Pulmonary Sequestration with a Descending Aorta-Sized Aberrant Artery

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A 47-year-old man was referred for further evaluation after an abnormal shadow was detected on a chest X-ray during a routine health check-up. Computed tomography (CT) revealed a 35-mm protruding structure arising from the descending aorta, which was initially suspected for an aortic aneurysm. However, contrast-enhanced CT demonstrated that the lesion was an aberrant systemic artery measuring 21 mm in diameter and 35 mm in length, originating from a 23-mm descending aorta. Three smaller peripheral branches were identified supplying the left S10 segment, with no connection to the pulmonary vein—findings consistent with intralobar pulmonary sequestration. No significant inflammatory changes were observed in the surrounding lung parenchyma.

Although no guidelines exist for managing pulmonary sequestration in adults, large-caliber aberrant systemic arteries have been reported to undergo aneurysmal degeneration or dissection due to systemic arterial pressure.[1] Given the abrupt change in the vessel diameter, surgical or endovascular intervention was considered; however, the patient declined both options as he remained asymptomatic.

Non-contrast CT was performed every 6 months for the first 3 years and annually thereafter, using a standardized protocol with diameter-based measurements. At the 10-year follow-up, contrast-enhanced CT was additionally performed to evaluate for possible thrombosis. No change in vessel morphology was observed (Figures 1a and b).

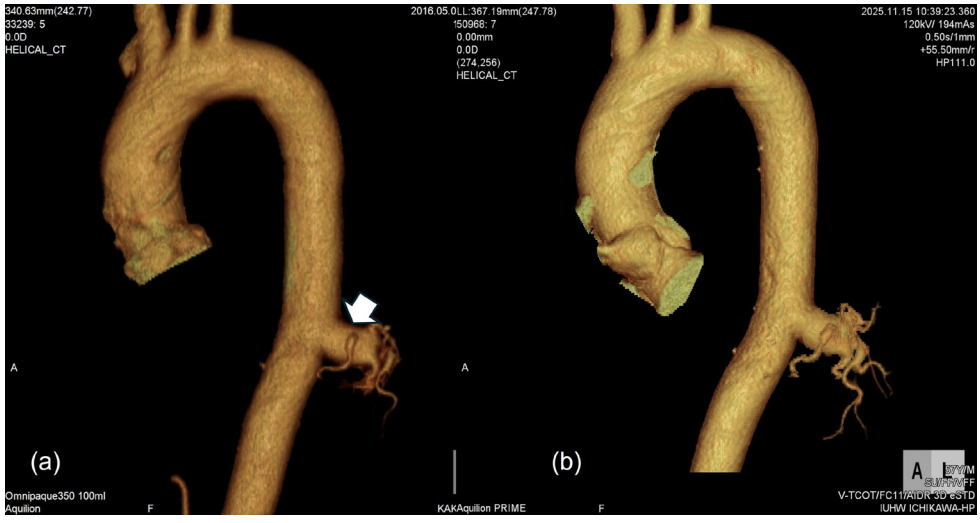

FIG. 1. Volume-rendered 3D reconstructions of contrast-enhanced CT angiography demonstrating a large aberrant systemic artery arising from the descending thoracic aorta. (a) Volume-rendered 3D reconstruction showing an aberrant systemic artery arising from the descending thoracic aorta, with a diameter nearly equal to the aortic lumen. A white arrow indicates the aberrant vessel supplying the sequestered lung. (b) Ten years later, the morphology of the aberrant artery remains unchanged. (c) Axial contrast-enhanced CT image showing the aberrant systemic artery coursing toward the left lower lobe. 3D, three-dimensional; CT, computed tomography.

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This case demonstrates the long-term anatomical stability of a vascular anomaly with high-risk morphology. The diameter of the aberrant artery was nearly equivalent to that of the descending aorta (21 mm vs. 23 mm). Furthermore, it exceeded the previously reported average diameter for adult pulmonary sequestration.[2] The abrupt tapering morphology raised concern for rupture risk of rupture. Although aberrant arteries exceeding 20 mm in diameter have been described,[3] reports on tapering and decade-long stability are lacking. Moreover, while aneurysmal dilatation of aberrant systemic arteries has been reported in adult pulmonary sequestration—particularly in cases requiring endovascular or hybrid intervention[4]—no aneurysmal transformation occurred in this patient despite a 21-mm origin diameter and abrupt tapering over a 10-year follow-up period.

The lack of inflammation in the adjacent lung tissue may have contributed to the long-term vascular stability. This case provides educational value for clinicians managing congenital pulmonary vascular anomalies.

Informed Consent: Written informed consent was obtained from the patient for publication of this image.

Conflict of Interest: No conflict of interest was declared by the author.

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