

Aneurysm of the Internal Thoracic Vein An Extremely Rare Cause of a Mediastinal Mass

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A 45-year-old woman with a history of surgically treated melanoma was referred to our institution for a 4-cm undiagnosed mass in the upper anterior mediastinum disclosed by chest computed tomography (CT) during oncological follow-up (Figure 1).

Thymoma was suspected and preoperative evaluation was completed with positron emission tomography disclosing moderate fluorodeoxyglucose uptake.

In view of the patient's recent oncological history, CT-guided percutaneous biopsy was requested before planning surgical resection by median sternotomy.

The contrast-enhanced CT scan performed with an optimal timing of contrast enhancement showed a round well-delineated mass within the right anterior mediastinum, with a venous contrast enhancement identical to the superior vena cava enhancement and a tiny vascular connection to the internal mammary vein, thus demonstrating that the mass was an aneurysm of the right internal mammary vein (Figure 2).

The patient being asymptomatic and the vascular lesion stable at the second CT scan, we did not propose any surgical exploration, and a careful follow-up program was started.

Anterior mediastinal masses most commonly originate from the thymus, thyroid, parathyroid, and lymph glands.¹ Intrathoracic vascular lesions account for almost 10% of mediastinal masses, the majority of these being aneurysms arising from the aorta and its branches.² Excluding aortic disease, a vascular origin of anterior mediastinal masses is uncommon.¹ Aneurysms arising from mediastinal systemic veins are very rare, although superior



FIGURE 1. Axial computed tomography image of the upper thorax showing a streak artifact within the superior vena cava (early venous phase) and an anterior mediastinal hypodense mass suspected to be thymoma.

vena cava or innominate venous aneurysms have occasionally been described, with fewer than 30 cases reported in the literature.²

Internal thoracic vein aneurysm has been reported only once in a 52-year-old woman after a recent car accident but without any sternal or rib injury or mediastinal hematoma at the time of the crash¹; our patient, on the contrary, did not have any history of trauma, catheterization, or line placement which might explain the aneurysm formation.

The best contrast enhancement for thoracic masses is obtained during the venous phase: this will avoid artifacts manifesting as blooms and streaks in the subpectoral region and anterior mediastinum adjacent to the subclavian and brachiocephalic veins.³ If these effects are sufficiently severe, they may decrease the overall image quality by obscuring enlarged lymph nodes, resulting in incomplete or inaccurate characterization of axillary or mediastinal masses, and obscuration of vascular lesions.³

Inadequate contrast enhancement of vascular lesions may arouse the wrong suspicion of tumor. In our patient, the first CT scan, performed for oncological follow-up, was

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FIGURE 2. Axial computed tomography image of the upper thorax acquired during a venous phase showing an anterior mediastinal mass with the same contrast enhancement of the superior vena cava and a subtle venous connection with the internal mammary vein (arrow).

acquired during an early chest phase, as shown by a streak artifact within the superior vena cava leading to suspicion of a thymoma.

Vascular anomalies should always be suspected before an invasive diagnostic approach. In these cases, percutaneous CT-guided lung or mediastinal biopsies should be skipped or preceded by less invasive procedures if technically feasible.⁴

Although very rare, internal thoracic vein aneurysm should be entertained before planning a CT-guided biopsy of undiagnosed anterior mediastinal masses as the diagnosis is readily established by contrast CT scan of the chest with image acquisition in the venous phase.

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