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VASCULAR DISEASE

IMAGING VIGNETTE: CLINICAL VIGNETTE

A "Snake-Like" Vessel in the Thorax

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ABSTRACT

We report a congenital extracardiac arteriovenous fistula revealed incidentally in a patient undergoing computed tomographic coronary angiography for angina. This clinical vignette panel describes the origin and the trajectory of this rare vascular lesion. (J Am Coll Cardiol Case Rep 2024;29:102181) © 2024 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

We describe a rare case of an arteriovenous malformation in a middle-aged patient. Computed tomographic coronary angiography (CTCA) in a 55-year-old male patient with angina excluded obstructive coronary artery disease but an unexpected extracardiac structure was revealed. As well delineated on the vignette panel (**Figure 1**), an abnormal vascular lesion was found to arise from the distal part of the aortic arch and continue downward with a tortuous pattern toward the roof of the left atrium, continuing its snake-like course in the interatrial septum, and following a retro-aortic course toward the left atrioventricular groove and connecting with a branch of the great cardiac vein system in the lateral wall of the left ventricle, forming an arteriovenous fistula (AVF). Invasive coronary angiography did not detect the AVF, because the endpoint of the arterial vessel was in the cardiac veins.

AVF malformations are rare congenital anomalies, and large fistulas are very uncommon findings.[1] Extracardiac systemic AVFs are of importance to clinical practice when they are hemodynamically significant. A large AVF may manifest itself as congestive high-output cardiac failure, particularly if the shunt flow is >2 L/min.[2,3] However, this patient did not complain of any heart failure symptoms, because the AVF was not large enough to induce a hemodynamic effect on cardiac output. Also, angina could not be attributed to the presence of AVF, owing to its small size, and myocardial ischemia with nonobstructive coronary arteries was the most possible cause of angina.

In conclusion, imaging modalities such as CTCA can reveal rare vascular abnormalities, such as this rare "snake-like" vessel, that need to be approached by integrating clinical data for optimal management.

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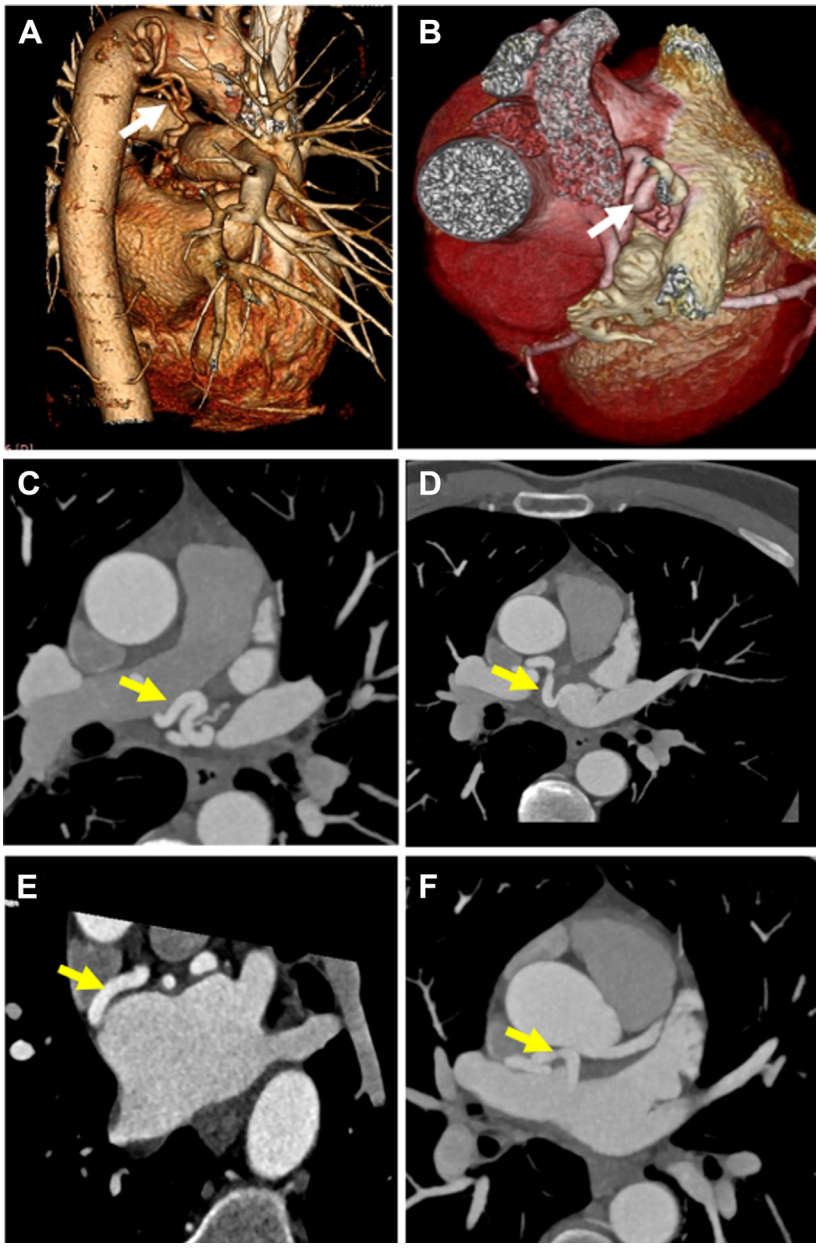
ABBREVIATIONS AND ACRONYMS

AVF = arteriovenous fistula

CTCA = computed tomographic coronary angiography

INOCA = myocardial ischemia with nonobstructive coronary arteries

FIGURE 1 Computed Tomographic Coronary Angiography Depicting the Arteriovenous Fistula



Three-dimensional (3D) reconstruction of computed tomographic (CT) angiography dataset showing (A) the origin of an anomalous vessel from the aortic arch (white arrow) travelling toward (B) the roof of the left atrium (white arrow) 3D reconstruction of electrocardiography-gated coronary CT angiographic scan. (C to F) Axial views depicting the tortuous tract of the artery in contact with the roof of the left atrium, toward the interatrial septum, and joining a small vein next to the left circumflex artery, leading to an arteriovenous malformation (yellow arrows).

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