

Ectopic Right Renal Artery Originating from Anomalous Common Celio-Mesenteric Trunk:

Multifaceted Imaging Approach

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A 28-year-old woman presented with a history of uncontrolled hypertension, despite medical therapy, and with fibromuscular dysplasia of the renal arteries (RAs). Angiograms from another hospital revealed an unusual left RA arising vertically from the aorta. The left RA had a distinctive beaded appearance in its proximal and mid segments, consistent with fibromuscular dysplasia. At that time, the patient underwent successful balloon angioplasty. Because of her persistently elevated blood pressure, we performed repeat renal and abdominal angiography.

The ostial, proximal, and mid portions of the left RA were patent. In addition, we identified substantial anatomic variations of the abdominal aorta and its major branches—findings not described in the earlier angioplasty report. The proximal abdominal aorta was of normal size down to the level of the RAs. The abdominal aorta then bifurcated into a markedly narrow distal abdominal aorta (Figs. 1 and 2) and an anomalous celio-mesenteric trunk (CMT). The CMT gave rise to the proper celiac trunk (which branched into the splenic and common hepatic arteries) and to another common trunk, which gave rise to an ectopic right RA and the superior mesenteric artery (SMA) (Figs. 1 and 2). No intervention was performed during this angiography. To confirm and elucidate these anomalies, we obtained a cineangiogram of the abdominal vasculature (Fig. 3).

Comment

The CMT is a well-documented but uncommon aortic branch vessel arrangement in which the SMA arises anomalously from the celiac trunk; the reported prevalence is

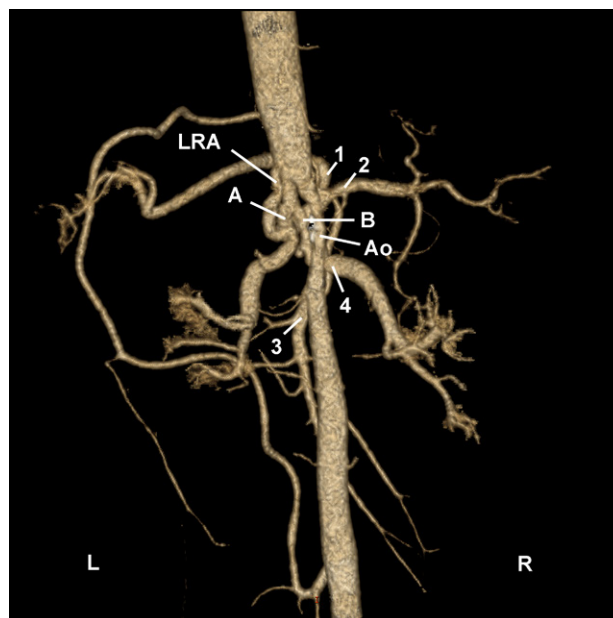


Fig. 1 Computed tomographic angiogram of the abdominal aorta (posterior view) shows the visceral arteries. “A” indicates the anomalous celio-mesenteric trunk, which continues as the celiac artery proper and then gives rise to the splenic artery (1) and common hepatic artery (2). “B” indicates a common arterial trunk that originates from the celio-mesenteric trunk and gives rise to the superior mesenteric artery (3) and right renal artery (4).

Ao = tapering descending aorta; LRA = left renal artery origin with vertical takeoff

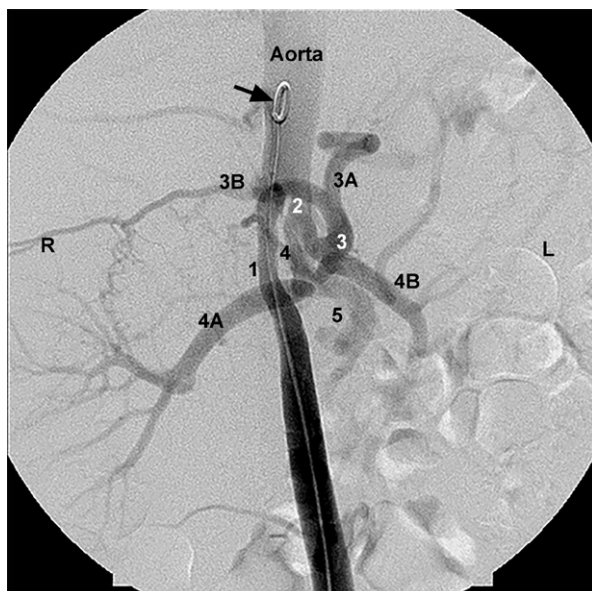


Fig. 2 Cineangiogram (anterior view) shows the abdominal aorta, which bifurcates into a narrow distal abdominal aorta (1) and an anomalous celio-mesenteric trunk (2). The proper celiac artery (3) gives rise to the splenic artery (3A) and common hepatic artery (3B). The celio-mesenteric trunk has another common trunk (4) that bifurcates into the right renal artery (4A) and superior mesenteric artery (4B). The left renal artery (5) has an independent origin not shown in this view, because it courses behind vessels (2) and (4). Arrow points to the catheter in the abdominal aorta.

L = left; R = right



Fig. 3 Cineangiogram (anterior view) of the left renal artery reveals a separate origin of the vessel where the catheter is engaged. The shape and course of the left renal artery is similar to that shown in Figure 1.

less than 1.5%.^{1,2} We found only 2 related reports that documented a common origin of the left RA from an inferior mesenteric artery and a common origin of accessory (right or left) RAs from the SMA; however, these cases did not involve the celiac trunk and were identified only during cadaver dissection.^{3,4} In our patient, the SMA and ectopic right RA arose as a secondary common trunk vessel from the celiac trunk. This arrangement is unique.

After our report was submitted for publication, Connolly and colleagues⁵ described a common trunk for the celiac artery, SMA, and bilateral RAs, wherein the left RA arises from the very proximal main trunk and the right RA arises between the origins of the celiac artery and SMA. The authors named this the celio-mesenteric-renal arterial trunk.⁵

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