Anatomical aortic variation: Aberrant right subclavian artery (ARS)

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The retroesophageal right subclavian artery or “Arteria lusoria”, originating directly from the aortic arch, is a rare anatomical anomaly (Figures 1,2). The location of the vessel, between the vertebral column and the esophagus, determines its course to the right. This defect frequently is asymptomatic, found during autopsy or diagnostic procedures. However, it may be symptomatic due to the process of this blood vessel in the limited anatomical space. This structural problem may produce symptoms of mediastinal organ compression.  

The most common anomaly in association with the left aortic arch is the ARS with a left ductus arteriosus. 2 This anomaly occurs in approximately 1% to 2% of patients. 3 

The formation of the ARS is due to the absence or atypical involution of the fourth right aortic arch during the embryonal development, with persisting of the seventh right intersegmental artery. The persistence of the eighth segment of right dorsal aortic root produces the implantation of the right subclavian artery after of the left subclavian artery. Furthermore, this persistence allows the formation of the proximal part of the ARS. 4 During its development to reach the left axilla, in 80% of the cases the artery takes position behind the esophagus. In 15% between the esophagus and trachea and 5% the artery has an anterior position to the trachea or the main stem of the bronchus. 5 The bulbous configuration at the origin of the aberrant right subclavian artery in the left aortic arch is known as Kommerell’s diverticulum. This name is also used for the diverticular out-pouching at the origin of the aberrant left subclavian artery in the right-sided aortic arch. 

The anomaly is in association with congenital abnormalities such as hypoplastic left heart syndrome, coarctation of the aorta, and atrioventricular canal defects. Aortic pathologies such as aneurysms, dissections, and arch branching anomalies have been reported with ARS. 6

**FIGURE 1**
LEFT AORTIC ARCH WITH ABERRANT RIGHT SUBCLAVIAN ARTERY. EMBRIONARY SCHEMATIC REPRESENTATION.

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A. Black-shaded area represents the position of the break in the arch. Right ductus arteriosus is closed (black-shaded). B. Representation of the ARS evolution (curve arrow). LCA indicates left common carotid artery; LDA, left ductus arteriosus; LSA, left subclavian artery; RCA, right common carotid artery; RDA, right ductus arteriosus; RSA, right subclavial artery, AO, aorta; PA, pulmonary artery; T, trachea; E, esophagus.

FIGURE 2 ARS WITH STANFORD B AORTIC DISSECTION.
CT SCAN IMAGE (VOLUMEN RENDERED). LATERAL VIEW. LARS, R, RIGHT; R.C, RIGHT COMMON; L.C, LEFT COMMON; S, SUPERIOR; A, ARTERY; V, VEIN.

REFERENCIAS


