

Pulmonary vascular disease: diagnosis and endovascular therapy

This special issue of *Cardiovascular Diagnosis and Therapy* focuses on recent advances in the diagnosis and endovascular therapy of pulmonary vascular disease. Though less commonly encountered in clinical practice, pulmonary vascular diseases result in significant morbidity and mortality. Symptoms range widely, with some disorders presenting incidentally on imaging and some with profound symptoms of hypoxia, heart failure or hemoptysis. Recent advances in imaging, especially the high resolution, thin section multi-detector CT angiography and magnetic resonance angiography provide excellent visualization of pulmonary vasculature and allow assessment of disease location and extent. These imaging tests also help assess the response to treatment. In addition to the anatomical details, these imaging tests can provide functional assessment of the cardiac structures (such as ejection fraction, right ventricular strain or failure), especially with ECG gating. The direct assessment of pulmonary vascular pressure and resistance are not yet feasible with these non-invasive imaging tests, but tissue decomposition imaging with spectral CT provides a new paradigm that is still unexplored for imaging of pulmonary perfusion. Pulmonary angiography and right heart catheterization allow anatomical and functional assessment of pulmonary circulation. Recent advances in endovascular therapy are pushing the envelope for minimally invasive treatment of various pulmonary vascular disorders. In addition to pulmonary vascular disorders *per se*, management of other vascular complications following extracorporeal membrane oxygenation and lung transplant are part of pulmonary vascular specialist. The role of imaging following surgical interventions of pulmonary vasculature is important to assess disease resolution and further complications.

In the first few chapters, Dr. Kandathil *et al.* reviewed the vascular anatomy, anatomical variants of pulmonary vasculature and pathophysiology of pulmonary circulation. Dr. Josephs discussed the common congenital anomalies, and their management. The subsequent chapters focused on diagnosis and management of pulmonary thromboembolism. Dr. Rajiah *et al.* discussed the imaging findings of acute pulmonary embolism and Dr. Sista *et al.* discussed the current status of endovascular therapy for acute pulmonary embolism. Imaging of chronic pulmonary embolism is discussed by Dr. Kay *et al.*, while Dr. Menon *et al.* focused on recent advances of balloon pulmonary angioplasty for chronic pulmonary embolism. Dr. Rajiah *et al.* updated on the imaging findings of pulmonary hypertension. Dr. Kay *et al.* discussed the diagnosis and endovascular management of pulmonary vasculitis disorders.

Pulmonary arteries are involved in significant percentage of patients affected with hereditary hemorrhagic telangiectasia. Dr. Battaile *et al.* discussed the clinical aspects of hereditary hemorrhagic telangiectasia and pulmonary arteriovenous malformations. Dr. Saboo *et al.* reviewed the role of imaging and recent advances in the diagnosis of pulmonary arteriovenous malformations. An update on endovascular management including the use of newly developed microvascular polytetrafluoroethylene covered nitinol plug is discussed by Dr. Chamarthy *et al.* Pulmonary artery aneurysms can occur in various systemic and local diseases. Dr. Park *et al.* discussed the imaging diagnosis and endovascular treatment options of pulmonary artery aneurysms. Dr. Cherian reports a rare case of coronary artery to pulmonary artery fistula that was treated with coils and detachable balloons.

Post-operative imaging of the pulmonary arteries is important especially following complex cardiopulmonary reconstructive surgeries. Dr. Restrepo *et al.* discussed the role of imaging following pulmonary vascular surgery. Dr. Pillai reviewed the vascular complications of extracorporeal membrane oxygenation. Dr. Batra *et al.* discussed the role of imaging in the diagnosis of post-lung transplant pulmonary vascular complications and briefly reviewed the current role of endovascular therapy. Finally, Dr. Renapurkar reviewed the imaging findings of pulmonary vein stenosis.

We hope this issue focusing on imaging and endovascular interventions for pulmonary vascular disorders will of interest to readers and contribute to improved patient care.

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