Case-of-the-Day NON-TRAUMA

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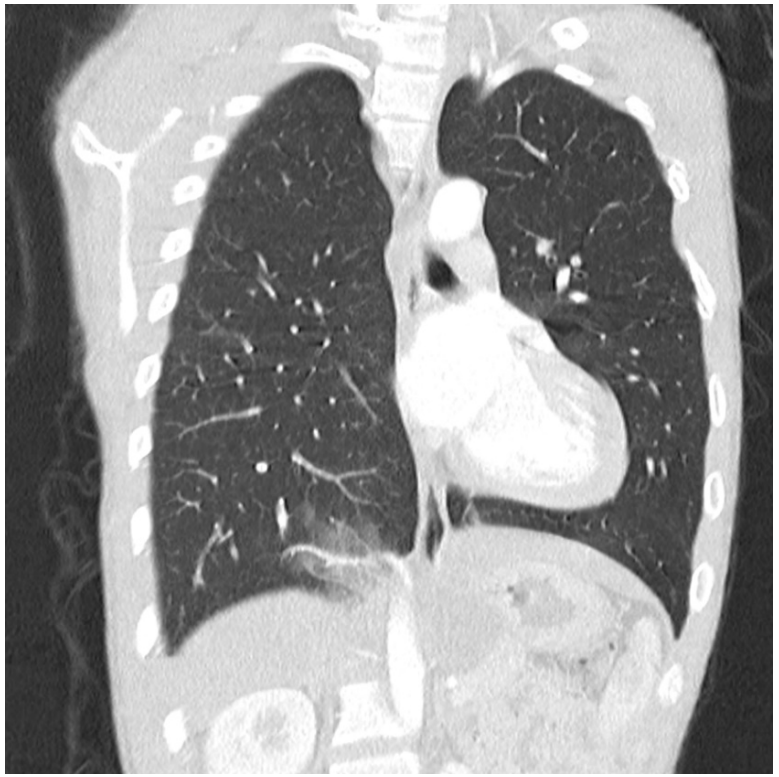
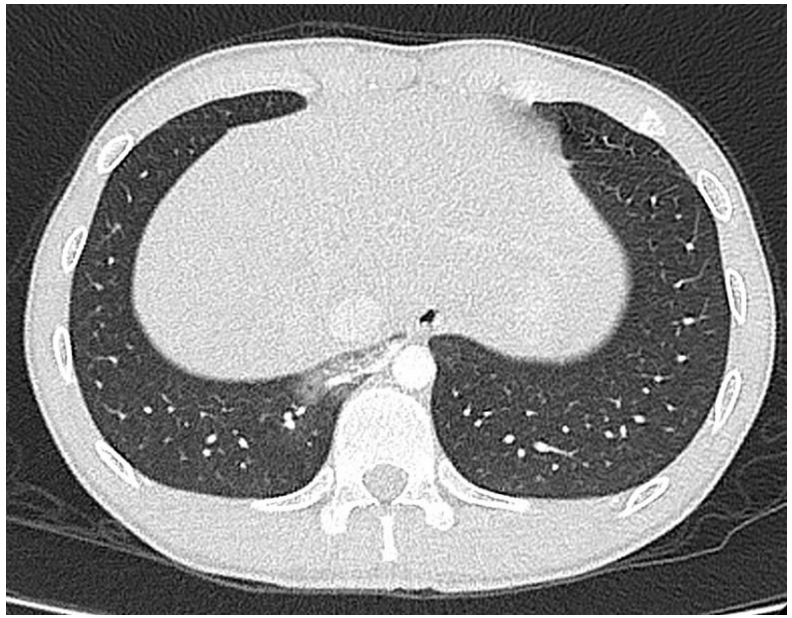
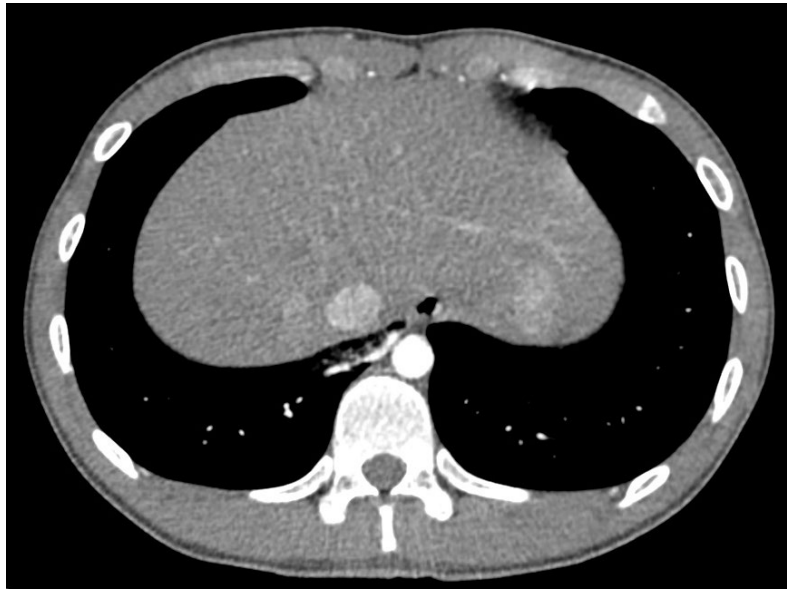
Case-of-the-Day NON-TRAUMA Description: An otherwise healthy 19-year-old male presented to our institution with a two-week history of low-volume hemoptysis. On questioning, he admitted to having had a similar episode of hemoptysis a year prior for which he had not sought medical attention. On presentation, Chest X-Ray and laboratory findings were unremarkable.



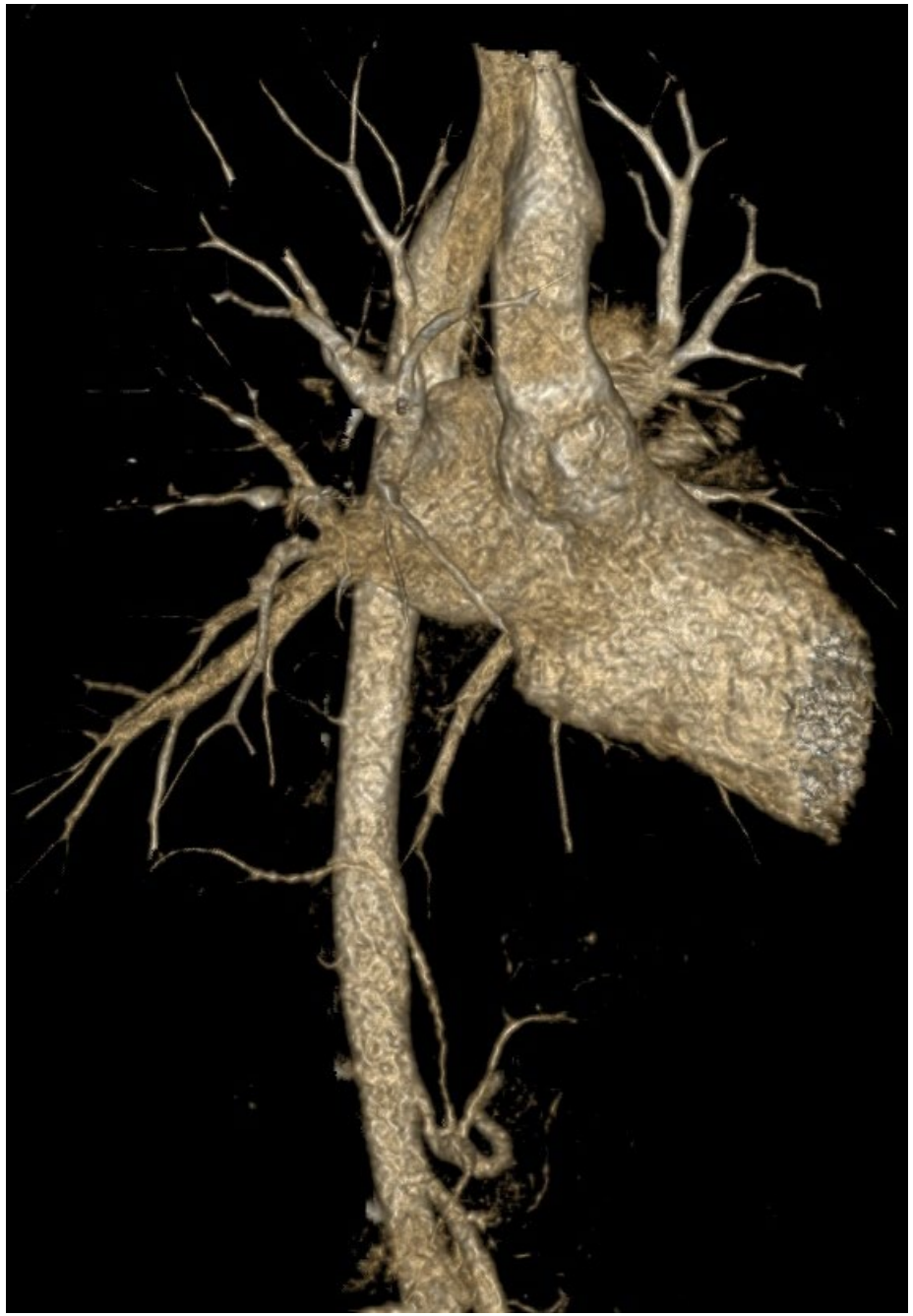
CTPA. Coronal MPR with the use of MIP
(lung window)



CTPA. Axial MPR with the use of MIP
(lung window)

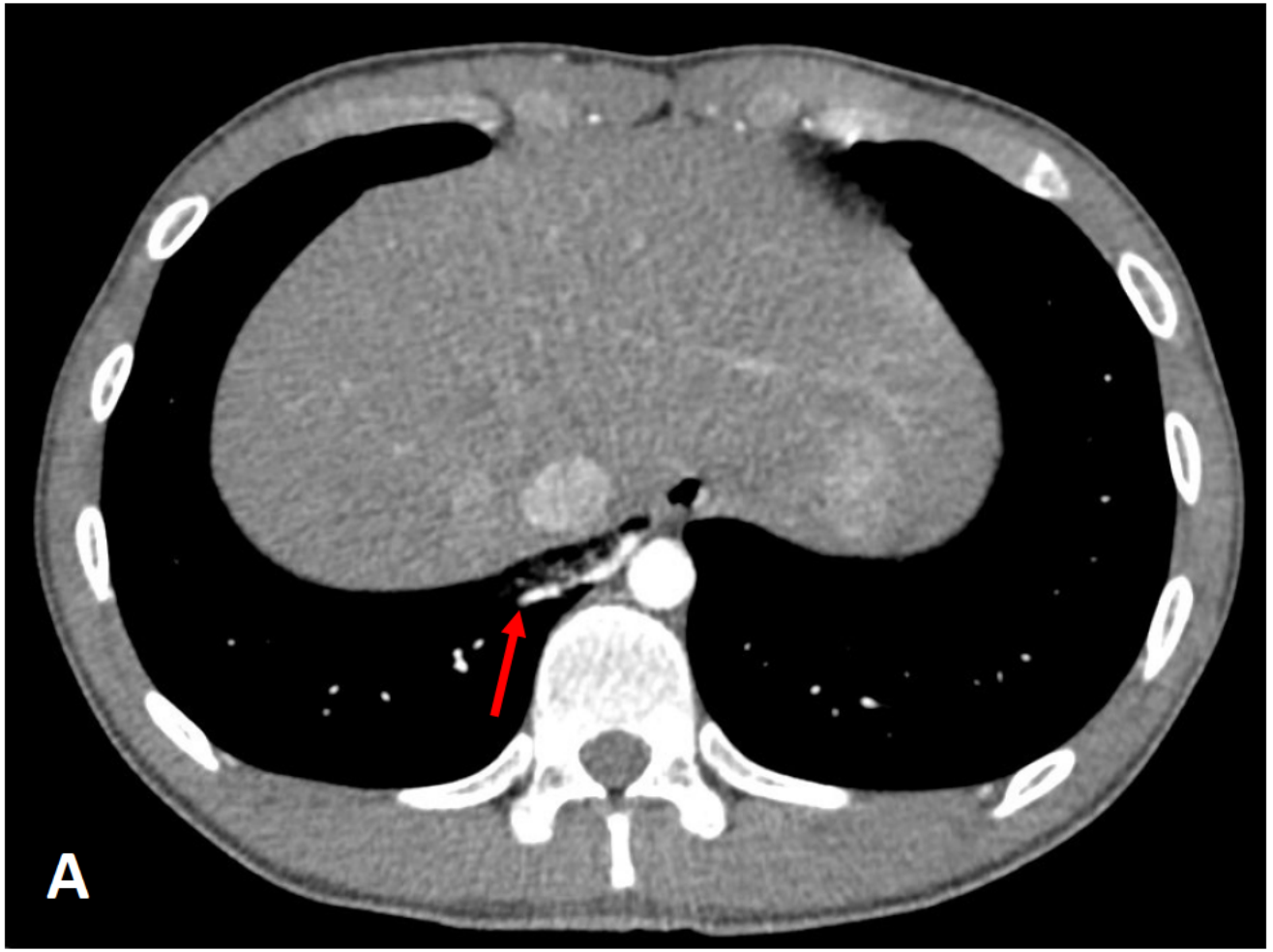


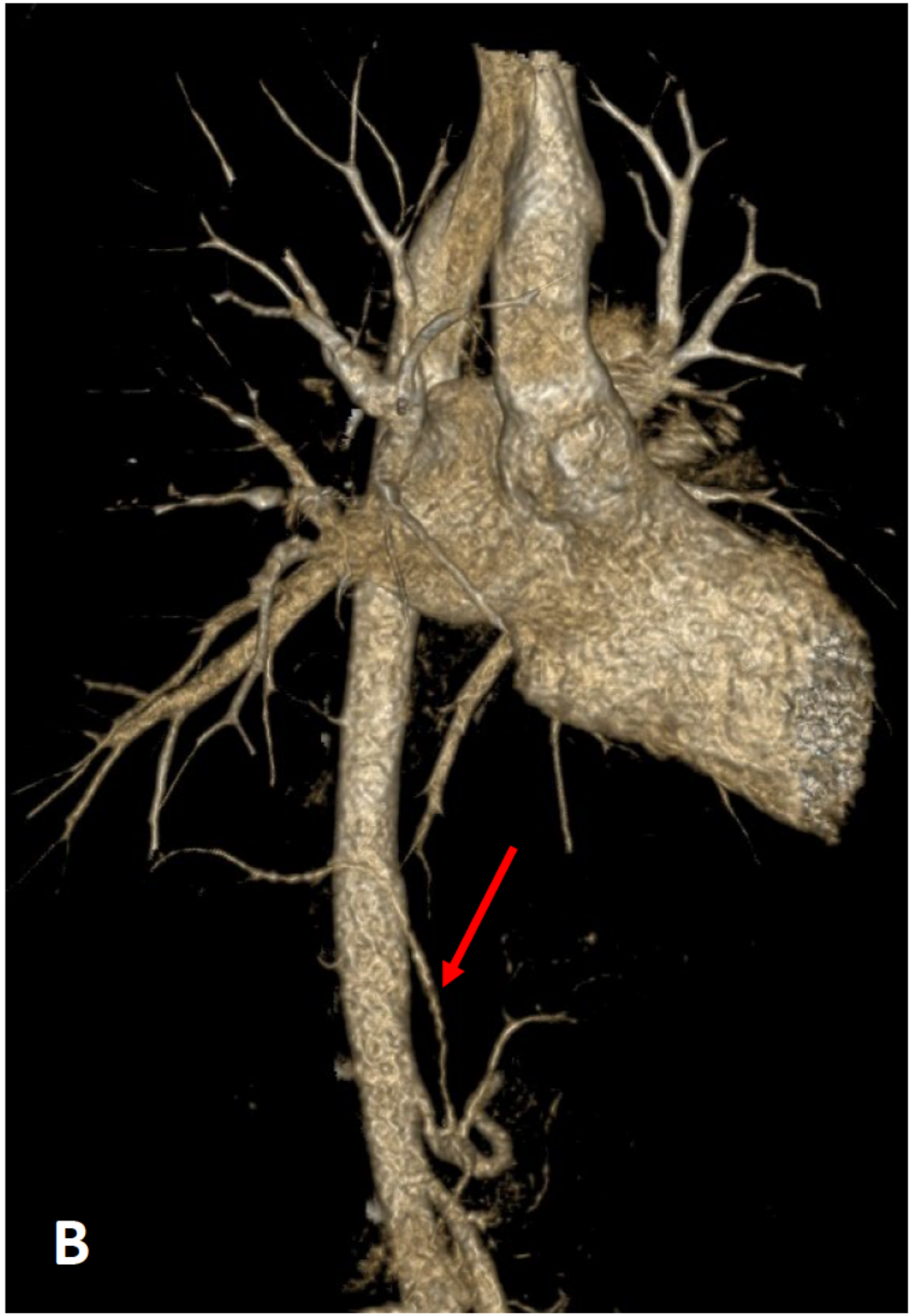
CTPA. Axial MPR with the use of MIP (soft tissue window)



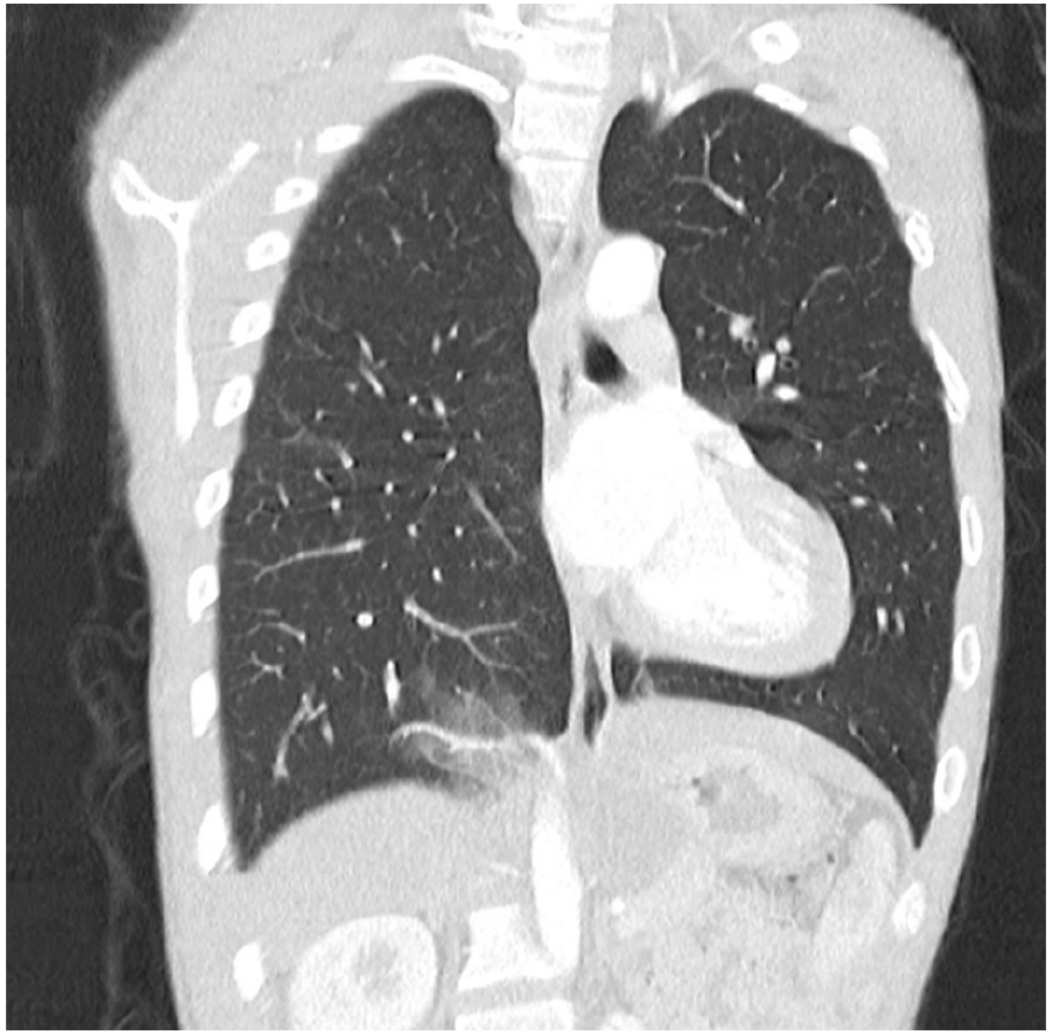
CTPA. 3D reconstruction

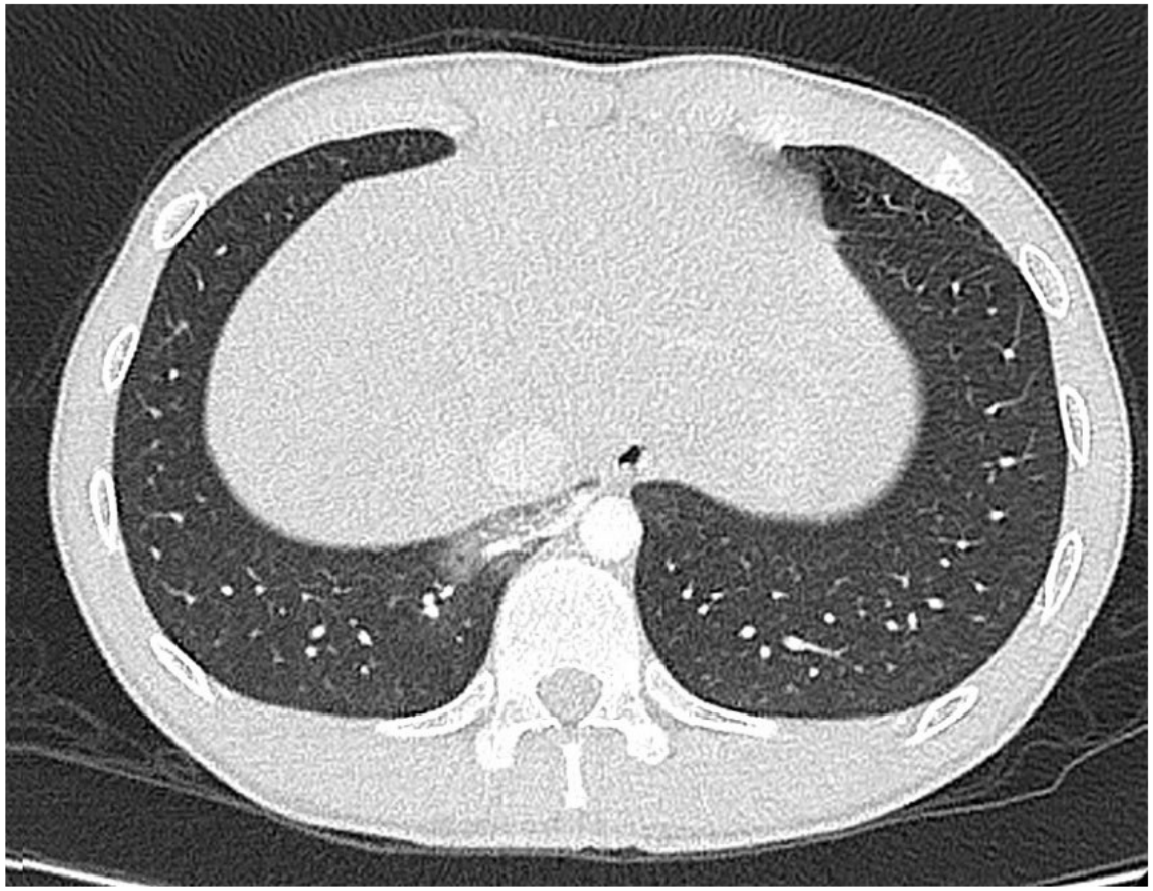
Final diagnosis: **Isolated systemic arterial supply to normal lung with secondary hemoptysis**





CTPA images. A. Axial MPR MIP. B. 3D reconstruction. Images reveal an aberrant artery (→) arising from the celiac trunk and entering the right basal pulmonary segments at the level of inferior pulmonary veins.





CTPA images. A-B. Coronal and axial MPR MIP. Lung windows demonstrated a small well-circumscribed area of ground glass density in the posterior basal segment of the right lower lobe around the aberrant artery raised from the coeliac trunk, in patient's context consistent with an area of hemorrhage. There weren't findings of associated lung sequestration. Findings were consistent with isolated systemic arterial supply to normal lung with secondary hemoptisis.

CASE DISCUSSION: FINAL DIAGNOSIS

Abnormal systemic arterial supply to the lungs can be seen in various congenital and acquired diseases. Identification and characterisation of aberrant vascular supply is essential for further management and treatment.

Isolated systemic arterial supply to normal lung:

- Presence of an anomalous supply to a lung lobe by an isolated systemic arterial feeder (usually from the descending thoracic aorta) → most commonly on the lower lobes (L>R). When present on the right side, the feeder usually arises from the coeliac trunk or abdominal aorta (5). Venous drainage is via the pulmonary vein. There is no normal PA supply to this segment.
- Differentiating feature of this entity from classic bronchopulmonary sequestration is the presence of a normal connection of this lung to the bronchial tree and also extreme thinning / absence of the interlobar artery distal to the origin of the superior segmental artery (4).
- Vast majority of patients are asymptomatic. However, they may present with haemoptysis due to a systemic feeder supplying the lung at high pressure → surgical ligation or endovascular embolisation of the systemic arterial feeder may be contemplated (6). Our patient was lost to follow-up so no treatment was done.

CASE DISCUSSION: DIFFERENTIAL DIAGNOSIS

Differential diagnosis includes numerous entities both congenital and acquired.

Scimitar síndrome (fig 1.)**:** Anomalous venous drainage from the right lung into the inferior vena cava (most common), portal vein, hepatic vein, or rarely right atrium. In addition, there is hypoplasia of the right lung and right pulmonary artery.

Bronchopulmonary sequestration (fig 2.)**:** sequestration is defined as a non-functioning lung segment without continuity to the tracheobronchial tree with anomalous systemic arterial supply. The intralobar type lacks its pleural cover and drains into pulmonary vein. The extralobar type has its own pleural covering with systemic venous drainage. The aberrant artery arises from lower thoracic or abdominal aorta and enters the lung via the pulmonary ligament.

Pulmonary arteriovenous malformation (fig 3.): pulmonary arterial feeder communicating with the pulmonary venous draining channel via a single fistula or multiple fistulae. The systemic collateral is seen arising from the aorta or its branches and supplying the parenchyma adjacent to the PAVM.

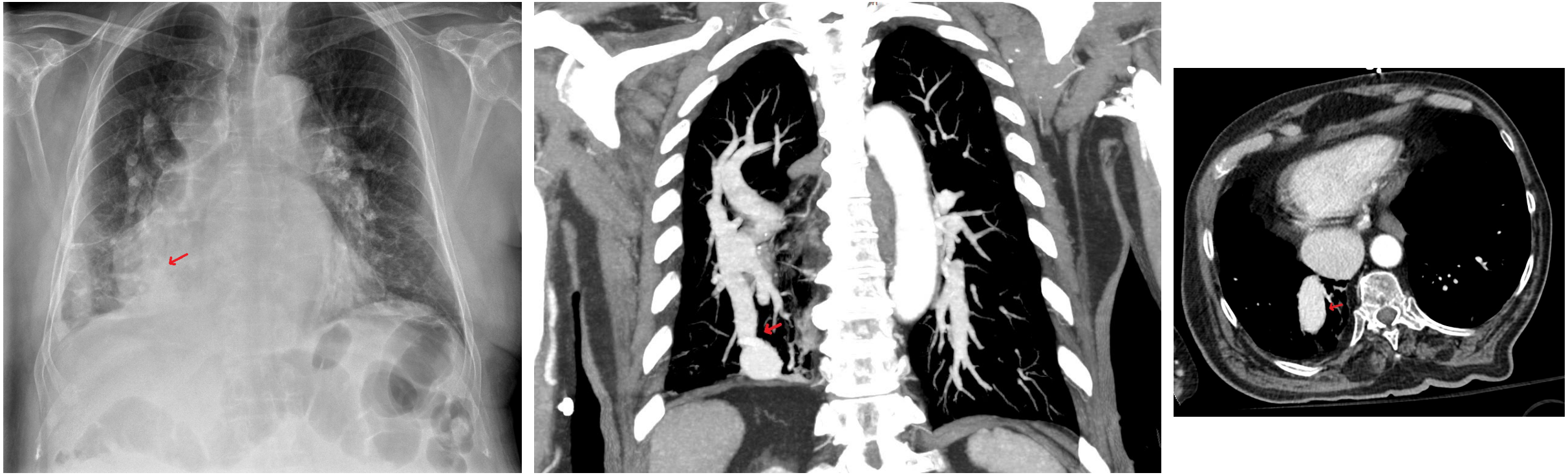


Figure 1. Images from a patient with **Scimitar síndrome**. Images show presence of anomalous drainage of the right lower lobal pulmonary vein into the suprahepatic IVC giving a scimitar-like appearance and hypoplastic right lung.

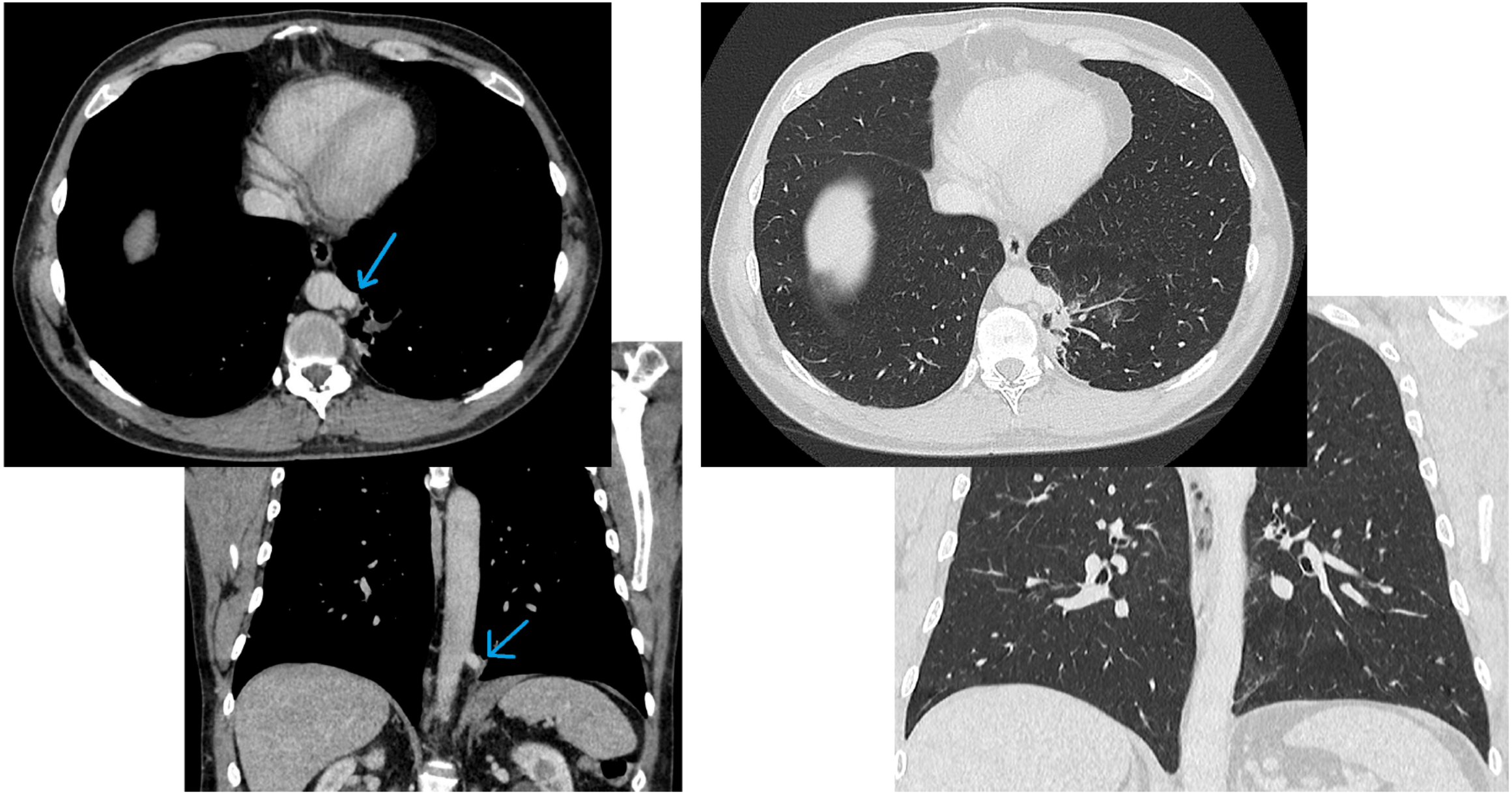
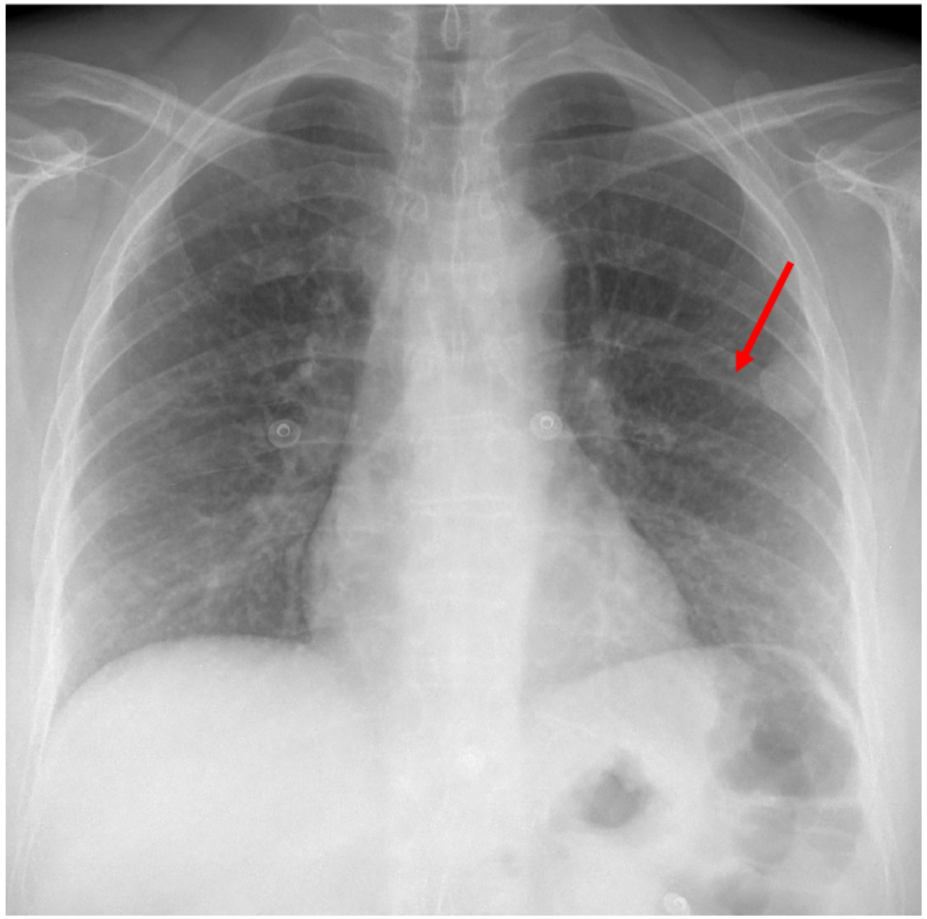
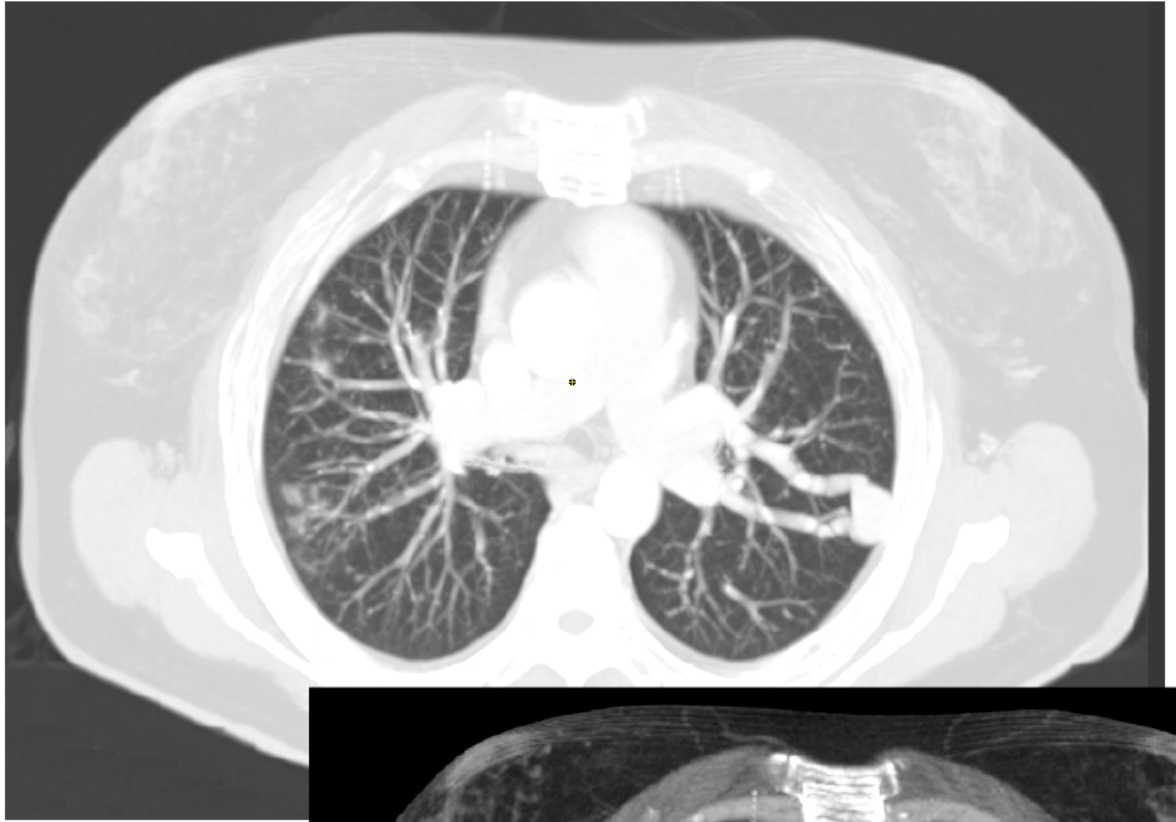


Figure 2. Images from a patient with **bronchopulmonary sequestration**. Images show the presence of an hyperinflated lung parenchyma associated with consolidations in the medial basal segment of the left lung which did not communicate with the bronchopulmonary tree of the left lung. The blood supply of this segment was from a systemic arterial feeder arising from the aorta, and the venous drainage was into the left lower lobe pulmonary vein.





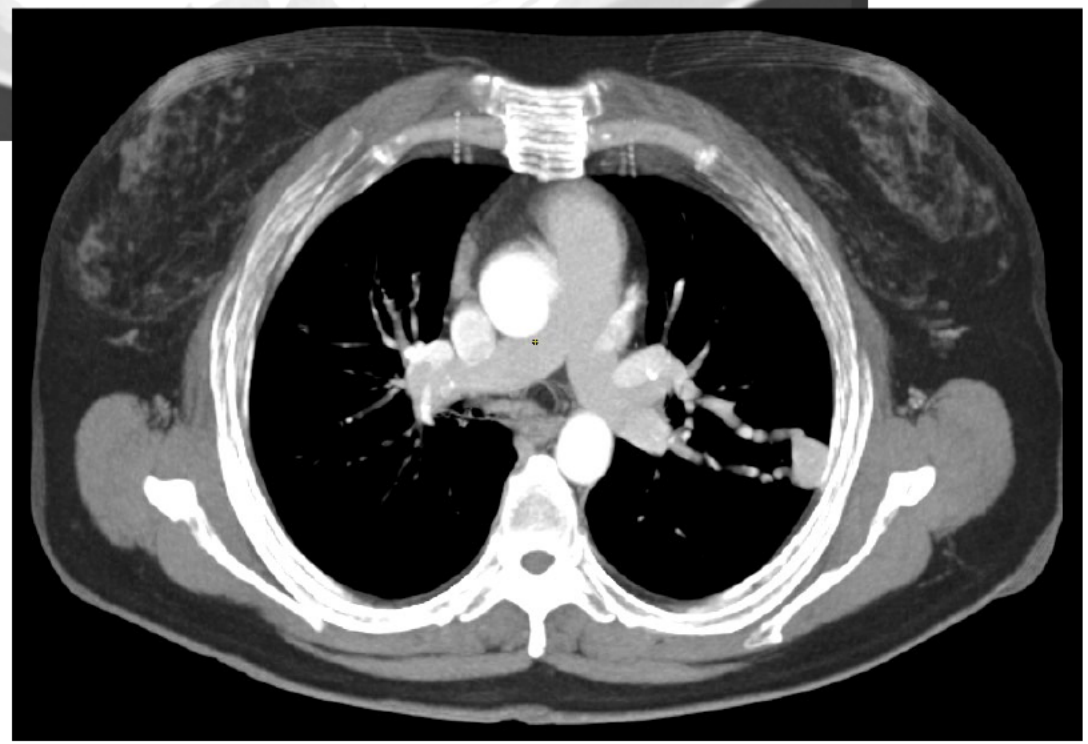


Figure 3. Images from a patient with a **pulmonary arteriovenous malformation** in the left upper lobe. PA chest radiograph shows a left mid peripheral nodule with a medial tubular opacity (→) that courses from the nodule to the hilum. CTA chest confirms the presence of a lobulated intensely enhancing nodule with feeding arterial and draining venous vessels.

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