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VENOUS IMAGES

From the Western Vascular Society

Congenital, meandering transdiaphragmatic aortocaval-right atrial arteriovenous fistula

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A 66-year-old white woman with chronic, intractable atrial fibrillation presented with nonfocal abdominal pain and fatigue. Computed tomography angiography subsequently demonstrated a large, tortuous arteriovenous conduit that originated from the paravisceral abdominal aorta just above the native right renal artery, traversed the right hemidiaphragm, and emptied into the suprahepatic inferior vena cava (IVC) near its insertion into the right atrium (*A/Cover*). The vessel was further evaluated with gadolinium-enhanced three-dimensional magnetic resonance angiography, which measured the anomalous vessel to be 11 mm at its aortic origin, averaging 10 mm throughout its course, with focal aneurysmal dilation to 17 mm where it emptied into the intrathoracic IVC (*B*). Time-resolved magnetic resonance angiography demonstrated a flow rate of 2.2 L/min through the fistula with a Qp/Qs ratio of 1.2. Echocardiography demonstrated marked cardiomegaly and no other anomalies. Because of the high-flow nature of the vessel and associated symptoms, percutaneous transaortic and transcaval arteriovenous fistulography was performed. Test balloon occlusion of the conduit did not result in any adverse hemodynamic changes. The conduit was occluded with endovascular Amplatzer vascular plugs (St. Jude Medical, St. Paul, Minn), resulting in complete cessation of blood flow (*C and D*). At 1-year follow-up, the patient had resolution of her atrial fibrillation and decreased pulmonary artery pressures. Consent was obtained for publication.

DISCUSSION

Spontaneous aortocaval fistulas are rare but described entities that can result from erosion of the aorta into the adjacent IVC.¹ Distinct from this condition, we report a uniquely well-developed, congenital, high-flow, transdiaphragmatic arteriovenous conduit connecting the paravisceral abdominal aorta and thoracic IVC as it empties into the right atrium. We believe the etiology of this vessel to be from failure of regression of an embryologic renal artery connecting the aorta to the mesonephros, which is highly vascular and the principal excretory organ during embryologic life between weeks 4 and 8 in gestation.² Although the mesonephros degenerated normally, this vessel persisted into adulthood. There were no branches along the path of this vessel, suggesting a congenital origin.

CONCLUSIONS

Whereas surgical or endovascular exclusion of the fistula is the traditional management for aortocaval fistulas, successful endovascular occlusion of lengthy high-flow arteriovenous fistulas has been described³ and was successful in this case.

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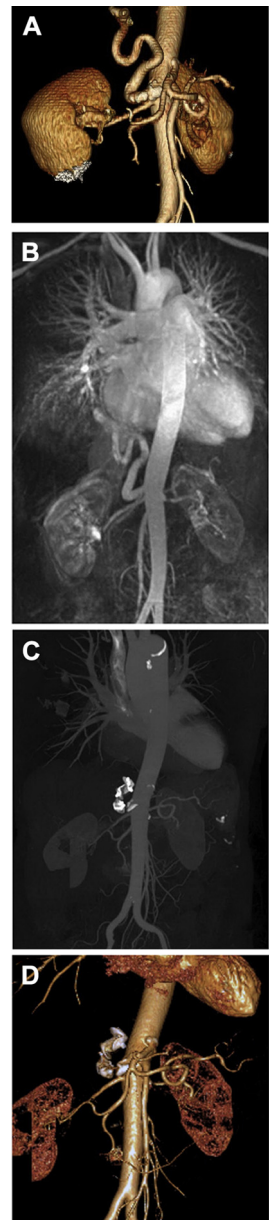
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