Kommerell’s diverticulum, right-sided aortic arch, and a hypoplastic left vertebral artery arising from the left common carotid artery

Faisal M. Shaikh, MD, MRCSI,a,b Alison Hurley, MBCh, BAO, c Orla Buckley, MRCP, FFR (RCSI), c and Sean Tierney, MCh, FRCSI,a,b Dublin, Ireland

A 68-year-old man was admitted with sudden onset of headache chest and neck pain, Q waves in the V1-V6 leads on his electrocardiogram, and elevated troponin levels. He previously had hypertension, ischemic heart disease, and bilateral cardiovascular events. The primary diagnosis was subendocardial infarction, and he was treated with systemic thrombolysis.

A coronary angiogram showed three-vessel disease with 75% stenosis. Carotid duplex imaging showed >80% stenosis of the internal carotid artery (ICA) bilaterally, a normal right vertebral artery (VA), and high resistance flow in the left VA. A three-dimensional contrast-enhanced computed tomography aortogram showed right-sided aortic arch (AA) (A and B), anomalous retroesophageal left subclavian artery (SA) (C), a diverticulum of Kommerell (DOK) at its origin (Cover) and a hypoplastic left VA (D) arising from left common carotid artery (CCA). He underwent right carotid endarterectomy and triple coronary artery bypass grafting a month later. Patient consent was obtained.

DISCUSSION

A right-sided AA, complicated by an aberrant left SA origin (with an otherwise normal heart), has been reported in 0.05% to 0.1% based on radiology and in 0.04% to 0.1% in autopsy series. Autopsy series have found 50% of right-sided AA are associated with an aberrant left SA. In adults, the right AA is frequently asymptomatic, unless it is aneurysmal. Typically, this occurs at the origin of an anomalous left SA and is termed a Kommerell’s diverticulum. More commonly, DOK occurs at the origin of an anomalous right SA (0.5%-2.0%), and rarely, in the right AA and anomalous origin of left SA (0.05%-0.1%).

The third developmental anomaly in our patient was an abnormal origin of the VA. The overall incidence of the anomalous origin of the VA is low, and it occurs more commonly on the left. Reported anomalous origins of the left VA include the root of the left SA, the arch of aorta, or the left CCA as occurred in this case.

In summary, we report three developmental anomalies of the AA, including right-sided AA, anomalous retroesophageal left SA associated with a DOK, and a hypoplastic left VA arising from left CCA, which have not been described previously.

REFERENCES


Submitted Jul 10, 2012; accepted Aug 21, 2013.

From the Department of Vascular Surgery, Tallaght Hospital; the Department of Surgery, Royal College of Surgeons in Ireland; and the Department of Radiology, Tallaght Hospital.

Author conflict of interest: none.

E-mail: faisalshaikh@rcsi.ie.

The editors and reviewers of this article have no relevant financial relationships to disclose per the JVS policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

J Vasc Surg 2014;60:1059

0741-5214/$36.00

Copyright © 2014 by the Society for Vascular Surgery.

http://dx.doi.org/10.1016/j.jvs.2013.08.092