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Clinical Video

Retrograde Systemic to Pulmonary Shunt Simulating Pulmonary Embolism

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Clinical Video

A 90-year-old woman is referred to the emergency for significant hemoptysis. She is a lifelong non-smoker, known for post-pneumonia multifocal bronchiectasis, labile hypertension and low weight (41 kg). Ten months earlier, she presented with acute dyspnea. D-Dimers were elevated to 1367 mg/ml (N<500 mg/ml) while troponin levels were normal. A CT pulmonary angiogram (CTPA) revealed a filling defect mainly in the left lower lobar pulmonary artery (Figure 1). She was therefore put on warfarin and maintain on that regimen to treat non provoked pulmonary embolisms.

The current episode is the patient's first hemoptysis. She also complains of discomfort in her postero-inferior left hemithorax. Vital signs are normal, INR value is 2.05 (with intentional omission of a dose of warfarin the day before) and D-Dimers are at 411 mg/ml. Expecting a possible bronchial artery embolization, a thoracic angio-CT is performed. Prominent bronchial arteries are identified, particularly in the left lower lobe where multiple bronchiectasis is seen (Figure 2). Two large intercostal arteries (T10 and T11) are also identified on the left side. Left bronchial artery embolization is first performed followed by intercostal angiogram showing late retrograde opacification of the left lower lobe pulmonary arteries (Figure 3 and Video 1).

Video: https://youtube.com/shorts/1xQdFMLVRXA?feature=share

Upon further revision, it appears that a retrograde systemic to pulmonary shunt was the cause of pulmonary artery filling defect on CTPA 10 months earlier, simulating pulmonary embolisms. In patients with bronchiectasis or other extensive infectious or inflammatory pulmonary disease, the shunting of blood from the high-pressure systemic neovascularization of bronchial and non-bronchial origin toward the low-pressure pulmonary vascularization has to be kept in mind. In this particular case, embolization of left lower lobe bronchial and intercostal arteries was performed and anticoagulation was definitively suspended.

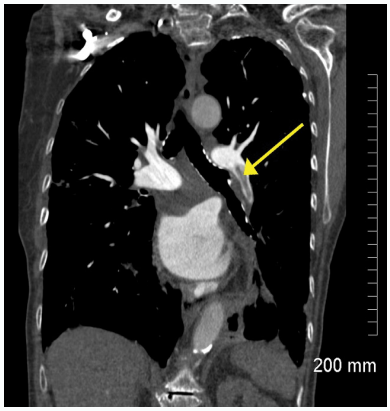

Figure 1: Yellow arrow → filling defect in the left lower lobar pulmonary artery.

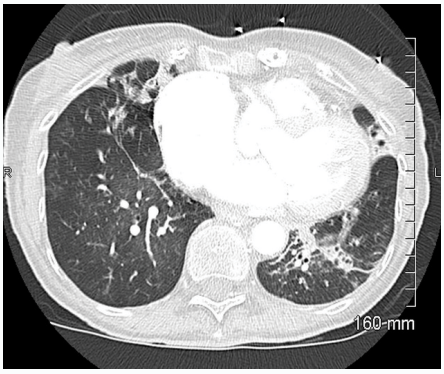

Figure 2: Multiple bronchiectasis, especially in left lower lobe and lingula.

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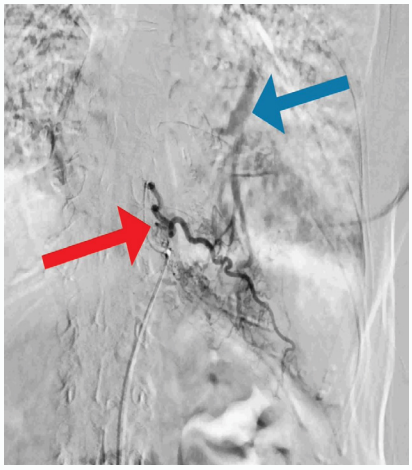

Figure 3: Red arrow → bronchial artery; blue arrow → pulmonary artery branch.