

# **Dilated Aberrant Right Subclavian Artery (arteria lusoria), as a rare cause of dysphagia in a patient with abdominal aortic aneurysm**

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### **Abstract**

A rare case of a 70 years old man with dysphagia secondary to compression of the oesophagus by dilated aberrant right subclavian artery (ARSA, Arteria lusoria) is presented. Contrast enhanced computed tomography of the mediastinum in our patient revealed this anomalous vessel arising from the aortic arch distal to the left subclavian artery which passed behind the esophagus as it traveled to the right axilla. It had proximal dilated segment compressing the esophagus. The co-existence of this anomaly with aneurysm of abdominal aorta was a unique finding in our patient. ARSA should be taken into account in patients with dysphagia when more common lesions are excluded.

### **Introduction**

An aberrant right subclavian artery occurs in approximately one of every 200 people. Normally right subclavian artery arises from brachiocephalic trunk and courses towards the arm. The aberrant vessel arises from the aortic arch or proximal descending aorta distal to the

left subclavian artery. Further course of ARSA can be variable. In 80% of the patients, it crosses between the oesophagus and the spinal column. In 15% of patients, it runs between the oesophagus and the trachea and in 5%, it passes anterior to both trachea and esophagus.<sup>1</sup> Dilatation of the vessel due to an aneurysm or atherosclerosis may cause dysphagia. Proximal dilatation of an aberrant right subclavian artery is rare.<sup>2</sup> Dysphagia is the most common presenting symptom. CT scan easily establishes the diagnosis of this lesion. The prevalence of arteria lusoria is particularly high in children with Down's syndrome and congenital heart disease (37%). It may also be seen in patients with tetralogy of Fallot, pulmonary atresia, and major aorticopulmonary collateral arteries.<sup>3</sup>

Computed tomography, barium swallow, trans-oesophageal ultrasound and intra-arterial angiography including direct catheterization of the ARSA, establishes the diagnosis. Dilatation of this vessel is rare but it may be complicated by rupture. Therefore, early elective treatment is indicated.<sup>4</sup>

## Case Report

A 70 years old male presented with history of progressively worsening dysphagia for the last six months. The patient was a known case of abdominal aortic aneurysm treated with aortoiliac bypass graft 5 years ago (Figure 1). The patient was hypertensive without any history of ischaemic heart disease. He was admitted for detailed investigations. The blood complete picture, liver and renal function tests were within normal limits and X-ray chest was normal. Barium swallow was not advised. Instead contrast enhanced CT scan of the mediastinum was done. It revealed an aberrant right subclavian artery (ARSA) arising from the distal aortic arch after the left subclavian artery and coursed to the right and upward behind the trachea and esophagus. Its proximal portion was dilated and was compressing the esophagus (Figure 2). The aortic arch was higher than normal with a more direct anteroposterior orientation. There was no brachiocephalic trunk. Further

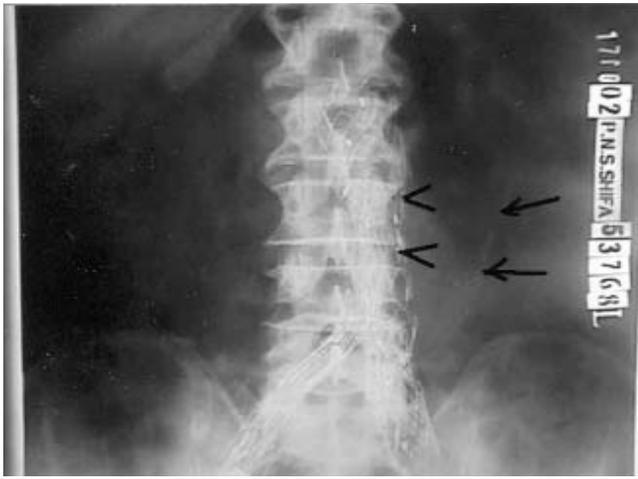


Figure 1. Plain X-ray. Abdominal aortic aneurysm showing faintly calcified walls (Arrows), treated with aortoiliac bypass graft (arrow heads)



Figure 2. CT scan of mediastinum shows dilated Aberrant right subclavian artery (arrowhead) arising from aorta (Ao) and compressing the esophagus. (Arrow)

course of the aberrant artery was in a right paraspinous position. No aneurysm of the aortic arch was seen and no abnormality was noted in the lung parenchyma on CT scan. He was referred to the vascular surgeon. The pre-operative investigations including echocardiography were found to be normal. After pre-anaesthetic assessment he was operated via left thoracotomy. The aberrant right subclavian artery was ligated, brought anterior to the trachea and reimplanted to the left subclavian artery. Postoperative course was uneventful and the patient was discharged symptom free.

## Discussion

David Bayford (1761) was the first to note the association of dysphagia with oesophageal compression caused by an aberrant right subclavian artery.<sup>5</sup> The most common embryologic abnormality of the aortic arch is an aberrant right subclavian artery, which occurs in 0.5% to 1.8% of the population. This abnormal origin of the right subclavian artery can be explained by the involution of the 4th vascular arch with the right dorsal aorta. The 7th intersegmental artery remains attached to the descending aorta and this persistent intersegmental artery becomes the right subclavian artery. This leads to the aberrant artery, which often follows a retro-oesophageal course. Dysphagia lusoria is the descriptive term for dysphagia resulting from oesophageal compression caused by an aberrant right subclavian artery (arteria lusoria).<sup>6</sup> The dilated proximal ARSA is also known as diverticulum of Kommerell. In some patients this diverticulum may become aneurysmal. The diagnosis of dysphagia lusoria can be overlooked despite significant dysphagia. This anomaly is complicated by aortitis, dysphagia, chronic cough and intermittent dyspnoea. Dysphagia caused by this anomaly develops in older patients due to increased rigidity of the oesophagus itself or vessel wall and elongation of the aorta. Aortic arch angiography has been the standard for definitive diagnosis of an aberrant right subclavian artery (arteria lusoria). Barium swallow, CT and MR imaging can also be used in the diagnosis.<sup>7</sup> Barium contrast examination of the oesophagus shows indentation on the oesophagus.

Endoscopic ultrasound (EUS) can identify ARSA as it lies close to the oesophagus. Although relatively uncommon, it is important to consider this vascular anomaly in the differential diagnosis of patients with dysphagia, dyspnoea, chest pain, fever, or mediastinal widening seen on chest roentgenography.<sup>8</sup>

Infant patients with arteria lusoria have symptoms of stridor or recurrent respiratory infections due to compression of trachea.<sup>7</sup> In adults the trachea is more rigid, therefore, respiratory symptoms are rare. When symptoms occur in adults, oesophageal complaints (dysphagia) predominate.

CT or MRI now usually accomplishes definitive diagnosis. Both display the severity of airway narrowing and the retro-oesophageal aberrant artery.<sup>9</sup>

### Conclusion

ARSA should be taken into account in patients presenting with dysphagia. CT scan is an effective imaging modality to diagnose this condition if facility of aortic angiography is not available.

### References

1. Janssen M, Breburda CS, Geuns RJ, Hermans WR, Klootwijk P, Bekkers JA, et al. Images in Cardiovascular Medicine. Aberrant right subclavian artery mimics aortic dissection. *Circulation* 2000; 101:459-60.
  2. Kent PD, Poterucha TH, Poterucha TH. Aberrant right subclavian artery and dysphagia lusoria. *N Engl J Med* 2002; 346:1637
  3. Rosa P, Gillespie DL, Goff JM, O'donnell SD, Starnes B. Aberrant right subclavian artery syndrome: a case of chronic cough. *J Vasc Surg* 2003; 37:1318-21
  4. Hara M, Satake M, Itoh M, Ogino H, Shiraki N, Taniguchi H, et al. Radiographic findings of aberrant right subclavian artery initially depicted on CT. *Radiat Med* 2003; 21:161-5.
  5. Delap TG, Jones SE, Johnson DR. Aneurysm of an aberrant right subclavian artery presenting as dysphagia lusoria. *Ann Otol Rhinol Laryngol.* 2000; 109:231-4.
  6. Bednarkiewicz M, Bruscheweiler I, Christenson JT. Undiagnosed aberrant right subclavian artery: pitfall in aortic arch surgery. *Cardiovasc Surg* 2003; 11:61-3.
  7. Berdon WE. Rings, Slings, and Other Things: Vascular Compression of the Infant Trachea updated from the Mid-century to the Millennium. *Radiology* 2000; 216: 624-32
  8. Gautier G, Rouviere O, Raudrant A, Pangaud C, Lyonnet D. Aberrant right subclavian artery aneurysms: CT assessment. *J Radiol* 2003; 84:1767-70.
  9. Reittner P, Stacher R. Dissecting aneurysm of an aberrant right subclavian artery: diagnosis with ultrafast CT. *Aktuelle Radiol* 1996 :6:38-40a.
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