



IMAGE IN CARDIOLOGY

Double aortic arch as cause of persistent stridor: Sequential imaging for preoperative assessment[☆]



Duplo arco aórtico na origem de estridor persistente: sequência de imagens para orientação cirúrgica

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A boy aged 2.5 years presented biphasic stridor at three months of age, which worsened with crying, feeding and upper respiratory tract infections. Fiberoptic bronchoscopy (FOB) at five months diagnosed tracheomalacia, with 80% dynamic collapse of the lower two-thirds of the trachea. The child had normal growth and no difficulty feeding. FOB at 21 months due to persistent stridor showed marked dynamic collapse and extrinsic compression of the trachea. Thoracic computed tomography (angio-CT) angiography identified a vascular ring due to a double aortic arch (Figures 1–3), causing extrinsic compression of the trachea with marked reduction in its caliber (Figure 4). There were no other cardiac malformations on echocardiographic study. At 23



Figure 1 Thoracic computed tomography (angio-CT) angiography, axial view, showing two aortic arches (arrows) forming a double aortic arch, which surround the airway and reduce tracheal caliber. The right aortic arch is dominant.

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months the child underwent ligation and division of the more hypoplastic arch (left anterior) by thoracotomy. The post-operative course was good, and the child currently has mild stridor only.



Figure 2 Thoracic angio-CT angiography, coronal maximum intensity projection reconstruction, showing two aortic arches (arrows) originating in the ascending aorta. The brachiocephalic trunk originates in the right aortic arch, while the left common carotid originates in the left aortic arch.



Figure 3 Thoracic angio-CT angiography, three-dimensional reconstruction, posterior view, showing two aortic arches (arrows) that join in the proximal descending aorta. The right aortic arch is of larger caliber.



Figure 4 Thoracic angio-CT angiography, three-dimensional reconstruction visualizing the airway. Note the tracheal compression (arrows) caused by the vascular ring.

Vascular rings account for 1% of congenital heart defects and are the most common malformation causing airway compression. In this case, the clinical presentation dictated the sequence of imaging exams – FOB followed by angio-CT. This combination of imaging techniques is essential for pre-operative assessment. angio-CT angiography provides better spatial and temporal resolution, rapid image acquisition requiring only sedation or brief anesthesia in uncooperative patients, and three-dimensional image reconstruction, and is thus the preferred imaging modality, especially with the lower radiation levels required with modern equipment. Assessment of tracheomalacia or other airway dysfunction still requires video bronchoscopy.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this investigation.

Confidentiality of data. The authors declare that no patient data appears in this article.

Right to privacy and informed consent. The authors declare that no patient data appears in this article.

Conflicts of interest

The authors have no conflicts of interest to declare.