Dysphagia caused by an aberrant right subclavian artery

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ABSTRACT

An aberrant right subclavian artery is the commonest aortic arch anomaly. Majority of them were asymptomatic. An aberrant subclavian artery is a rare cause of dysphagia in adults. This condition is also known as dysphagia lusoria. We report a case of dysphagia in a 49-year-old woman from an aberrant right subclavian artery. Diagnosis of her condition was made with barium swallow and MDCT (multidetector computed tomography) scan. She was managed conservatively.

KEY WORDS: deglutition disorders, aberrant right subclavian artery

CASE REPORT

INTRODUCTION

An aberrant origin of right subclavian artery is the commonest aortic arch anomaly that occurs in approximately 0.4 to 1% of the population.[1,2] The patient is usually asymptomatic.1 This aberrancy is a rare cause of dysphagia in adults and known as dysphagia lusoria. Physical examination is usually normal and upper endoscopic examination may miss the lesion.[3] Non-invasive diagnostic imaging for this condition includes barium swallow with confirmatory multidetector computed tomography (MDCT) or magnetic resonance imaging (MRI).[4-5] The ideal management strategy is unclear, but in patients with mild to moderate symptoms, conservative management is indicated.[3] In more severe cases, surgical intervention should be considered.[2,6]

CASE REPORT

A 49-year-old female presented with dysphagia for about six months. It was mild with sensation of a foreign body at the back of her throat each time she swallowed solid foods. It does not affect her dietary intake, and she had no other associated symptoms such as weight loss, nausea, vomiting or regurgitation. There were no significant past medical or surgical problems. Clinical examination and blood investigations were normal. No significant finding was noted during an upper endoscopic examination. Barium swallow revealed an oblique extrinsic compression of the esophagus with an inferior to superior course (left to right) consistent with an aberrant right subclavian artery (Figure 1). MDCT confirms the diagnosis of an aberrant right subclavian artery that arise from the aorta distal to the usual left subclavian artery compressing the esophagus as it traversed posteriorly (Figure 2a and 2b). There was no evidence of a Kommerell's diverticulum or aneurismal dilatation of this vessel. After a discussion with the patient regarding the findings and management options, she opted for a conservative management.

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DISCUSSION

Anatomical variations in the aortic arch and its branches are well documented. Aberrant origin of right subclavian artery is the commonest aortic arch anomaly in adults and occurs in approximately 0.4 to 1% of the population.[1-3] In this anomaly, the right subclavian artery does not arise from the brachiocephalic artery but instead develops as a fourth branch of the aortic arch distal to the left subclavian artery.

The specific embryologic abnormality of the aortic arch responsible for an aberrant right subclavian artery is the involution of the fourth vascular arch, along with the right dorsal aorta, leaving the seventh inter-segmental artery attached to the descending aorta. Since the persisting right aortic arch forms the root of the aberrant artery, the artery often has a broad base, referred to as a 'Kommerell's diverticulum. This persistent inter-segmental artery assumes a retro-esophageal position as it proceeds out of the thorax into the right arm. In 80% of cases, it crosses between the esophagus and the vertebral column, in 15% it runs between the esophagus and the trachea and in 5% of cases it passes anterior to both the trachea and esophagus.[2]

The patient with this anomaly is often asymptomatic.[1] About 60–80% of patients remain symptom-free in their lifetime.[2] Interestingly, even though this condition is a congenital anomaly, patients usually do not present in the childhood. They become symptomatic in the young adulthood and even in the middle or elderly age as seen in this case. The average age of presentation in these patients was 48 years.[2] Theories explaining this delayed presentation include physiologic and anatomic changes that may occur with the aging process such as increased esophageal rigidity, rigidity

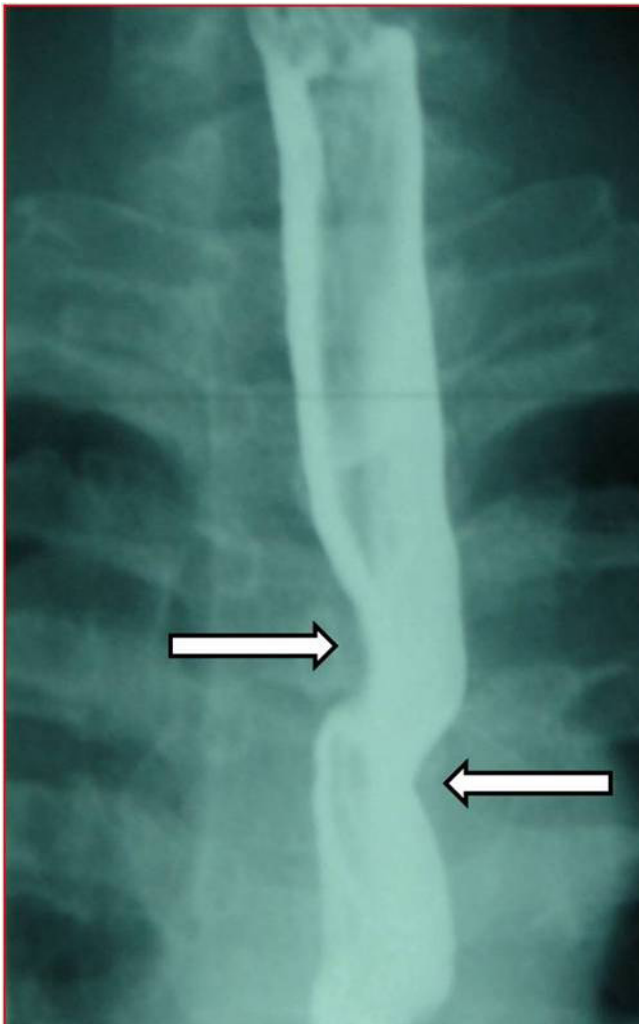

Figure 1: Barium swallow shows an oblique external compression of the esophagus (arrows) at the upper thoracic level from inferior (left) to superior (right) consistent with an aberrant right subclavian artery.

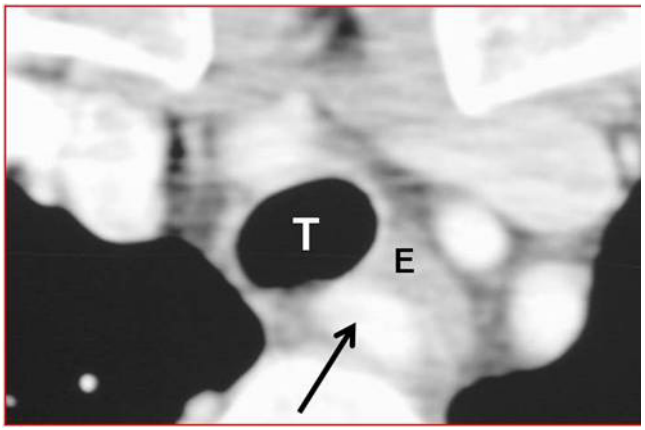

Figure 2a: Axial contrast-enhanced CT image showing the aberrant right subclavian artery (arrow) coursing posteriorly and compressing the esophagus (E). The structure labelled T is the trachea.

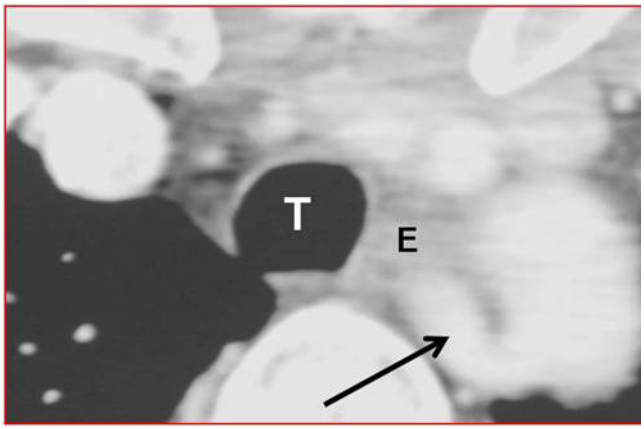

Figure 2b: Axial CT scan caudal to 2a showing the origin of the aberrant right subclavian artery from the posterior wall of the aortic arch. There was no aneurismal dilatation of this vessel.
(T: Trachea, E: Esophagus)

of the vessel wall due to atherosclerosis, elongation of the aorta and aortic aneurysm formation, especially in the presence of a Kommerell's diverticulum.[2-3]

Symptomatic adult patients usually present with dysphagia consistent with a mechanical obstruction.[6-7] Symptoms are primarily for solid foods and are associated with regurgitation of the undigested food, postprandial bloating, chest pain, and symptoms that frequently change with body positions. Other complaints include coughing, thoracic pain, or Horner's syndrome. In rare cases, patients may present with ruptured aneurysmal aberrant artery or Kommerell's diverticulum.[4,7]

The physical examination is usually normal.[2] Endoscopy may reveal a pulsatile, shelf-like extrinsic compression in the posterior wall of the esophagus, with intact mucosa. An arteria lusoria was discovered in 12 of 3334 (0.36%) patients who underwent endoscopy for various reasons.[1] The diagnostic modalities available to visualize an aberrant right subclavian artery include barium swallow, angiography, CT, and MRI. Barium swallow may suggest the presence of a vascular anomaly by demonstrating a diagonal indentation caused by extrinsic compression of the proximal posterior esophagus at the third thoracic vertebral level below the level of the aortic arch. Lateral or oblique views will show the extrinsic compression to be posterior. Contrast enhanced CT or MRI can easily confirm the findings of barium swallow, and in addition they can demonstrate the exact relationship of the anomalous vessels with surrounding structures like esophagus and trachea. It can also show vascular changes such as atherosclerotic changes, aneurysm formation and diverticulum.[4,6] Aortic arch angiography has been the standard for definitive diagnosis of arteria lusoria. However, its invasive nature limits its use as a diagnostic tool.[1]

The management of patients with dysphagia lusoria primarily depends on the severity of the symptoms. Patient with mild to moderate symptoms is often treated symptomatically, with changes in lifestyle and dietary modifications.[3] Whereas in other patients who do not respond to conservative therapy, surgical in-

tervention is justified. Numerous surgical techniques have been described but none was agreed to be the gold standard technique.[2,6,8]

CONCLUSION

Dysphagia lusoria caused by an aberrant subclavian artery is a rare cause of dysphagia in adults. Currently, non-invasive imagings such as MDCT and MR angiography are the preferred imaging modalities to confirm this diagnosis.

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