Imaging the Pulmonary Vasculature

Ernest Scalzetti, MD
SUNY Upstate Medical University
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**Anatomy**
- The pulmonary circulation lies between the right ventricle and the left atrium.
- 3 vascular stations:
  - Pulmonary arteries
  - Pulmonary capillaries
  - Pulmonary veins
- Bronchial arteries (systemic circulation)

**Imaging Modalities**
- Imaging modalities that have value in the assessment of pulmonary vasculature:
  - Radiography
  - Echocardiography
  - CT/CTA
  - MRI/MRA
  - Nuclear perfusion scintigraphy
  - Angiography

**Pathology: Pulmonary Arteries**
- Stenosis
- Aneurysm
- Vasculitis
- Primary neoplasm: angiosarcoma.
- Encasement by other neoplasms such as primary lung cancer
- Thromboembolism

**Pathology: Pulmonary Capillaries**
- AVMs allow blood to bypass the capillaries
- Capillaritis/small vessel vasculitis

**Pathology: Pulmonary Veins**
- Venoocclusive disease
- Tumor thrombus
- Encasement and compression by fibrosing mediastinitis
- Anomalous drainage
Physiology

- The imaging modalities that depict pulmonary vascular anatomy also say something about its physiology
- Quantitation of physiologic parameters related to blood flow
  - Echocardiography
  - MRI
  - CTA

Physiology and pathophysiology

- 100% of cardiac output passes through the pulmonary circulation
  - Except: when there is an intracardiac shunt
- Pulmonary arterial pressure
  - Normal PA systolic pressure <25 mmHg
  - Normal PA mean pressure <15 mmHg
  - Elevated PA pressure: pulmonary hypertension