CLINICAL IMAGE

Difficult-to-treat asthma and dysphagia in an adult patient with aberrant right subclavian artery

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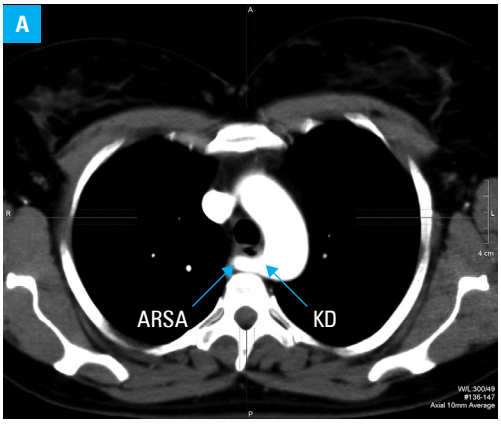
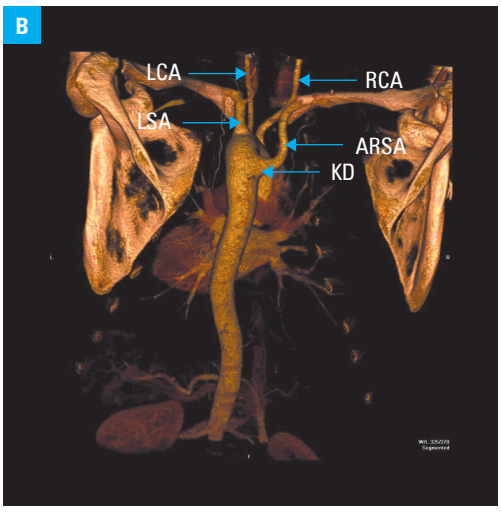
Aberrant right subclavian artery (ARSA), also called *arteria lusoria*, is the most common congenital abnormality of large vessels branching from the aortic arch, which occurs with a prevalence of 0.5% to 2% of the general population.[1]

In infants, the disorder can manifest as stridor, wheezing, and recurrent respiratory infections due to the lack of sufficient rigidity of the trachea.[1] In children, dyspnea or dysphagia can occur. In adults, this anomaly is usually clinically silent. When symptomatic, it produces dysphagia (*dysphagia lusoria*).[2] The first case of an elderly woman with dysphagia caused by an ARSA was described in 1787 by Bayford.[3] The predominance of dysphagia in adulthood may result from increased rigidity of the trachea, progressive atherosclerosis and stiffness of the ARSA, its tortuosity, or aneurysmal dilation.[4] We report here a case of a symptomatic ARSA in an adult woman with asthma.

A 39-year-old woman was admitted to the Department of Pulmonology to extend the diagnosis of uncontrolled asthma and to establish a relationship between vascular anomaly and asthma. The patient had a history of mild atopic asthma since childhood. The course of the disease aggravated at the age of 32 years, when she began to suffer from multiple, sudden episodes of shortness of breath, coughing, and wheezing. Within the last 7 years, she required 35 hospitalizations on that account, including 4 hospitalizations in intensive care units. Symptoms persisted despite treatment with high doses of systemic and inhaled corticosteroids.

Chest computed tomography (CT) performed 5 years ago owing to suspicion of pulmonary embolism after a lower limb fracture revealed a vascular anomaly in the form of an ARSA. At first, it was not associated with troublesome respiratory symptoms; however, with time, the patient reported increasing difficulty swallowing solid





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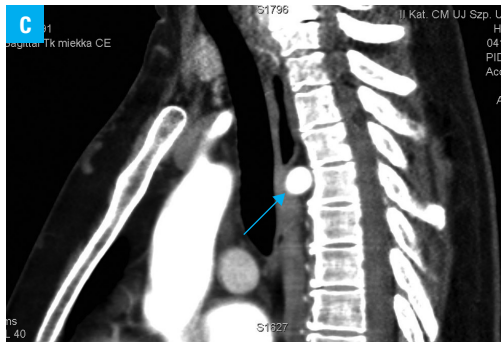

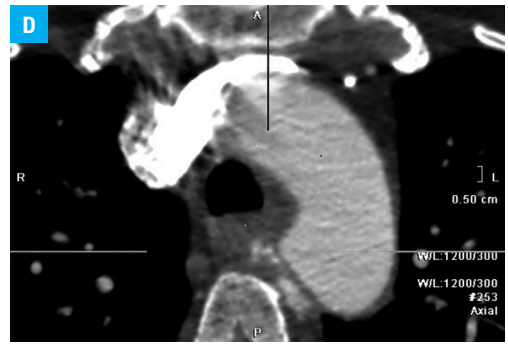

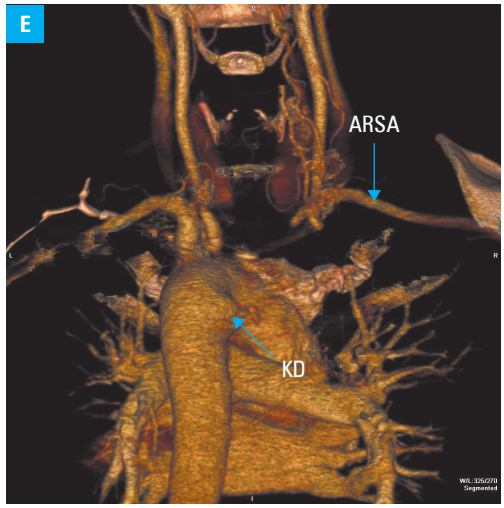

FIGURE 1 **A** – Chest computed tomography (CT) scan showing the left aortic arch with an aberrant right subclavian artery (ARSA) arising from the Kommerell diverticulum (KD). The artery runs behind the esophagus causing its compression. The lumen of the trachea remains intact. **B** – 3-dimensional CT reconstruction (P-A view) demonstrates the ARSA branching from the proximal part of the descending aorta, as the last aortic arch vessel. It begins from the KD and forms an incomplete vascular ring around the esophagus and trachea (not visible). **C** – A reconstructed sagittal CT scan showing the esophagus compressed by the ARSA (arrow). **D** – A postoperative chest CT scan showing the amputated ARSA with restoration of normal anatomical relations between the aortic arch and esophagus. **E** – Postoperative 3-dimensional CT reconstruction (P-A view) showing the residual KD. The remaining visible distal part of the ARSA travels to the right arm.
Abbreviations: LCA, left carotid artery; LSA, left subclavian artery; RCA, right carotid artery

food, which resulted in choking, dyspnea, and wheezing. Eventually, she was able to swallow only liquids. Gastroscopy showed an extrinsic compression with evident pulsation. Bronchoscopy revealed no abnormalities. Repeatedly performed chest CT showed the left aortic arch with an ARSA (FIGURES 1A and 1B). The esophagus was compressed by the anomalous vessel (FIGURE 1C).

Two children of the patient had been diagnosed with ARSA in childhood. One of them suffered from dysphagia, and the other—from dyspnea. They both underwent surgical correction at the age of 11 and 12 years, respectively, with complete relief of the symptoms.

The patient underwent a surgical treatment that consisted in releasing the aberrant artery through the left-sided thoracotomy. Due to her age and the risk of limb ischemia, the artery bypass grafting with cardiopulmonary bypass was initially considered. Finally, a classic surgical procedure involving the dissection of the ARSA was performed. It was preceded by measurement and comparison of blood pressure in both radial arteries after balloon closure of the right subclavian artery to verify the sufficient upper limb perfusion. After confirmation of satisfactory collateral circulation, the artery dissection was successfully performed. No ischemic complications were observed (FIGURE 1D and E).

After the surgery, dysphagia and its consequences completely resolved. Nevertheless, asthma persisted but it was well controlled on inhaled corticosteroids. So far only 2 exacerbations occurred: after the use of a nonsteroidal anti-inflammatory drug and due to respiratory tract infection.

In view of the above, congenital aortic arch anomalies should be considered in a differential diagnosis of dysphagia and asthma in patients who remain uncontrolled despite optimal treatment, not only in children but also in adults.[5]

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