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Incidentally Detected Aberrant Right Subclavian Artery: A Case Report

İnsidental Tespit Edilen Aberran Sağ Subklavyen Arter: Olgu Sunumu

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Abstract

Aberrant right subclavian artery (ARSA) is a rarely seen congenital and often asymptomatic anomaly. The most common clinical presenting symptom in adult ARSA patients is dysphagia, while patients may rarely present with respiratory complaints. We present here the case of a 79-year-old patient with dysphagia who was diagnosed based on thorax and neck CT and esophagography findings. The patient was treated for pneumonia in the centers to which she applied with complaints of cough and inability to swallow, and was subsequently referred to us with the suspicion of a mediastinal mass after radiograms were obtained. The diagnosis of ARSA was made based on contrast-enhanced computed tomography. With this in mind, ARSA should be included in the differential diagnosis of patients presenting with dysphagia, despite it being a rarely seen etiology.

Key words: *Right subclavian artery, esophagus, dysphagia.*

Öz

Aberran sağ subklavyen arter (ASSA) konjenital bir anomali olup, sıklıkla asemptomatik seyreden ve nadir görülen bir anomalidir. Erişkin ASSA'lı hastalarda en sık klinik başvuru semptomu disfaji olup nadirde olsa solunum yakınmaları ile de başvurabilirler. Yutma güçlüğü ile başvuran 79 yaşındaki bir hasta çekilen toraks ve boyun BT, özofagografi ile tanı konularak sunulmuştur. Hasta yutkunamama ve öksürük şikayeti ile başvurduğu merkezlerde pnömoni tedavisi görmüş, çekilen grafiler sonrası mediastinal kitle şüphesiyle sevk edilen hastaya kontrastlı bilgisayarlı tomografi ile ASSA tanısı konulmuştur. Sonuç olarak yutma güçlüğü ile başvuran hastalarda ASSA buna neden olan nadir bir sebepte olsa ayırıcı tanıda yer almalıdır.

Anahtar Sözcükler: *Sağ subklavyen arter, özofagus, disfaji.*

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ARSA was first described in an autopsy performed by David Bayford (1) in 1794. It is a congenital anomaly that often courses asymptomatically without any clinical findings, and is the most common aortic arch anomaly seen in autopsy series, with a prevalence of 2.5% (2).

Diagnoses of ARSA, which mostly leads an asymptomatic course, are often made incidentally, and mostly through imaging methods performed for such complaints as dysphagia, cough and stridor resulting from the aberrant artery compressing surrounding tissues. Dysphagia is the most common among these symptoms, and was for many years referred to as "dysphagia lusoria".

CASE

A 79 -year-old female patient applied to clinics other than ours with complaints of dysphagia and cough for around 1 year. She had been treated for pneumonia and with antireflux treatments, and was suspected of having a mediastinal mass based on a non-contrast thorax CT, leading to her referral to our center.

Upon referral, no pathology was detected during a physical examination and chest X-ray (Figure 1). The patient reported choking and swallowing difficulties, especially while eating solid foods, for the last year. She had suffered from an MCA (mean cerebral artery) infarction about 30 years earlier. Her left ventricular ejection fraction was 30–35%, and she had a pacemaker. No abnormal findings were detected in biochemical tests. A barium esophagogram revealed esophageal compression (Figure 2).

An attempted endoscopy failed due to an obstruction of the esophageal lumen. A contrast-enhanced thorax CT and neck CT revealed that the patient's right subclavian artery emerged from the distal arch of the aorta and coursed posterior to the esophagus at the level of T2-T3 vertebrae. The patient was subsequently diagnosed with aberrant subclavian artery. CT images of the ARSA revealed esophageal compression, but without any tracheal compression (Figure 3). The diagnosis was confirmed from sagittal and coronal CT sections (Figure 4).

Surgical treatment has not been considered in the patient who underwent cardiovascular surgery consultation for the surgical treatment of ARSA, due to advanced age of the patients and the absence of symptoms. Consuming soft foods and avoiding foods and beverages that could affect esophageal motility have been recommended.

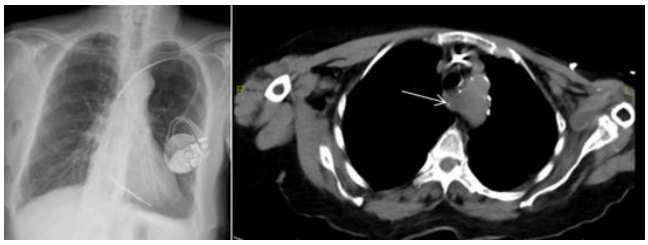

Figure 1: The patient's PA AC was unremarkable. A non-contrast thorax CT scan revealed an aberrant subclavian artery (white arrow), giving the impression of a mediastinal mass

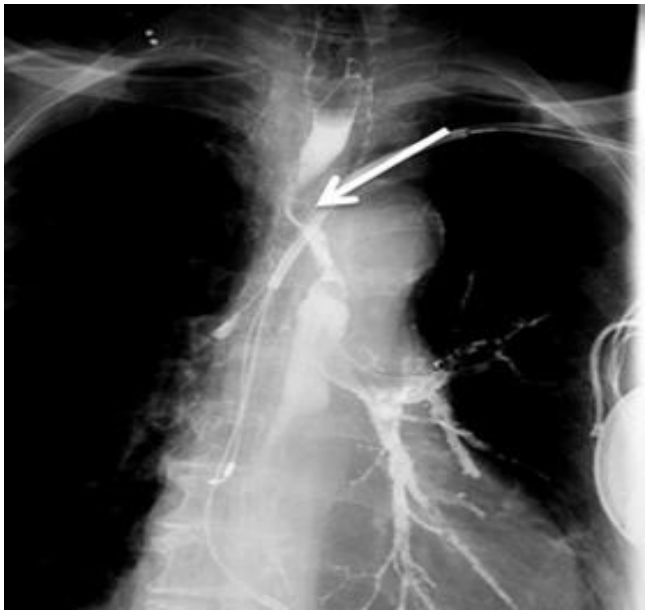

Figure 2: Stenosis (white arrow) due to the compression of the aberrant subclavian artery on a barium X-ray. The aspiration of the contrast material into the bronchial system and the patient's pacemaker can also be seen

DISCUSSION

In cases with ARSA anomalies, four arteries arise from the aortic arch – the right main carotid artery, the left main carotid artery, the left subclavian artery and the ARSA (Figure 5). As the final branch, the ARSA, arises proximal to the descending aorta in the left hemithorax, and then courses up, passing around the back of the esophagus. This is the most common variation, with a prevalence of 80–84% (3). Other variations pass between the esophagus and trachea in 12.7–15% and in front of the trachea in 4.2–5% of cases (4)

When ARSA, which is often asymptomatic and detected incidentally, becomes symptomatic, patients may present with complaints of difficulty swallowing, regurgitation, postprandial bloating, chest pain and cough, especially when eating solid foods. In a more recent study, however, dysphagia was reported as a symptom in 71.2% of 141 ARSA cases (5).

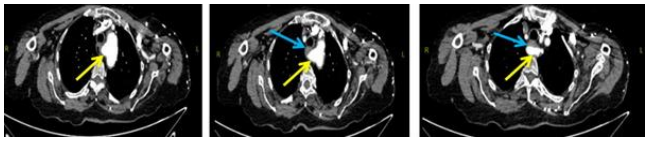

Figure 3: Aberrant right subclavian artery (yellow arrow) detected in contrast-enhanced thorax CT and the esophagus constricted by the pressure of the artery (blue arrow)

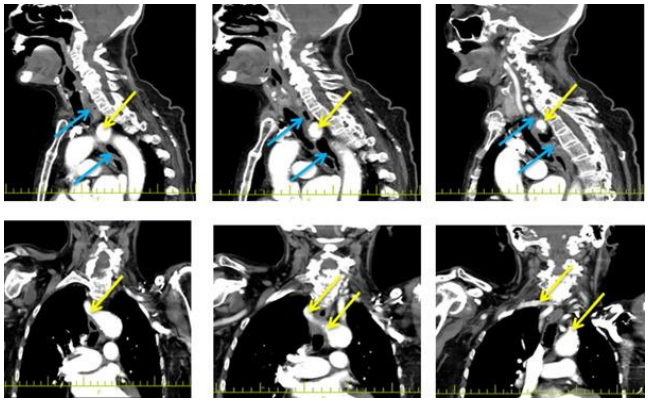

Figure 4: The aberrant right subclavian artery (yellow arrow) and compressed esophagus (blue arrow) on sagittal (top) and coronal (bottom) CT scans of the patient

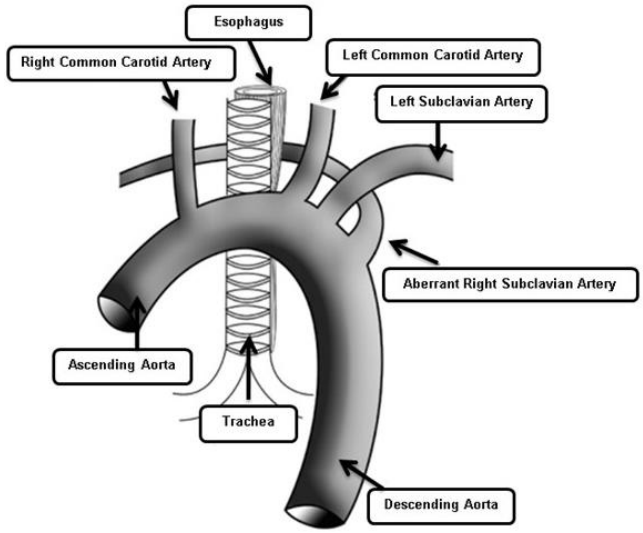

Figure 5: Schematic view of aberrant right subclavian artery anomaly

ARSA is usually diagnosed in middle and advanced ages, and therefore clinical findings are delayed. Anatomical and physiological changes, such as increases in esophageal and arterial wall rigidity due to atherosclerosis, and aortic elongation with aging have been suggested to lead to delays in the identification of clinical findings (6).

Although angiography has traditionally been the optimum diagnostic method of ARSA, 3-dimensional spiral CT angiography is accepted as the basic imaging method for the diagnosis of thoracic vascular anomalies. Contrast-enhanced CT scans, which are widely used, are superior to conventional angiography, being noninvasive and allowing the vascular structures and surrounding tissues to be examined as a whole (7).

Diagnoses of ARSA can also be made based on the detection of compression on esophagograms. In the esophagoscopy diagnostic approach, pulsations on the posterior wall of the esophagus are the most common finding, and transesophageal echocardiography may also aid in the diagnosis (8).

Dietary and pharmacological therapies are often the first treatment options in ARSA, while surgical treatments are recommended for patients who do not respond to medical treatment, or whose complaints aggravate. Available surgical treatments include dissection of the aberrant artery and its anastomosis up to the ipsilateral carotid artery, although due to the high mortality rates reported in surgical treatments, endovascular treatment methods have been recommended more recently (9). Generally performed surgeries include posterior mediastinal procedures or occlusion of the ARSA with a right pleural approach in a median sternotomy, followed by an extraanatomical axillary artery bypass and several reconstructive procedures (10,11).

CONCLUSION

ARSA should be considered in the differential diagnosis of patients who present with dysphagia with or without chronic cough. Imaging methods such as contrast-enhanced thorax CT, barium esophagogram and transesophageal echocardiography can aid in the diagnosis. While conservative treatments are preferred in cases of ARSA with asymptomatic or mild symptoms, surgical treatment options may be preferred in severe cases.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - M.A., S.K.; Planning and Design - M.A., S.K.; Supervision - M.A., S.K.; Funding - M.A., S.K.; Materials - M.A.; Data Collection and/or Processing - M.A., S.K.; Analysis and/or Interpretation - M.A., S.K.; Literature Review - M.A.; Writing - M.A., S.K.; Critical Review - M.A., S.K.

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ve/veya Yorum - M.A., S.K.; Literatür Taraması - M.A.; Yazıyı Yazan - M.A., S.K.; Eleştirel İnceleme - M.A., S.K.

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