

Extracranial Carotid Aneurysm Secondary to Takayasu Arteritis (TA): A Rare Complication

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ABSTRACT

Extracranial aneurysms are a rare presentation accounting for only less than 5% of all peripheral artery aneurysms. The left common carotid artery aneurysm is considered even rarer. We present a case of a 46-year-old gentleman who presented to casualty unit with a neck mass, stridor and acute respiratory distress. Prior to this admission patient was being investigated for Takayasu arteritis (TA). Patient was subsequently intubated due to respiratory compromise. A CT angiography of the thorax was done showed a proximal left common carotid artery aneurysm with contained leakage of aneurysm with severe compression of the trachea. Patient was subsequently transferred to the vascular team in National Heart Institute for further management.

Keywords: Aneurysm, Extracranial, Common carotid artery, Carotid aneurysm, Takayasu arteritis, Computed tomography

INTRODUCTION

Extracranial aneurysms are rare. Common presentation of an artery aneurysm is pulsating mass at the specific area. Common carotid artery (CCA) involvement is very rare and is a serious disease requiring prompt treatment in order to avoid complications. It can displace the airway and to some extent compromising the tracheal effective diameter for breathing. Pressure effect to the adjacent structures such as recurrent laryngeal nerve can lead to hoarseness or impingement on the cervical oesophagus can lead to dysphagia. Other clinical presentations are pain, neck mass, bruit, stroke, tinnitus, haemorrhage, dizziness and tracheal obstruction.¹ The presence of mass without pulsation may be due to extensive clot formation within the lumen.² Significant narrowing of the trachea can cause stridor, which can be inspiratory, expiratory or biphasic. Our patient presented with a neck mass, stridor and respiratory distress.

CASE REPORT

A 46-year-old non smoking gentleman with no prior medical illness, presented to a private physician with history of recurrent left sided headache and pain radiating to the left shoulder blade of 6 months duration. Blood investigations showed leucocytosis, raised erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP). He has low haemoglobin level, 7.1 g% and total cholesterol was 3.4mmol. Clinical examinations showed tenderness over the left neck region with bruit. Vital signs were stable. No frank or occult bleeding noted to explain the low haemoglobin.

Doppler sonography of bilateral carotids showed minimal mural thickening (2.4 mm and 3.1 mm are normal) of both common carotid arteries. Patient was subsequently treated as TA and started on steroids. There was marked improvement of symptoms (ie headache and shoulder pain) post-steroid therapy. Later he was referred to our Radiology unit and Rheumatology clinic for further management. Patient was planned for an angiographic study of the arch of aorta and its branches.

Three months later, patient presented again to casualty department in our hospital with severe dyspnoea of 2 days duration and acute onset of stridor. On arrival to casualty, patient was in respiratory distress and was intubated. He had leucocytosis and arterial blood gas (ABG) showed type 1 respiratory failure. Chest radiograph and computed tomography angiogram (CTA) of thoracic aorta was performed.

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Chest radiograph demonstrated a superior mediastinal mass compressing the trachea (Figure 1). Bedside ultrasonography of the neck showed dilatation of the left common carotid artery, starting from the arch of aorta until the carotid bifurcation. CTA of the thoracic aorta was performed. The presence of left common carotid artery saccular aneurysm was confirmed (Figure 2). The patient was referred to cardiothoracic and vascular surgery unit for further intervention. He underwent resection of the aneurysm, a covered stent, and an extra-anatomic bypass. However patient succumbed to sepsis 2 weeks post operation.

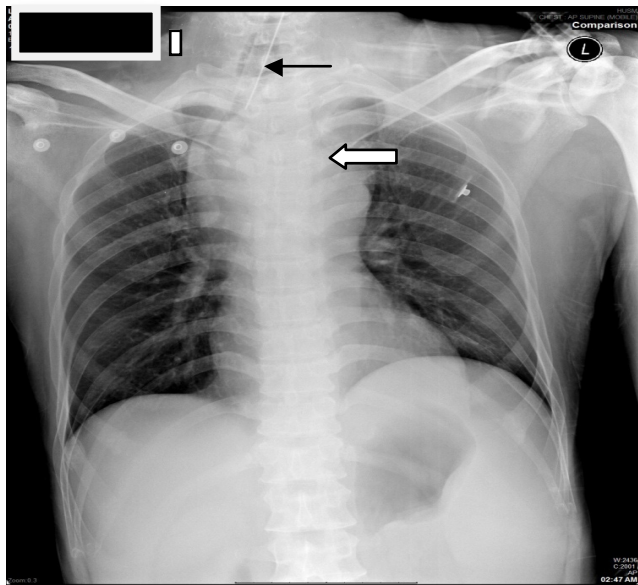


Figure 1: Chest radiograph, supine view showing a superior mediastinal mass (thick white arrow) causing deviation of the trachea to the right. Trachea is narrowed. Aortic arch is normal and no artherosclerotic calcification. Costophrenic angles are sharp and there was no apical pleural cap to suggest pleural effusion. Both lung fields are clear. The endotracheal tube is displaced to the right (thin black arrow).



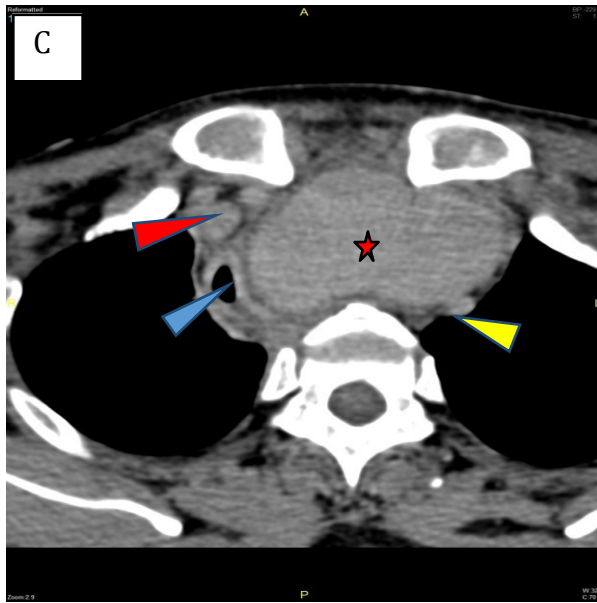


Figure. 2: Contrast CT thorax with reconstruction coronal (A & B) and axial views(C).
 (A) Coronal section showing the aortic arch and branches. Brachiocephalic trunk (blue star) is normal in calibre. The origin of proximal left common carotid artery (yellow star) is seen pointing upward.
 (B) Coronal section slightly posterior to the image (A). Saccular aneurysm is seen in profile displacing the trachea (blue triangle). Superiorly, ectasia of distal Left CCA (green star) seen measuring 1.2 cm. Inferior to aneurysm (white star), area of fluid density (HU 20-30) is likely due to contained leak.
 (C) Axial view showing the aneurysm (red star) splaying the brachiocephalic trunk (red triangle) and left subclavian artery (yellow triangle) with deviation of trachea to the right.

DISCUSSION

Most common causes of aneurysm are blunt or penetrating trauma, iatrogenic, inflammation, infection, vasculitis, tumour, arteriosclerosis and idiopathic or unknown origin.³ Changes to the arterial wall integrity can be expected following radiation therapy for head and neck carcinoma. Extracranial carotid artery aneurysm is extremely rare, accounting for only 0.4 to 4% of all peripheral artery aneurysms.^{4,5}

Types of aneurysm that are typically seen in carotid system are saccular, fusiform or pseudoaneurysm. Saccular aneurysms are usually seen in the mid segment of the cervical internal carotid artery, and trauma has been reported to be the most common. Fusiform aneurysm most commonly involves the bifurcation of the common carotid artery with the most cause being arteriosclerosis.⁵ Chronic inflammatory disease of unknown aetiology such as TA is an extremely rare cause. The aneurysm usually appears at advanced stages of the disease.

Systematic review reported by Li et al showed 71% of carotid artery aneurysm occurs in male with mean age of 45 years old.⁴ Main presentations are central neurologic dysfunction such as stroke or Transient Ischaemic Attack (TIA)(43.9%) and pulsatile neck mass (19.8%). Only 15.3% presented with compressive symptoms.⁴

The modes of radiological investigations include, chest radiography, carotid doppler ultrasonography, CTA thorax and arch aortogram. The commonest sites were right Internal Carotid Artery (37.9%) and left internal carotid artery (35.8%). Only 16% cases occur at left common carotid artery,⁴ as reported in this case. The conventional treatment of aneurysm is resection and graft, which can be from autogenous vein or using stent. Even though the surgery is an effective treatment, it is technically difficult and the rate of complications for example cranial nerve palsy, stroke, leakage and rupture during surgery.³ In this case, the surgical intervention was performed however the post operative period was complicated with sepsis.

CONCLUSION

The clinical presentation of extracranial carotid artery aneurysm is highly dependent on the site and the size of the affected artery. Surgical treatment is recommended for almost all extracranial carotid aneurysms. Complications such as rupture, thrombosis and emboli may prevail if the early detection and prompt treatment is delayed. Despite early intervention, the morbidity is still high.

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