Rare arch and supra-aortic vessel anomaly

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DESCRIPTION

A 3-year-old child with history of a large secundum atrial septal defect came to our institution for surgical cardiovascular evaluation. The patient had reached all developmental milestones and was completely asymptomatic. During imaging workup, a three-dimensional magnetic resonance angiography (MRA) reconstruction showed an incidental finding of a unique left aortic arch with branch vessel anomalies. The images showed a fenestrated origin of the left common carotid artery (figure 1A) along with an independent origin of the right internal and external carotid arteries from the brachiocephalic trunk, with a partial fusion in their proximal segments (figure 1B). At the time of diagnosis, neurology and neurosurgery services were consulted suggesting only close monitoring. At the 6-month follow-up, the patient remains neurologically intact.

Anomalies of the aortic arch are usually associated with impaired development of the branchial arches, heart defects and chromosome abnormalities. Although most of the anomalies are silent, vascular variations may produce respiratory and cardiovascular symptoms. Thorough imaging evaluation is fundamental to determine the vascular configuration and guide the treatment strategy.[1 2]

Cardiovascular imaging evaluation includes non-invasive studies such as echocardiogram, CT and MRI reconstructions. MRA is a feasible option in paediatric patients since it allows reconstruction of the vessels without exposing the patient to ionising radiation or contrast. Moreover, when associated with congenital cardiac anomalies, MRI has the advantage to provide additional information on ventricular function and blood flow.[2] Clinical silent aortic arch anomalies are incidental findings, occasionally discovered during cardiac evaluation.

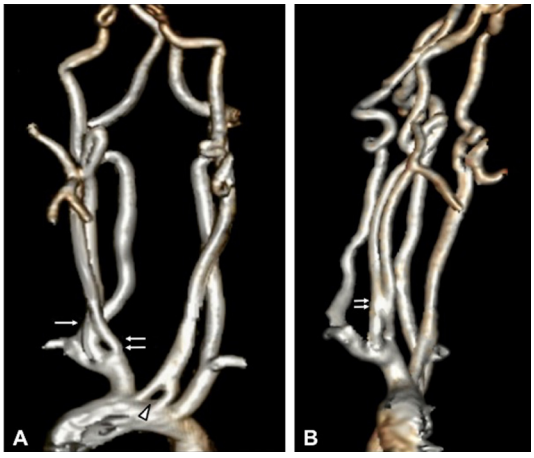

Figure 1 Three-dimensional magnetic resonance angiography reconstruction. (A) Anterior view depicting the fenestrated origin of the left common carotid artery (arrowhead), the independent origin of the internal carotid (single arrow) and external carotid (double arrows) arteries. (B) Right lateral view demonstrating partial fusion of the proximal segments between right internal and external carotid arteries.

Learning points

- Aortic arch anomalies are associated with impaired development of branchial arches, heart defects and chromosome abnormalities.
- These anomalies are usually clinically silent and commonly found as an incidental finding on imaging studies.
- Thorough imaging evaluation is fundamental to determine the vascular configuration and guide the treatment strategy.

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Competing interests RAH is a consultant for Stryker, Codman, Covidien, and MicroVention. The remaining authors have nothing to disclose.

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