CASE REPORT

Massive carotid artery aneurysm presenting as an oropharyngeal swelling in a young woman

Kah Hoong Chang, James Cotter, Gerald Thomas McGreal

Department of Surgery, Mercy University Hospital, Cork, Ireland

Correspondence to
Dr Kah Hoong Chang,
kahhoong_chang@yahoo.co.uk

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SUMMARY

A 28-year-old woman presented to the emergency department with a 5-day history of a sore throat and a pharyngeal swelling that increased in size. The patient was previously investigated for Marfan's syndrome after episodes of bilateral spontaneous pneumothoraces but did not meet the criteria for diagnosis. Examination revealed a large pulsatile lesion in the oropharynx. CT angiography revealed an internal carotid artery aneurysm. The patient underwent a successful urgent open repair of the aneurysm with a primary arterio-arterial anastomosis without a patch. Histopathology of the aneurysmal sac revealed cystic medial degeneration.

BACKGROUND

Aneurysms of the extracranial carotid arteries (common carotid artery (CCA), external carotid artery (ECA) and cervical part of the internal carotid artery (ICA)) are very rare. The largest reported series included 141 cases in a 15-year period.¹ In addition, the diagnosis of such cases is often missed or delayed due to its rarity, with potentially fatal consequences. The mortality rate in non-operated patients with carotid artery aneurysm is reported at 70%.²

CASE PRESENTATION

A 28-year-old married, nulliparous, product builder, presented to the emergency department of a neighbouring hospital with right-sided neck pain and a right pharyngeal swelling associated with a sore throat, which had been present for 5 days. She is a non-smoker. Examination revealed a pulsatile swelling in the right oropharynx, which was assumed to be an abscess (figure 1A). Aspiration was attempted but abandoned due to the patient's strong gag reflex. At this point, the possibility that it was not an abscess was considered and it was felt prudent to obtain imaging prior to attempting any further intervention. A CT scan was subsequently arranged and it showed a 17×13 mm saccular aneurysm of the right ICA. The patient was subsequently transferred to the on call vascular service in the Mercy University Hospital.

The patient has no history of trauma or intravenous catheterisation of the cervical jugular vein to have caused a traumatic aneurysm. She has a history of bilateral spontaneous pneumothoraces (left-sided in 2007 and right-sided in 2008). She underwent an elective right-sided limited thoracotomy and apical

Figure 1 (A) Preoperative and (B) postoperative appearance of the oropharynx. Large pulsatile swelling in the right oropharynx, which disappeared postoperatively (arrow).

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Figure 2 (A) Transverse plane; (B) sagittal plane; (C) three-dimensional view of the CT angiogram of the carotid artery. The right ICA aneurysm is shown protruding into the oropharynx (yellow arrow). CCA, common carotid artery; ICA, internal carotid artery.

bullectomy followed by parietal pleurectomy. She subsequently underwent a left-sided ligation of bullae and pleurectomy. Her postoperative recovery for both procedures was uneventful. Her phenotype is ectomorphic, which is the phenotype most typically associated with Marfan's syndrome.

INVESTIGATIONS

Preoperatively, a CT angiogram of the carotid arteries showed a 17×13 mm saccular aneurysm of the right ICA (figure 2A, B). Postoperatively, the patient had MRI and MR angiography of the brain, which were unremarkable. MR angiography of the aorta revealed no aneurysm or dissection of the thoracic and abdominal aorta.

The patient was previously investigated for Marfan's syndrome in 2011, due to having presented with bilateral pneumothoraces and her ectomorphic phenotype. She was evaluated

using the Ghent criteria.³ Spontaneous pneumothorax constitutes one minor criterion. She has one major and one minor skeletal feature. Overall, she did not meet the criteria for the diagnosis of Marfan's syndrome.

DIFFERENTIAL DIAGNOSIS

Differential diagnoses of a painful oropharyngeal swelling include tonsillar abscess, adenoiditis, neoplasm and carotid artery aneurysm.

TREATMENT

The decision was made to repair the aneurysm urgently in view of risk of rupture. Under general anaesthetic, a cervical incision was made parallel and anterior to the sternocleidomastoid muscle and centred over the carotid bifurcation. The incision was carried down through the platysma, and the

Figure 3 (A) Right neck dissection of the ICA aneurysm; (B) ICA transected proximal and distal to the aneurysmal sac; (C) end-to-end ICA anastomosis. (A) Dissection of the right neck revealing the arterial anatomy, with the aneurysmal sac deeply embedded in the oropharynx (green arrow). (B) Grossly normal ICA was transected proximal (green arrow) and distal (black arrow) to the aneurysmal sac. (C) Owing to the tortuosity of the ICA, there was adequate length of the artery for the two transected ends to be approximated with an end-to-end anastomosis without a patch (green arrow). CCA, common carotid artery; ICA, internal carotid artery; ECA, external carotid artery.

sternocleidomastoid muscle was retracted laterally with self-retaining retractors.

CCA and ECA were grossly normal. The proximal ICA was tortuous and diseased. The remaining ICA appeared to be unaffected. The patient received 4000 units of unfractionated heparin intraoperatively. The aneurysm was embedded into the oropharynx (figure 3A). This required extremely careful dissection of the ICA. For this reason, the aneurysmal sac was left in situ and an incisional sample of the sac was sent for histology. Owing to the tortuous nature of the ICA, there was adequate length of ICA proximal and distal to the aneurysmal sac for primary anastomosis without the need for a patch (figure 3B). A spatulated end-to-end anastomosis of the proximal ICA was performed using 6/0 polypropylene (figure 3C). Excellent backflow was observed from the ICA prior to closure. The patient made an uneventful postoperative recovery and was discharged on postoperative day 3. The pharyngeal swelling reduced significantly postoperatively and completely resolved 2 weeks later (figure 1B).

OUTCOME AND FOLLOW-UP

The patient made an uneventful recovery. Further assessments by a cardiologist and a rheumatologist refuted the diagnosis of Marfan's syndrome.

The histopathological analysis of the aneurysmal sac revealed focal elastic fragmentation with very focal small pools of Alcian blue-positive myxoid material, most consistent with evidence of cystic medial degeneration. Increased fibrosis in the immediate adventitial region was noted. No atheromatous change or inflammatory vasculitis was appreciated on the multiple levels examined.

Radiological imaging of the aorta was recommended to the patient during any future pregnancy, as pregnancy has unpredictable effects on blood vessels. Cases have been reported on patients presenting with de novo arterial dissections during pregnancy due to the effects of progesterone on vascular tone.⁴

DISCUSSION

Extracranial carotid artery aneurysms are rare and most commonly due to atherosclerosis.^{5 6} The literature on isolated carotid artery aneurysm secondary to cystic medial necrosis is scarce.^{7 8}

Because of their rarity, the diagnosis of extracranial carotid artery aneurysms is often missed or delayed, especially in the absence of neurological symptoms. Carotid artery aneurysms in the oropharynx or neck may be mistaken for an inflammatory or neoplastic lesion of a tonsil, peritonsillar abscess or neck tumour.^{9 10} Carotid artery aneurysms are associated with catastrophic complications if untreated. A high index of suspicion, early recognition and prompt operative intervention is therefore critical.

Open surgical repair is the treatment of choice in patients with extracranial carotid aneurysms. Mortality in non-operated extracranial aneurysms of 71% and a significant stroke risk of up to 50% have been reported.¹ The option of endovascular procedure was considered in this case but deemed unsuitable in view of several reasons: the extreme tortuosity of the diseased vessel and the acute presentation with concern of leak or rupture. In addition, the operator has ample experience with open carotid operations.

Complete excision of the aneurysm is not recommended as it is associated with a high incidence of cranial nerve injuries.^{11 12}

Learning points

- ▶ Extracranial carotid artery aneurysm is a rare condition.
- ▶ A high index of suspicion is required to diagnose this condition.
- ▶ Missed or delayed diagnosis and inappropriate management can lead to potentially life-threatening or fatal consequences.

In this case, complete excision of the aneurysmal sac was not performed as it was deeply embedded in the oropharynx.

We present an extremely rare case of an ICA aneurysm presenting as a painful oropharyngeal swelling. This highlights the importance of clinical suspicion despite its rarity. An attempted ad hoc intervention would have had life-threatening, if not fatal, consequences.

Contributors JC and KHC prepared the manuscript. GTM supervised and approved the final draft for submission.

Competing interests None.

Patient consent Obtained.

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