery aneurysm. Differential diagnosis includes carotid body tumour, cervical lymphadenopathy, tortuous carotid artery, cervical abscess etc. The Diagnosis of carotid artery aneurysm can be easily confirmed by non invasive carotid duplex scan. Arteriography still remains the gold standard in pre-operative surgical planning⁸. With advance of radiological technologies, MRA has gained its popularity. But the CTA with 64-row multi-detector computed tomography has been gaining much more popularity and confidence of the vascular surgeons. This MDCT has excellent and highly developed software like MIP (Maximum Intensity Projection), MPR (Multiplanar Reconstruction) and VRT (Volume Rendering Technique). 3D reconstructions of images are just like pictures a surgeon sees after the operation field exposed at surgery. In addition, the lesion can be seen from all possible angles. In aid of the CTA, Colour Doppler Duplex study further eased the diagnosis instantaneously. Size, extent, presence and extent of mural thrombus, if any, and anatomical relationship of the aneurysm neck with the parent artery can be well demonstrated by 3D reconstruction. In this case no evidence of any thrombus was however seen within the aneurysm.

Instant diagnosis can save the life of the patient by taking immediate surgical measures. A surgical approach should be used

to exclude the aneurysm from the cerebral circulation either by coil occlusion of the aneurysm, balloon internal carotid artery occlusion, or internal carotid artery ligation^{2,9}. Following operation, the patient should be given low molecular weight heparin to prevent phlebitis.

CTA with MDCT using MIP, MPR and VRT 3D images supplemented by colour doppler is very safe, quick, and accurate in diagnosing carotid aneurysm. In case of suspected aneurysm or other vascular abnormalities prompt investigations using CTA and CD help instant recognition of the disease. It should be borne in mind that carotid artery aneurysm is associated with severe catastrophic complications and demands early recognition and prompt operative intervention.

References:

1. Shumacker HB. Cystic medial necrosis. *J Cardiovasc Surg* 1978; 19: 639-45.
2. McCollum CH, Wheeler WG, Noon GP, DeBakey ME. Aneurysms of the extracranial carotid artery. Twenty-one years' experience. *Am J Surg* 1979; 137: 196-200.
3. Mokri B, Piepgras DG, Sundt TM Jr, Pearson BW. Extracranial internal carotid artery aneurysms. *Mayo Clin Proc* 1982; 57: 310-21.
4. Latter DA, Ricci MA, Forbes RD, Graham AM. Internal carotid artery aneurysm and Marfan's syndrome. *Can J Surg* 1989; 32: 463-66.
5. Marsalese DL, Moodie DS, Lytle BW, et al. Cystic medial necrosis of the aorta in patients with Marfan's syndrome: surgical outcome and long-term follow-up. *J Am Coll Cardiol* 1990; 16: 68-73.
6. Merendino KA, Winterscheid LC, Dillard DH. Cystic medial necrosis with and without Marfan's syndrome. *Surg Clin North Am* 1967; 47: 1403-18.
7. Welling RE, Taha A, Goel T, et al. Extracranial carotid artery aneurysms. *Surgery* 1983; 93: 319-23.
8. Krupski WC, Effeney DJ, Ehrenfeld WK, Stoney RJ. Aneurysms of the carotid arteries. *Aust N Z J Surg* 1983; 53: 521-25.
9. Zhang Q, Duan ZQ, Xin SJ, Wang XW, Dong YT. Management of extracranial carotid artery aneurysms: 17 years' experience. *Eur J Vasc Endovasc Surg* 1999; 18: 162-65.