

PROGRESSIVE DYSPHAGIA IN A PATIENT WITH PARAPHARINGEAL PULSATING MASS: A CASE REPORT AND LITERATURE'S REVIEW

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ABSTRACT

Introduction: Anomalous cervical carotid artery pathway represents an unknown risk factor for massive bleeding during pharyngeal surgery and intubation. It is often found incidentally in totally asymptomatic patients undergoing radiographic studies for unrelated reasons or patients who have respiratory diseases, cough and difficulty swallowing or undergoing pharyngeal surgery for other pathology.

Case presentation: We describe a 48-year-old woman who presented chronic cough, feeling of a lump in the throat and progressive dysphagia. Endoscopic examination demonstrated an evident pulsatile mass protruding inside its retro pharynx. Three-dimensional MDCT angiography and Doppler ultrasonography performed accurate images allowing the accurate assessment of these vascular anomalies.

Conclusion: Evaluation of pulsating hypopharynx mass should include differential diagnosis with retropharyngeal abscess or tumorous lesion. The association of an abnormal pathway is highly correlated with the onset of neurological symptoms, an increased risk of bleeding and stroke. Therefore, where it is not possible to follow the patient's condition due to severe associated complications, resection and surgical correction of the affected vascular segment is indicated.

Keywords: Cervical carotid artery, variant anatomy, pharynx, aberrant.

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Introduction

The common carotid artery (CCA) bifurcates into the internal and external carotid arteries at upper border of the thyroid cartilage level with the disc between the third and fourth cervical vertebrae.

The cervical portion of the internal carotid artery (ICA) traverses to the cranial base without branching. Elongation of the cervical (extracranial) part of the internal carotid artery (ICA) leading to its tortuosity, kinking and coiling or looping is not a rare condition, which could be caused by both embryological and acquired factors. Whereas the prevalence of ICA aberrations varies from 7.9% to 62%, a torturous CCA has been rarely reported^(1,2). Although most patients are asymptomatic, a few have an increased risk for dysphagia with aging, anomalous

cervical carotid artery pathway in literature it is rarely reported as a cause of dysphagia⁽³⁾.

Case presentation

A 48-year-old female presented a non-productive chronic cough for a few months with acute worsening in the last 2-3 weeks. More recently, she noted airway obstruction episodes during sleep, a feeling of a lump in the throat and progressive dysphagia, symptoms frequently changed with position. No history of alcohol use or smoking or respiratory problems resulted and she was under antihypertensive medical treatment.

Conservative medical therapy failed to relieve her symptoms. She had a successful professional career requiring frequent voice use.

Physical examination revealed a mildly injected posterior pharyngeal wall, no raised tongue, swollen neck, erythema and nuchal stiffness. A flexible endoscopic examination has discovered a smooth-surfaced pulsating mass on the left side of the hypopharynx, which had a compression mechanical's effect causing dysphagia.

The functional endoscopic evaluation of a swallowing study (FEES) showed a small residual on the obstructed side and penetration into the val-



Fig. 1: CT scan showed a medialization of left ICA.

lecula and the pyriform sinuses after swallowing.

Head and neck CT scan were prescribed to exclude inflammatory processes (abscess) or tumor of posterior or parapharyngeal region.

CT scan (Fig. 1) and a three-dimensional MDCT angiography reconstruction (to evaluate the anomalous carotid artery associated with the upper aero digestive tract) showed a medialization of left CCA and subsequent cervical left ICAs with kinking, confirming the left CCA and the ICA were bent and close relation with the hypopharynx (Fig. 2).

The patient was informed of the risks and complications of this anatomical variation and were given medical or surgical therapy options or wait



Fig. 2: three-dimensional MDCT angiography reconstruction with Anomalous conduction of left ICA.

and see (close monitoring). She chose elective observation and followed medical treatment to reduce ENT's symptoms.

Discussion and conclusion

The etiology of aberrant ICAs is unknown but comprises genetic causes such as embryological development and acquired causes like cardiovascular diseases⁽³⁾.

The prevalence of anatomic variants is between 7.9% and 62% and the reason was ascribed to congenital anomalies, fibro muscular dysplasia or atherosclerosis^(1,4), often occurring with advanced age⁽⁴⁾. Usually patients are totally asymptomatic but sometimes they may have difficulty breathing, coughing and difficulty swallowing. In particular, other diseases affecting the upper airways must be included in the differential diagnosis⁽⁵⁻⁷⁾.

The presence of an unknown aberrant ICAs represents a potential risk of intraoperative complications both during orotracheal intubation and either laryngo-esophageal surgery⁽⁸⁾.

Parapharyngeal ICA aberrations have been reported as silent in up to 80% of cases and discovered incidentally during physical examination, pharyngeal surgery, or radiological investigations⁽⁹⁻¹¹⁾. Only a few clinical cases of dysphagia caused by mass effect related to the internal carotid artery have been published and the best treatment is not yet defined⁽¹¹⁻¹³⁾.

A classical description of the ICA reported in Grays Anatomy indicates that it arises from the bifurcation of the common carotid artery lateral to the upper edge of the thyroid cartilage level with the disc between the third and fourth cervical vertebrae. According to its course, the ICA is divided into cervical, petrous, cavernous and cerebral parts.

As it is indicated by Bannister et al., the length of the ICA artery varies with the length of the neck and the point of carotid bifurcation. Its cervical part is normally straight but occasionally may be very tortuous, being closer to the pharynx than usual and very near the tonsil⁽¹⁴⁾.

Variations in the extracranial course of the ICA are not rare and often reported in the literature. Pharyngeal transposition of ICA is a risk factor for acute hemorrhage in pharyngeal surgery^(15,16).

La Barbara et al. proposed a hypothesis in which the extracranial ICA is considered as a segment of transition between an elastic vessel (CCA) and a muscular vessel (intracranial ICA) and it is particularly subject to metaplastic transformation,

similarly to other transition zones in human body⁽¹⁷⁾. Their results showed elastic and muscular tissue of the ICA of their patients with kinking, coiling and tortuosity, replaced by loose connective tissue, configuring a metaplasia of its tunica media. The rarity of obstructive symptoms in patients before 45 years old supports the acquired nature of kinking⁽¹⁷⁾.

In the past, angiography was the gold standard for diagnosis of vascular abnormalities. At the beginning of 21st century, CT angiography or MR angiography replaced conventional angiography. Both techniques can show exactly the anatomy of the aortic arch, its main derivations and the contingent relationships with the surrounding structures.

The development of the volume rendering and the three-dimensional reconstructions made possible to visualize more accurately the aberrant pathways of the cervical carotid artery.

In a recent study evaluating the reliability of multidetector CT scanning to detect an aberrant subclavian artery, vascular pathology was detected in 15/38 patients (40%) previously negative with other radiological studies⁽¹⁸⁾.

An association of elongations of the ICA that is kinking, coiling, winding and angled with neurological symptoms and high stroke risk supports surgical approach for correction of stenotic occlusions of the ICA in order to prevent stroke^(19,20).

Therefore, elongation of the cervical part of the ICA could be corrected by resection and removal of segments of the ICA and connection of its cut ends by end-to-end anastomoses.

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