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CARDIOVASCULAR FLASHLIGHT

Adult congenital heart disease

Ventricular septal defect with uncommon three left brachiocephalic veins

Zihao Li , Lina Yu , and Hongwei Zhang *

Radiology Department of Qilu Hospital of Shandong, University Dezhou Hospital (Dezhou People's Hospital), No. 1166, Dongfanghong West Road, Decheng District, Dezhou City, Shandong Province, 253000, China

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A 10-month-old boy with a heart murmur since birth was diagnosed with a perimembranous ventricular septal defect (VSD) via ultrasound. A computed tomography angiography (CTA) was conducted for a detailed cardiovascular assessment. CTA revealed three left brachiocephalic veins, two (*Figure 1A–C* asterisks) going anterosuperior to the aortic arch and one (*Figure 1A–C* arrows) travelling

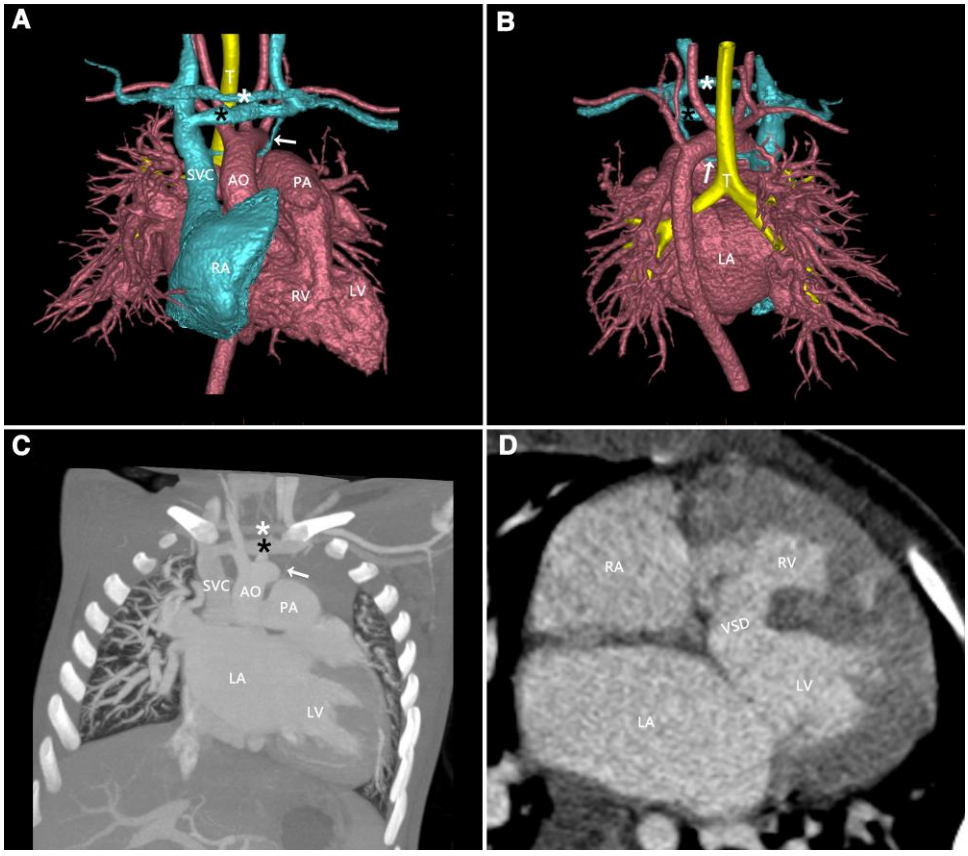

Figure 1 A 10-month-old boy was found to have a heart murmur since birth and was diagnosed with the perimembranous ventricular septal defect. (*A–C*) Two veins can be seen in front of the aortic arch, running parallel to the left brachial vein. One is thinner (white *) and the other is thicker (black *). A thin left brachial vein (arrow) can be seen running in front of the trachea behind the ascending aorta. (*D*) The ventricular septal defect is visible. AO: aorta; PA: pulmonary artery; LA: left atrium; RA: right atrium; LV: left ventricle; RV: right ventricle; SVC: superior vena cava; T: trachea; VSD: ventricular septal defect.

* Corresponding author: Tel: +86 13305442120, Email: 44406891@qq.com
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posterior to the ascending aorta (Supplementary material online, *Movie 1 and 2*). CTA also visualized the perimembranous VSD (*Figure 1D*). The patient underwent surgical repair and recovered well.

During embryonic development, new channels form above and below the fourth aortic arch, directing venous drainage from the left side of the head, neck, and arm into the right anterior cardinal vein. The inferior plexus degenerates and the superior plexus becomes the left brachiocephalic vein.[1] A retro-aortic left brachiocephalic vein is detected when the superior plexus degenerates while the inferior plexus does not.[2] When neither the superior nor inferior plexuses degenerate, the circumaortic aorta's left brachiocephalic vein is observed.[3] A double left brachiocephalic vein is visible when the inferior plexus degenerates and the superior plexus develops two branches.[4] Our case report describes a previously undocumented condition where the upper and lower plexus develop into two and one branches, respectively, resulting in three left brachiocephalic veins. To treat VSD, common methods include catheter-based closure and surgical repair. Understanding this vascular anomaly can reduce the risk of complications associated with these procedures.

Supplementary material

Supplementary material is available at *European Heart Journal – Case Reports*.

Consent: The authors confirm that written consent for submission and publication of this case report including images and associated text has been obtained from the patient in line with COPE guidance.

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Data availability

No data were generated or analysed for or in support of this paper.

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